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Impact Evaluation of Rashtriya Krishi Vikas Yojana (RKVY) in Rajasthan

S. S. Kalamkar and M. Swain

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Foreword

The process of planned economic development in India began with the launching of the First Five Year Plan in 1951 and currently India is in the 12th Five Year Plan (2012-13 to 2016-17). The main objective of policy makers is to promote growth with social justice. While growth rate of gross domestic product was 3.6 percent per annum during the First-Five Year Plan, it grew at the rate of 7.8 percent per annum during the Tenth Plan and a road map for 9 percent per annum for the 11th Plan (2007-08 to 2011-12) was being conceived by the Planning Commission. However, despite this improved performance in growth rates over the plan periods, the major concern is that workforce continues to perpetuate in the agricultural sector. This means that the agricultural sector has to be an engine of growth as this will lead to inclusive growth. However, a contrary picture has emerged as there has been a sharp deceleration in Indian agriculture with declining growth rates and fall in share of agriculture in gross domestic product (GDP) from 36.4 percent in 1982-83 to 17.0 percent in 2008-09.

Realizing the gravity of the situation and steep fall in growth rates in SDP from agriculture, National Development Council, in its meeting held on 29th May, 2007 resolved that a special Additional Central Assistance Scheme (Rashtriya Krishi Vikas Yojana-RKVY) be launched. RKVY was launched in 2007-08 with an aim to provide assistance to the states to ensure a holistic development of agriculture and to enhance public investment so as to achieve 4 percent growth rate in agriculture and allied sectors during Eleventh Five Year Plan period which has been operational since then. The NDC resolved specifically that agricultural development strategies must be reoriented to meet the needs of farmers and called upon the Central and State governments to evolve a strategy to rejuvenate agriculture.

The National Development Council in order to give a boost to the agricultural and allied sector, conceived a centrally sponsored scheme namely-*Rashtriya Krishi Vikas Yojana* with a view to achieve a growth rate of 4 per cent per annum during the Eleventh Five Year Plan Period. The pattern of funding under this scheme is 100 percent Central grant. In order to be eligible to receive funds under this scheme, each district in every state has prepared a Comprehensive District Agricultural Plan (CDAP) indicating its budgetary requirements for innovative as well as on-going schemes. A large number of districts in the country have already prepared this plan. Further, each state has to prepare a Comprehensive State Agricultural Plan (SAP) by integrating the District Plans. The state has to, at the outset, indicate resources that can flow from the state to the district.

The state governments have been receiving assistance under RKVY scheme from Central Government since 2007-08. It would be important to study the impact of this scheme on selected parameters of beneficiary households in the state of Rajasthan. Ministry of Agriculture, GOI has assigned this task to ISEC, Bangalore. As a part of all India project, on request of ISEC, Bangalore, AERC VVN worked as a partner Institute & undertook work of data collection, imputing and processing for the state of Rajasthan.

I would like to congratulate the entire project team for preparing this excellent research report. I hope findings of the study would be useful for academicians, policy makers and researchers.

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List of Abbreviations

A	Area
AAGR	Annual Average Growth Rate
AGR	Annual Growth Rate
AFCL	Agricultural Finance Corporation Limited
ASMO	Area Sown More Than Once
Av.	Average
C.I.	Cropping Intensity
CAGR	Compound Annual Growth Rate
CGR	Compound Growth Rate
DES	Directorate of Economics and Statistics
FAO	Food and Agriculture Organization
FFP	Farmers Field School
FYP	Five Year Plan
GCA	Gross Cropped Area
GDP	Gross Domestic Product
GIA	Gross Irrigated Area
GOR	Government of Rajasthan
GOI	Government of India
GSDP	Gross State Domestic Product
ha	Hectare
HH/hh	Household
I.I.	Irrigation Intensity
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
INM	Integrated Nutrient Management
IPM	Integrated Pest Management
kg	kilograms
mha	Million hectares
MOA	Ministry of Agriculture
mt	Metric Tonnes

NA		Not Available
NCA		Net Cropped Area
NFHS		*National Family Health Survey*
NFSM		National Food Security Mission
Non-NFSM		Non Beneficiary of National Food Security Mission
NHM		National Horticultural Mission
NIA		Net Irrigated Area
NPK		Nitrogen (N), Phosphorus (P), and Potassium (K)
NSA		Net Sown Area
NSDP		Net State Domestic Product
NSS		National Sample Survey
OBC		Other Backward Classes
P		Production
PACS		Primary Agricultural Credit Societies
PDS		Public Distribution System
RKVY		Rashtriya Krishi Vikas Yojana
SC		Scheduled Caste
SRR		Seed Replacement Ratio
ST		Scheduled Tribe
TE		Triennium Endings
USA		United States of America
WFP		World Food Programme
Y		Yield
A.I.	-	Artificial Insemination
A.I.C.	-	Artificial Insemination Centre
AEZs	-	Agri Export Zones
APMC	-	Agricultural Produce Market Committee
ATMA	-	Agriculture Technology Management Agency
BAPU	-	Block Agriculture Planning Unit
BPL	-	Below Poverty Line
BRGF	-	Backward Region Grants Fund
CACP	-	Commission for Agricultural Cost and Prices
CB	-	Cross Breed
C-DAP	-	Comprehensive District Agriculture Plan

C-SAP		Comprehensive State Agricultural Plan
DPAP	-	Drought Prone Area Programme
DAPU	-	District Agriculture Planning Unit
DDP	-	District Development Plan
DFL	-	Disease Free Layings
DIC	-	District Industries Centre
DPAP	-	Drought Prone Area Programme
DRDA	-	District Rural Development Authority
EGS	-	Employment Guarantee Scheme
FFS	-	Farmers Field School
FHP	-	Farm Harvest Price
FYP	-	Five Year Plan
GCA	-	Gross Cropped Area
GDP	-	Gross Domestic Product
GIA	-	Gross Irrigated Area
GoI	-	Government of India
GP	-	Gram Panchayat
GSDP	-	Gross State Domestic Product
GVO	-	Gross Value of Output
Ha	-	Hectare
HYV	-	High Yielding Variety
IADP	-	Integrated Agricultural Development Plan
INM	-	Integrated Nutrient Management
IPM	-	Integrated Pest Management
IWMP	-	Integrated Watershed Development Programnme
IWMP		Integrated Watershed Management Programme
KVI	-	Khadi and Village Industries
KVK	-	Krishi Vigyan Kendra
MSAMB	-	Maharashtra State Agricultural Marketing Board
MSHMPB	-	Maharashtra State Horticulture and Medicinal Plants Board
MSP	-	Minimum Support Price
NADP	-	National Agriculture Development Programme
NAFED	-	National Agricultural Cooperative Marketing Federation of India
NCAP	-	National Centre for Agricultural Economics and Policy

		Research
NDC	-	National Development Council
NDP	-	Net Domestic Product
NFSM	-	National Food Security Mission
NHM	-	National Horticulture Mission
NIA	-	Net Irrigated Area
NPK	-	Nitrogen, Potassium and Potash
NREGS	-	National Rural Employment Guarantee Act
NWDPRA	-	National Watershed development Programme for Rainfed Areas
PPP	-	Public Private Partnership
Prod	-	Production
Prodvty.	-	Productivity
RKVY	-	Rashtriya Krishi Vikas Yojana
SAU	-	State Agricultural Universities
SHG	-	Self Help Group
SLSC		State Level Sanction Committee
SRR	-	Seed Replacement Ratio
SWOT	-	Strength, Weakness, Opportunity and Threat
WPI	-	Wholesale Price Index

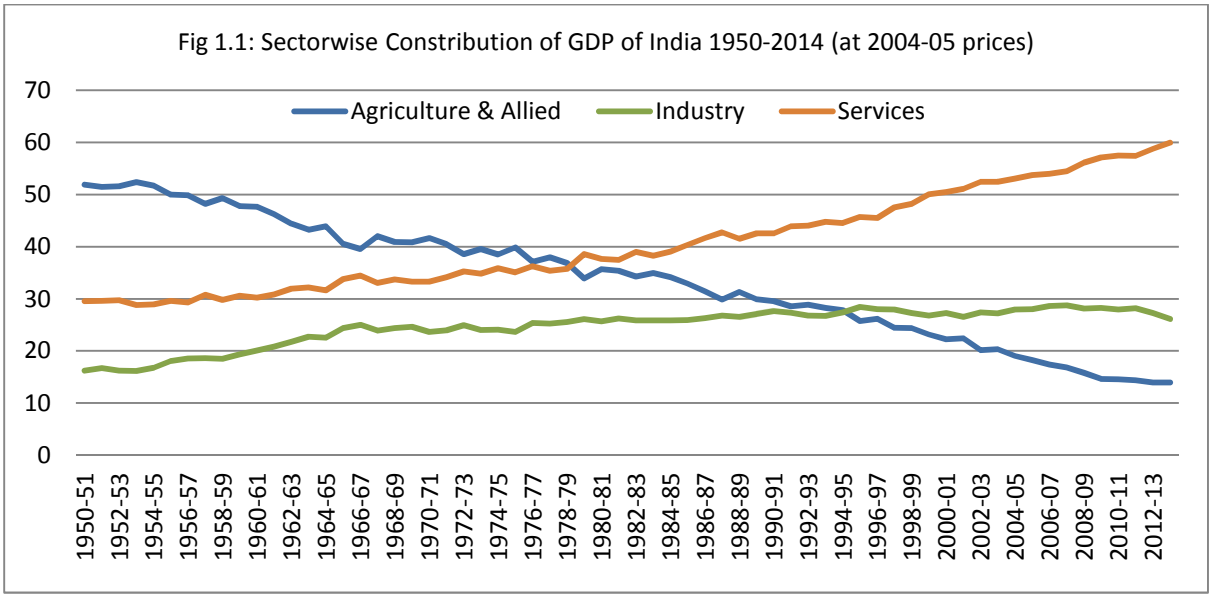
Chapter I

Introduction

1.1 Introduction:

Agricultural growth plays an important role in achieving certain national goals, such as reducing rural poverty, providing food and nutritional security, supplying raw materials to major industries such as textiles, earning foreign exchange, etc. Further, agriculture is also the dominant sector of the Indian economy because more than half the workforce in the country is engaged in agriculture. Therefore, sustained growth in India's agricultural sector is essential for economic development and for maintaining overall stability of the economy. However, despite major part of the workforce being employed in this sector, the contribution of agriculture in gross domestic product (GDP) has registered a steady decline from 51.9 percent in 1950-51 to 13.9 percent in 2013-14, at 2004-05 prices (Fig. 1.1). While slower growth of GDP in agricultural as compared to non-agricultural sector is expected, the main failure has been the inability to reduce the dependence of the workforce on agriculture significantly by creating enough non-farm opportunities to absorb the labour surplus in rural areas.

Fig 1.1: Sectorwise Constribution of GDP of India 1950-2014 (at 2004-05 prices)



1.2 Genesis of RKVY:

Given the agrarian nature of our economy, agriculture and rural development have always occupied the attention of the planners and policy makers, which is evident from the priorities given to these sectors in terms of resource allocations in different five year plans (Kalamkar and Shroff, 2011a). India's performance in agriculture over the past decades has shown considerable progress and all the Revolutions (Green, Blue, White and Yellow) have brought about vast changes in the agrarian scene since independence. However, in the recent past, there had been a sharp deceleration in Indian agriculture with the growth rate of agriculture GDP slipping from 3.62 percent during 1984-85 to 1995-96 to less than 2 percent in the period 1995-96 to 2004-05 (Table 1.1). Further, state-wise trends indicate that the largest slumps were occurred in those areas/states that are predominantly rainfed (Planning Commission, 2008). This deceleration, although most marked in rainfed areas, was occurred in almost all states and covered all major sub-sectors. Further evidence of the worsening situation of farming households was observed from the results of the 59th round of NSSO (2005 and 2005a) on the *'Situation Assessment of Farmers'*, which shows that 48.6 percent of the farmers' households in India are indebted, and about 41 percent farmers' households in the country did not like farming because it is not profitable, risky and it lacks social status. These results had clearly showed the signs of acute distress and stagnation in productivity in the sector. The deceleration in the growth rate of agriculture and allied sectors has resulted in widening disparities in the per worker productivity between agriculture and non-agricultural sectors. In fact in the recent past, the distressful condition of farmers has been the major cause of suicides in different regions of the country. This seems to be a matter of serious concern, especially in view of a growth strategy leaning towards globalization and therefore encouraging competition. A declining growth rate of investment in agriculture, declining efficiency in input-use, no major technological breakthrough and falling prices, have all contributed to the lower agricultural growth in the country.

Table 1.1: Growth Rate of National State Domestic Products (NSDP) from Agriculture (1984-85 to 1995-96 7 1995-96 to 2004-05)

(% per annum)

State	Growth rate in NSDP Agriculture		Rainfed (%)	State	Growth rate in NSDP Agriculture		Rainfed (%)
	1984-85 to 1995-96	1995-96 to 2004-05			1984-85 to 1995-96	1995-96 to 2004-05	
Punjab	4.00	2.16	03	**Rajasthan**	**5.52**	**0.30**	**70**
Haryana	4.60	1.98	17	Orissa	-1.18	0.11	73
Utter Pradesh	2.82	1.87	32	Madhya Pradesh	3.63	-0.23	74
Tamil Nadu	4.95	-1.36	49	Karnataka	3.92	0.03	75
West Bengal	4.63	2.67	49	Maharashtra	6.66	0.10	83
Bihar	-1.71	3.51	52	Kerala	3.60	-3.54	85
Andhra Pradesh	3.18	2.69	59	Assam	1.65	0.95	86
Gujarat	**5.09**	**0.48**	**64**	All India	3.62	1.8554	60

Note: States are ranked by percentage of rainfed area.
Source: Planning Commission, GOI, 2008.

The growth rate in NSDP from agriculture during the period 1995-96 to 2004-05 in every state had showed a dismal performance and was negligible or even negative in some states. The states of Gujarat and Rajasthan had experienced the less than 0.5 percent rate of growth during second period. The growth rate in the agricultural sector has always lagged behind the overall growth rate of the economy. Indian agriculture was in a state of crisis and one of the major challenges is to reverse deceleration in agricultural growth rates so as to successfully achieve a higher broad based growth. Realizing the gravity of the situation and steep fall in growth rates in SDP from agriculture, a number of schemes/programmes were initiated to revive and accelerate growth in agriculture and allied sectors during the Eleventh plan. Further, National Development Council (NDC), in its meeting held on 29th May, 2007 resolved that a special Additional Central Assistance Scheme (Rashtriya Krishi Vikas Yojana-RKVY) be launched. In order to overcome the above weaknesses and give a major boost to the agricultural sector, the RKVY aimed at providing assistance to the states to ensure a holistic development of agriculture. Thus, RKVY was launched during 2007-08 to incentivize the states to enhance public investment to achieve 4 percent growth rate in agriculture and allied sectors during XIth

Five Year Plan (FYP) period. The NDC resolved specifically that agriculture development strategies must be reoriented to meet the needs of farmers and called upon the Central and State governments to evolve a strategy to rejuvenate agriculture (see, Box 1.1).

Box 1.1: **Resolution with respect to the Additional Central Assistance scheme**

Introduce a new Additional Central Assistance scheme to incentivise States to draw up plans for their agriculture sector more comprehensively, taking agro-climatic conditions, natural resource issues and technology into account, and integrating livestock, poultry and fisheries more fully. This will involve a new scheme for Additional Central Assistance to State Plans, administered by the Union Ministry of Agriculture over and above its existing Centrally Sponsored schemes, to supplement the State-specific strategies including special schemes for beneficiaries of land reforms. The newly created National Rainfed Area Authority will on request assist States in planning for rainfed areas.

Source: GOI (2007).

1.3 About Rashtriya Krishi Vikas Yojana:

As mentioned earlier, among several schemes, a centrally sponsored scheme RKVY with an allocation of Rs. 25,000 crores was introduced during Eleventh FYP to enable agriculture to achieve goals of bridging the yield gaps in important crops, maximize returns to the farmers and incentivize states to spend more on agricultural sector and address the problems of agriculture and allied sectors in an integrated manner. RKVY is a State Plan scheme, which is administered by the Union Ministry of Agriculture. The pattern of funding under this scheme is 100 percent Central grant. The eligibility for assistance under the scheme depends upon the amount provided in the State Plan budgets for agriculture and allied sectors, over and above the base line percentage expenditure incurred by the State Governments on agriculture and allied sectors. The baseline share of agriculture in total State Plan expenditure (excluding the assistance under the RKVY) must be at least maintained, and upon its doing so, it will be able

to access the RKVY funds. The base line is a moving average, and the average of the previous three years is taken into account for determining the eligibility under the RKVY, after excluding the funds already received (GOI, 2007). The main objective of RKVY is to give boost to the agricultural sector to that yield gaps can be reduced and potential growth of the state/district can be capitalised (Box 1.2). The scheme focuses on agriculture and allied sectors including infrastructure, extension services and capacity building (see. Box 1.3).

Box 1.2 Basic Features of the RKVY

The RKVY aims at achieving 4 per cent annual growth in the agriculture sector during the XI Plan period, by ensuring a holistic development of agriculture and allied sectors. The main objectives of the scheme are :

(i) To incentivise the states so as to increase public investment in agriculture and allied sectors.

(ii) To provide flexibility and autonomy to states in the process of planning and executing agriculture and allied sector schemes.

(iii) To ensure the preparation of agriculture plans for the districts and the states based on agro-climatic conditions, availability of technology and natural resources.

(iv) To ensure that the local needs/crops/priorities are better reflected in the agricultural plans of the states.

(v) To achieve the goal of reducing the yield gaps in important crops, through focused interventions.

(vi) To maximize returns to the farmers in agriculture and allied sectors.

(vii) To bring about quantifiable changes in the production and productivity of various components of agriculture and allied sectors by addressing them in a holistic manner.

Source: GOI (2007).

1.3.1 Comprehensive District Agricultural Plan:

The need for integrated local area plans, based on specific endowments and needs of each area, was stressed from the beginning of planned development. However, despite several reports and studies, only sporadic efforts and isolated cases of such planning could be located. It was therefore decided by the Government of India that the 'District Plan Process'

should be an integral part of the process of preparation of State's next Five Year Plan. In order to get assistance from the RKVY scheme, it is mandatory to prepare a 'Comprehensive District Agricultural Plan' (C-DAP) for every district in the state and finally prepare a State Agricultural Plan (SAP).

Box 1.3 Areas of focus under the RKVY

(a) Integrated development of major food crops such as wheat, paddy, coarse cereals, minor millets, pulses, oilseeds
(b) Agriculture mechanization
(c) Activities related to enhancement of soil health.
(d) Development of rainfed farming systems in and outside watershed areas, as also integrated development of watershed areas, wastelands, river valleys
(e) Support to State seed farms
(f) Integrated Pest Management
(g) Encouraging non-farm activities
(h) Strengthening of market Infrastructure and marketing development
(i) Strengthening of Infrastructure to promote Extension Services
(j) Activities relating to enhancement of horticultural production and popularization of micro irrigation systems
(k) Animal husbandry and fisheries development activities
(l) Special schemes for beneficiaries of land reforms
(m) Undertaking concept to completion projects
(n) Grant support to the State Government institutions that promote agriculture/horticulture
(o) Study tours of farmers
(p) Organic and bio-fertilizers
(q) Innovative schemes

Source: GOI (2007).

C-DAP is a document which encompasses the vision for development of the district in a holistic manner and also the strategies to achieve the same so that there is human development, infrastructure development and higher growth rates which will generate more employment. A district plan was to describe what a district will try to achieve over a medium term of five

years and how it intends to achieve it. The plan contains an analysis of the current situation of the district and particularly its needs and potentials. The district is taken up as the planning unit, with the plan process starting from below so that all stakeholders in the district are incorporated. Essentially, the main aim of C-DAP is to prepare an agricultural development plan from Gram Panchayat upward to the District level, i.e. bottom up approach. District Plan includes schemes under Stream I (innovative schemes) and Stream II (ongoing scheme). C-DAP shall clearly identify the main causes for backwardness of the district and address these issues. C-DAP will also conduct a SWOT analysis so that the drivers of growth in the district are identified and full potential of the district is realized. RKVY is available to the states in two distinct streams. At least 75 per cent of the allocated amount shall be proposed under Stream-I for specific projects. The amount under Stream- II, will be available for strengthening the existing state sector schemes and filling the resource gaps (Kalamkar and Shroff, 2011).

1.4 Plan Outlay by Heads of Development during IXth, Xth & XIth FYP:

The Eleventh Plan strategy of inclusive growth rests upon substantial increase in public sector outlay. The eleventh five year plan was formulated with a total public sector outlay of Rs. 36,44,718 crores with share of centre and states including union territories respectively amounting to Rs. 2,15,6571 crores and Rs. 14,88,147 crores at 2006-07 prices. The revival of agricultural growth and raising it to 4 percent per annum has been identified as one of the important strategies for achieving faster and inclusive growth and accomplishing an overall target of 9 per cent GDP growth per annum in the 11th FYP period. The actual allocation to agriculture and allied sectors, irrigation and flood control and rural development respectively was amounted to Rs. 136381 crores, 210326 crore and 301069 crores respectively during eleventh five year plan (Table 1.2). And out of the total plan outlay, these three heads accounted for 17.77 percent. The plan expenditure on these three heads together increased from Rs. 166493 crore in ninth plan, Rs. 284176 crore in tenth plan, Rs. 647776 crore in

eleventh plan and projected to Rs. 1242749 crore in the end of twelfth plan. As has been highlighted in earlier section, the government had initiated measures to incentivize State Governments to increase investment in agriculture sector by provision of Rs 25,000 crores additional assistance to States over the plan period through the RKVY. However, in terms of percent share of these three heads in total outlay during ninth to twelfth plan could not changed much, as it ranges between 16-19 percent of total outlay during these periods (Table 1.3). It indicates that while increasing the plan outlay for agriculture and related sectors, outlay on other heads of economy were also increased relatively.

Table 1.2: Plan Outlay by Heads of Development in India: IXth to XIIth Five Year Plans

Amount in Crore

Head of Development	IX Plan (1997-2002)	X Plan (2002-07)	XI Plan : 2007-12 at 2006-07 prices	XI Plan : 2007-12 realisation at current prices	XII Plan (2012-17) Projected at current prices
I. Agricultural & allied activities	37456	58933	136381	162849	363273
II. Rural development	73439	121928	301069	285008	457464
III. Special area programmes	3649	20879	26329	44138	80370
IV. Irrigation & flood control	55598	103315	210326	217563	422012
V. Energy	215545	403927	854123	652173	1438466
VI. Industry and minerals	69972	58939	153600	179943	377302
VII. Transport	121324	225977	572443	612058	1204172
VIII. Communications	47616	98968	95380	53108	80984
IX. Science, technology & environment	25529	30424	87933	67141	167350
X. General economic services	15038	38630	62523	84487	305612
XI. Social services	182005	347391	1102327	1172540	2664843
XII. General services	11940	16328	42283	51759	107959
XIII. Total (I to XII)	859301	1525639	3644717	3582767	7669807

Source: GOI (2014) and http://planningcommission.nic.in/data/datatable/0814/comp_databook.pdf

Table 1.3: Head-wise share in Total Plan Outlay in India: IXth -XIIth Five Year Plans

Head of Development	IX Plan (1997-2002)	X Plan (2002-07)	XI Plan : 2007-12 at 2006-07 prices	XI Plan : 2007-12 realisation at current prices	XII Plan (2012-17) Projected at current prices
I. Agricultural & allied activities	3.86	3.74	4.55	4.74	3.86
II. Rural development	7.99	8.26	7.95	5.96	7.99
III. Special area programmes	1.37	0.72	1.23	1.05	1.37
IV. Irrigation & flood control	6.77	5.77	6.07	5.50	6.77
V. Energy	26.48	23.43	18.20	18.75	26.48
VI. Industry and minerals	3.86	4.21	5.02	4.92	3.86
VII. Transport	14.81	15.71	17.08	15.70	14.81
VIII. Communications	6.49	2.62	1.48	1.06	6.49
IX. Science, technology & environment	1.99	2.41	1.87	2.18	1.99
X. General economic services	2.53	1.72	2.36	3.98	2.53
XI. Social services	22.77	30.24	32.73	34.74	22.77
XII. General services	1.07	1.16	1.44	1.41	1.07
XIII. Total (I to XII)	100.00	100.00	100.00	100.00	100.00

Source: GOI (2014) and http://planningcommission.nic.in/data/datatable/data_2312/DatabookDec2014%2039.pdf

It was reported that during the XI plan, Rs. 22408.76 was released to States out of which Rs. 21586.6 crore was utilized in implementing 5768 projects in certain broad categories namely crop development, horticulture, agricultural mechanization, natural resource management, marketing and post harvest management, animal husbandry development, fisheries, extension, etc (GOI, 2014). By the virtue of these enhanced investments, agriculture and allied sectors could achieve an annual growth rate of 3.64 percent during XIth plan against a growth rate of 2.46 percent per annum in the X plan period.

1.5 Statewise Allocation, Release, Expenditure of the States under RKVY:

The RKVY Guidelines recognize and build on the need for convergence and integration of the various programmes implemented at District/State level into District Agriculture Plans (DAPs) and State Agriculture Plan (SAP). Each district is required to formulate a District Agriculture Plan by including the resources available from other existing schemes, District, State or Central Schemes such as Backward Region Grant Fund (BRGF), Swarnajayanti Gram Swarozgar Yojana (SGSY), National Rural Employment Guarantee Scheme (NREGS), Bharat Nirman and tied and untied grants from the Central and State Finance Commissions etc. The District Agriculture Plans are not to be the usual aggregation of the existing schemes but would aim at moving towards projecting the requirements for development of agriculture and allied sectors of the district. These plans present the vision for agriculture and allied sectors within the overall development perspective of the district. The District Agriculture Plans would reflect the financial requirement and the sources of financing the agriculture development plans in a comprehensive way. The DAP will include animal husbandry and fishery, minor irrigation projects, rural development works, agricultural marketing schemes and schemes for water harvesting and conservation, keeping in view the natural resources and technological possibilities in each district. Each State is further required to prepare a comprehensive State Agricultural Plan (SAP) by integrating the DAPs. The State will have to indicate resources that can flow from the State to the district.

During XII Plan, RKVY funding is provided through three streams viz. production growth (35%), infrastructure & Assets and sub-schemes (20%). The remaining 10% is provisioned as flexi fund from which states can undertake either production growth or infrastructure & assets projects depending upon States needs & priorities. Looking at the requirement of increasing investment, Government has recently done way with 35 per cent requirement in production stream thus paving the way for 100 per cent allocation in investments for infrastructure buildings & creation of assets.

The States have been provided flexibility and autonomy in the process of selection, planning, approval and execution of schemes to make investments in interventions as per their priorities and agro-climatic requirements so that the outcomes are as envisaged in the RKVY objectives. The projects of the State Governments are approved by the State Level Sanctioning Committees (SLSCs) under the Chairmanship of Chief Secretary of the respective States. The funds are routed through the State Agriculture Department, which is the nodal Department for the scheme.

The six sub-schemes were implemented as sub-schemes under RKVY during 2014-15 (http://www.rkvy.nic.in/). These sub-schemes and their allocations are:

i) **Bringing Green Revolution to Eastern Region:** - This programme was initiated in 2010-11 targeting the improvement in the rice based cropping system of Assam, West Bengal, Orissa, Bihar, Jharkhand, Eastern Uttar Pradesh and Chhattisgarh. Allocation for this scheme in 2010-11 & 2011-12 was Rs. 400 crore each, which has been enhanced to Rs. 1000.00 crore in 2012-13 & 2013-14. The allocation for the year 2014-15 was Rs.1000.00 crore.

ii) **Initiative on Vegetable Clusters:** - Growing demand for vegetables was proposed to be met by a robust increase in the productivity and market linkage. For the purpose, an efficient supply chain needed to be established, to provide quality vegetables at competitive prices. The allocation for this sub-scheme was Rs.300.00 crore each in 2011-12 & 2012-13. The allocation for the year 2013-14 was Rs. 200.00 crore and 2014-15 was Rs. 175.00 crore.

iii) **National Mission for Protein Supplements:** - National Mission for Protein Supplements was launched with an allocation of Rs.300 crore during 2011-12 to take up activities to promote animal based protein production through livestock development, dairy farming, piggery, goat rearing and fisheries in selected blocks. During 2012-13 & 2013-14 an

amount of Rs. 500 crore & Rs. 400.00 crore were allocated for 2014-15, Rs. 300.00 crore has been earmarked for this scheme.

iv) **Saffron Mission:** - The Scheme was initiated in 2010-11 with an overall Government of India budgetary support of Rs.288.06 crore over four years. Allocation has been Rs. 39.44 crore in 2010-11, Rs.50.00 crore each in 2011-12 & 2012-13. The mission was meant to bring economic revival of J&K Saffron. Outlay for the year 2013-14 was Rs. 100.00 crore. An amount of Rs.100.00 crore is earmarked for 2014-15.

v) **Vidarbha Intensive Irrigation Development Programme:** - The Scheme was initiated in 2012-13 which seeks to bring in more farming areas under protective irrigation. The allocation for the year 2012-13 & 2013-14 was Rs. 300.00 crore each. For 2014-15 Rs. 150.00 crore has been allocated for VIIDP.

vi) **Crop Diversification:** - The original Green Revolution States have the problem of stagnating yields and over-exploitation of water resources. The answer lies in crop diversification. An amount of Rs.500.00 Crore was allocated for 2013-2014 to the start a programme of crop diversification that would promote technological innovation and encourage farmers to choose crop alternatives. For 2014-15 Rs. 250.00 crore has been allocated for this scheme.

The Planning Commission has approved an outlay of Rs. 63,246 crore for implementation of RKVY for XII Plan. For the year 2014-15, allocation under the scheme was made of Rs. 9954.00 crore. The state-wise allocation, release, expenditure of the states under RKVY is presented in Table 1.4 and 1.5 as well as Fig 1.1 and 1.2. It can be seen from these tables that Andhra Pradesh, Bihar, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, Uttar Pradesh and West Bengal accounted each for more than 5 percent of total expenditure made under RKVY in India during 2007-2012, accounting together about 69 percent of total during this period. During 2012-13 to 2014-15 period, Chhattisgarh and Tamil Nadu joined group of having share of more than 5 per cent in total expenditure.

Table 1.4: State-wise Allocation, Release, Expenditure of the States under RKVY 2007-08 to 2011-12

Sir No	Name of the State/U.T.	State-wise Allocation, Total Release, Expenditure of the States under RKVY 2007-08 to 2011-12 (Rs. in Crore)														
		2007-08			2008-09			2009-10			2010-11			2011-12		
		A	TR	E	A	TR	E	A	TR	E	A	TR	E	A	TR	E
1	Andhra Pradesh	93.1	61.1	61.1	316.6	297.2	297.2	410.0	410.0	410.0	393.5	432.3	432.3	727.7	734.2	734.2
2	Arunachal Pradesh	2.9	1.9	1.9	6.9	0.0	0.0	16.1	16.0	16.0	39.1	29.0	29.0	8.3	10.7	10.7
3	Assam	23.8	0.0		142.6	144.1	144.1	79.9	79.9	79.9	256.9	216.9	216.9	227.8	227.8	227.8
4	Bihar	64.0	57.8	57.8	148.5	148.5	148.5	110.8	110.8	110.8	380.9	415.1	415.1	506.8	506.8	506.8
5	Chhattisgarh	60.5	53.0	53.0	116.5	117.5	117.5	131.8	136.1	136.1	461.0	503.4	503.4	230.6	212.6	210.5
6	Goa*	2.3	1.7	1.7	6.9	0.0	0.0	11.9	0.0	0.0	11.3	7.1	7.1	49.6	24.8	24.8
7	Gujarat	53.7	49.8	49.8	243.4	243.4	243.4	386.2	386.2	386.2	353.5	388.6	388.6	515.5	515.5	515.5
8	Haryana	23.1	21.5	21.5	74.0	39.5	39.5	112.8	112.8	112.8	204.7	226.8	226.8	168.9	176.9	176.6
9	Himachal Pradesh	17.4	16.2	16.2	15.1	15.1	15.1	33.0	33.0	33.0	94.9	94.9	94.9	99.9	99.9	99.9
10	J &K	6.9	0.0	0.0	16.2	1.2	1.2	42.1	42.9	42.9	162.2	96.4	96.4	103.0	63.0	59.3
11	Jharkhand	61.7	55.7	55.7	58.6	29.3	29.3	70.1	70.1	70.1	161.0	96.9	96.9	168.6	174.6	174.6
12	Karnataka	172.0	154.3	154.3	316.6	314.1	314.1	410.0	410.0	410.0	284.0	284.0	284.0	595.9	595.9	595.9
13	Kerala	61.4	55.4	55.4	60.1	30.1	30.1	110.9	110.9	110.9	192.4	149.7	149.7	173.9	182.9	182.5
14	Madhya Pradesh	110.0	101.6	101.6	146.1	146.1	146.1	247.4	247.4	247.4	589.1	559.2	559.2	398.4	398.4	398.4
15	Maharashtra	142.2	128.2	128.2	269.6	261.8	261.8	407.2	404.4	404.4	653.0	653.0	653.0	727.7	735.4	735.4
16	Manipur	1.4	0.0	0.0	4.1	0.9	0.9	5.9	5.9	5.9	24.8	15.5	15.5	22.3	22.3	22.3
17	Meghalaya	7.0	6.4	6.4	13.5	6.8	6.8	24.7	24.7	24.7	46.1	46.1	46.1	14.7	20.4	20.4
18	Mizoram*	1.1	0.0	0.0	4.3	0.8	0.8	4.2	0.0	0.0	7.5	3.8	3.8	34.6	36.6	36.6
19	Nagaland	9.5	3.2	3.2	13.9	7.0	7.0	20.4	20.4	20.4	13.2	13.3	13.3	37.5	37.5	37.5
20	Orissa	46.6	39.3	39.3	115.4	115.4	115.4	121.5	121.5	121.5	274.4	274.4	274.4	357.0	357.0	357.0
21	Punjab	39.9	36.1	36.1	87.5	87.5	87.5	43.2	43.2	43.2	179.1	179.1	179.1	138.9	145.9	145.9
22	**Rajasthan**	**71.7**	**55.8**	**55.8**	**233.8**	**233.8**	**233.8**	**186.1**	**186.1**	**186.1**	**572.5**	**628.0**	**628.0**	**685.0**	**692.1**	**692.1**
23	Sikkim	2.8	2.8	2.8	11.4	5.7	5.7	15.3	15.3	15.3	6.6	6.6	6.6	20.1	24.6	24.6
24	Tamil Nadu	188.2	153.6	153.6	140.4	140.4	140.4	127.9	127.9	127.9	225.7	250.0	250.0	333.1	333.1	332.7
25	Tripura	4.7	4.2	4.2	34.0	16.1	16.1	31.3	31.3	31.3	116.9	116.5	116.5	18.0	25.6	25.6
26	Uttar Pradesh	116.2	103.9	103.9	316.6	316.6	316.6	391.0	391.0	391.0	635.9	695.4	695.4	757.3	762.8	762.8
27	Uttarakhand	30.5	28.3	28.3	20.6	10.3	10.3	71.4	71.5	71.5	2.6	1.3	1.3	131.8	128.8	128.8
28	West Bengal	60.9	54.9	54.9	147.4	147.4	147.4	147.4	147.4	147.4	476.2	336.0	336.0	476.7	486.7	486.7
	Total States	**1475.1**	**1246.4**	**1246.4**	**3080.5**	**2876.3**	**2876.3**	**3770.3**	**3756.5**	**3756.5**	**6818.7**	**6719.0**	**6719.0**	**7729.2**	**7732.8**	**7725.7**
	Total UTs	**14.6**	**0.5**	**0.4**	**31.2**	**8.8**	**6.1**	**29.7**	**3.0**	**0.0**	0.0	0.0	0.0	0.0	0.0	0.0
	DAP	0.0	0.0	0.0	53.9	0.0	0.0	6.8	0.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0
	Admin Contingency#	0.0	0.0	0.0	0.0	1.7	1.7	0.0	1.4	1.4	60.0	1.0	1.0	81.6	61.3	0.0
	Grand Total	**1489.7**	**1246.9**	**1246.8**	**3165.7**	**2886.8**	**2884.1**	**3806.7**	**3761.8**	**3758.8**	**6878.7**	6720.1	6720.1	7810.9	7794.1	7725.7

Notes: A- Allocation, TR-Total Release and E.-Expenditure,; *These states are ineligible for the year 2009-10; # Admin Contingency to NIRD (National Institute of Rural Development), ISEC (Institute of Economic and Social Change, Bangalore); IIM-CMA (Indian Institute of Management-Centre for Management in Agriculture, Ahmedabad); DAP- District Agricultural Plan.
Source: http://agricoop.nic.in

Table 1.5: State-wise Allocation, Release, Expenditure of the States under RKVY 2012-13 to 2014-15

Sir No	Name of the State/U.T.	State-wise Allocation, Total Release, Expenditure of the States under RKVY 2012-13 to 2014-15 (Rs. in Crore)												Total 2007-08 to 2014-15		
		2012-13			2013-14			2014-15 (31.08.2015)			2015-16					
		A	TR	E	A	TR	E	A	TR	E	A	TR	E	A	TR	E
1	Andhra Pradesh	602.0	577.8	577.8	483.2	456.9	456.9	267.1	263.5	244.4	92.6	46.3	-	3293.2	3232.9	3213.8
2	Arunachal Pradesh	40.3	24.9	24.9	33.0	33.0	33.0	27.8	13.9	13.9	5.9	3.0	-	174.4	129.4	129.4
3	Assam	399.6	399.6	399.6	440.0	218.9	206.5	483.5	267.7	175.7	188.2	94.1	-	2054.0	1554.8	1450.4
4	Bihar	724.0	700.2	687.4	527.7	254.3	246.6	564.6	545.7	403.2	222.4	111.2	-	3027.3	2739.2	2576.2
5	Chhattisgarh	581.1	571.2	570.9	407.6	233.8	231.7	385.4	341.8	327.3	157.2	78.6	-	2374.6	2169.4	2150.3
6	Goa*	62.4	35.3	35.0	21.9	10.4	0.0	25.6	0.0	0.0	8.3	0.0	-	191.9	79.3	68.6
7	Gujarat	586.9	610.9	610.9	557.0	476.9	476.9	593.6	290.0	100.2	216.4	108.2	-	3289.7	2961.3	2771.5
8	Haryana	199.5	179.9	179.6	318.6	159.3	158.2	372.0	254.7	152.5	134.5	67.3	-	1473.6	1171.3	1067.4
9	Himachal Pradesh	73.5	59.3	59.3	77.4	77.4	77.4	86.1	86.1	86.1	27.7	13.8	-	497.3	481.9	481.9
10	J &K	112.1	103.2	102.0	148.0	88.5	86.9	150.5	78.3	31.8	62.2	31.1	-	740.9	473.5	420.4
11	Jharkhand	241.6	219.4	216.2	294.2	147.1	103.5	306.9	153.2	29.5	119.8	59.9	-	1362.6	946.2	775.8
12	Karnataka	586.5	549.2	549.2	794.6	467.3	465.4	884.2	632.2	209.0	322.8	167.7	-	4043.7	3407.0	2982.0
13	Kerala	282.3	253.0	252.7	270.8	256.2	254.2	321.4	300.7	287.3	113.0	56.5	-	1473.2	1338.9	1322.7
14	Madhya Pradesh	448.1	448.1	448.1	545.2	276.3	276.3	547.6	511.8	352.7	196.0	98.0	-	3031.8	2688.8	2529.8
15	Maharashtra	1025.8	1050.8	1050.8	1154.9	959.7	959.7	1013.5	942.1	312.6	386.6	193.3	-	5394.0	5135.4	4505.9
16	Manipur	52.9	48.0	48.0	41.0	23.7	23.7	43.0	43.0	43.0	13.8	6.9	-	195.3	159.1	159.1
17	Meghalaya	105.3	22.7	22.7	60.9	38.0	38.0	68.8	60.6	34.2	24.3	0.0	-	341.0	225.7	199.2
18	Mizoram*	200.9	184.7	184.7	132.0	77.4	77.4	113.9	113.9	37.3	38.8	19.4	-	498.4	417.2	340.7
19	Nagaland	85.8	85.8	85.8	52.6	30.1	30.1	52.8	52.8	52.8	16.4	8.2	-	285.6	249.9	249.9
20	Orissa	503.1	468.3	468.3	508.4	529.4	529.4	504.1	482.1	369.8	201.1	100.6	-	2430.5	2387.4	2275.1
21	Punjab	146.9	86.8	86.8	448.2	229.4	229.4	508.7	413.7	156.1	168.3	84.1	-	1592.5	1221.8	964.2
22	**Rajasthan**	**363.1**	**348.2**	**348.2**	**735.2**	**735.2**	**729.0**	**740.6**	**695.3**	**651.8**	**268.7**	**134.4**	-	**3587.9**	**3574.4**	**3524.6**
23	Sikkim	29.5	15.2	15.2	20.2	10.2	10.2	19.0	9.5	8.0	4.3	0.0	-	124.7	89.8	88.4
24	Tamil Nadu	659.7	613.3	613.3	301.5	270.0	270.0	299.0	299.0	259.7	105.0	52.5	-	2275.4	2187.2	2147.5
25	Telangana	-	--	-	-	-	-	180.9	179.6	150.3	67.8	33.9	-	180.9	179.6	150.3
26	Tripura	56.4	56.4	56.4	74.3	70.5	70.5	80.3	80.3	24.2	27.1	13.6	-	415.8	400.8	344.8
27	Uttar Pradesh	432.3	294.5	294.5	746.7	561.1	525.5	704.9	589.5	439.7	248.0	124.0	-	4100.8	3714.7	3529.3
28	Uttarakhand	44.4	8.2	8.2	88.0	44.0	44.0	95.4	80.7	47.6	33.9	17.0	-	484.7	373.1	340.0
29	West Bengal	464.8	374.6	374.6	508.1	265.1	265.1	598.6	582.3	475.2	236.1	75.3	-	2880.0	2394.3	2287.2
	Total States	**9110.7**	**8389.4**	**8371.0**	**9864.0**	**7000.0**	**6875.2**	**9864.0**	**8363.9**	**5475.9**	3707.2	**1798.7**	-	51712.6	46084.3	43046.0
	Total UTs												-	75.5	12.3	6.5
	DAP				72.6								-	133.4	0.9	0.9
	Ad.Cont.#	106.6	10.6	0.0	90.0	52.5	52.5	0.0	0.0	0.0			-	338.2	128.5	56.5
	Grand Total	**9217.3**	**8400.0**	**8371.0**	**9954.0**	**7052.5**	**6927.7**	**10039.6**	**8363.9**	**5475.9**	**3707.2**	1798.7	-	52362.6	46226.1	43109.9

Note: - Not Available.
Source: http://agricoop.nic.in

Fig. 1.2 :State-wise Allocation, Release, Expenditure of the States under RKVY- Total during 2007-08 to 2011-12

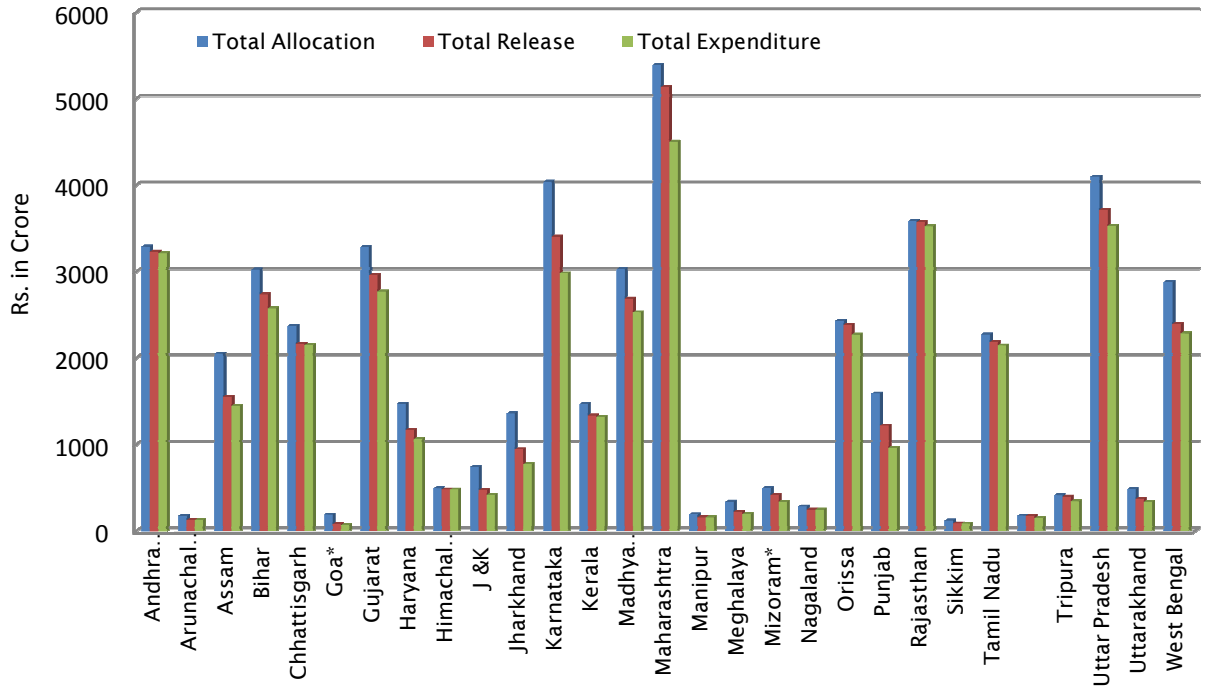
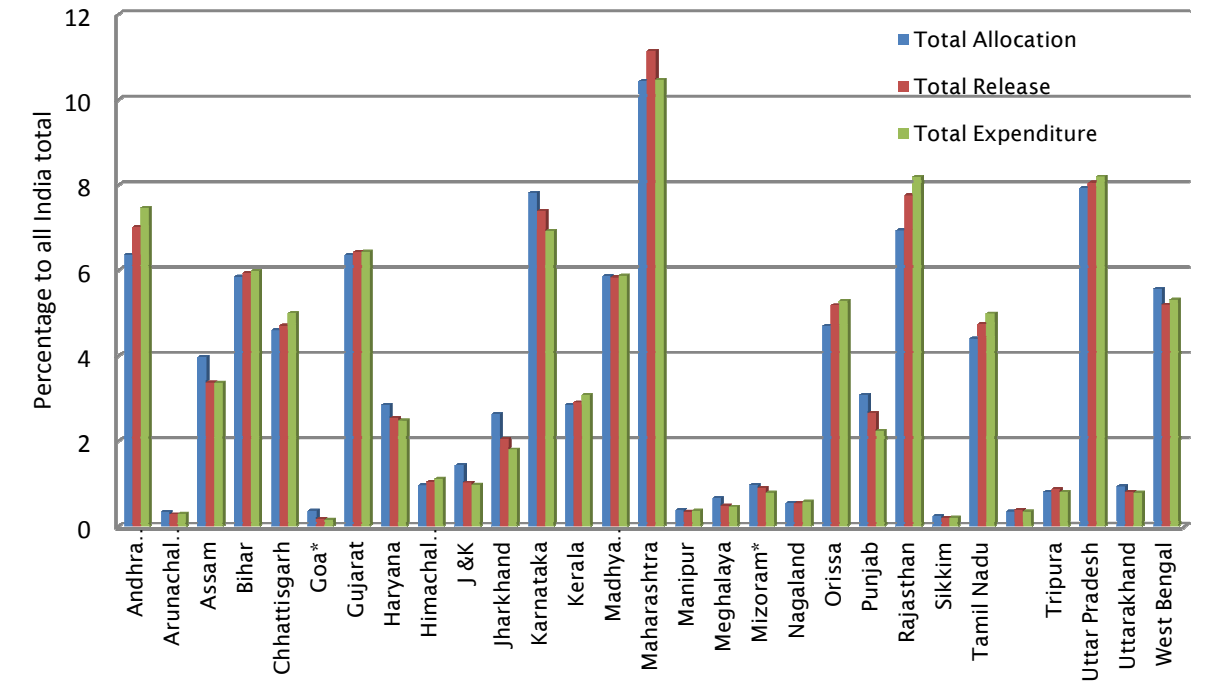


Fig. 1.3 :State-wise share in total Allocation, total Release, total Expenditure of the States under RKVY during 2012-13 to 2014-15



1.6 Growth in Indian Agricultural Sector:

The Eleventh Plan addresses itself to the challenge of making growth both faster and more inclusive. The target of doubling the rate of growth of agriculture to 4 per cent in the Eleventh Plan is critical for achieving greater inclusiveness (Planning Commission, 2008a). The deceleration in agriculture, which began in the Ninth Plan period and continued in the Tenth Plan period, has been a major area of concern from the point of view of inclusiveness. With half our population deriving the greater part of their income from agriculture, faster growth in agriculture is necessary to augment their incomes. Rising incomes in agriculture will also boost non-agricultural income in rural areas, thus helping redress the rural–urban imbalance. The Eleventh Plan has therefore set a sectoral target of doubling agricultural growth to 4 per cent per year. In this context, it may be noted that agricultural growth increased from less than 1 per cent in the first three years of the Tenth Plan to average more than 4 per cent in the last two years of tenth five year plan and maintained it during first year of the Eleventh Plan also. However, poor monsoons during 2009-10 have a setback to the agricultural sector. Thus in order to sustain a growth rate of 4 per cent per annum, priority on irrigation and watershed has to be given.

As per the estimates of GDP for 2005-06 to 2013-14, released by the Central Statistical Organisation (CSO), the economy was grown at the rate of 4.74 per cent in 2013-14, with the industrial sector growing abysmally low by 0.35 per cent while service sector would grow by 7.00 percent. Despite of decline in rate of growth in agriculture during 2012-13, this sector registered robust growth during 2013-14 (Table 1.6). The exception, as anticipated, is agriculture and allied sectors where the growth rate was estimated to be minus 0.27 per cent in 2008-09 over 2007-08. In terms of sectoral shares, the share of agriculture and allied sectors in GDP at factor cost has declined gradually from 19.03 per cent in 2004-05 to 13.94 per cent in 2013-14 (at 2004-05 prices). During the same period, the share of industry has remained between 26- 28 per cent, while that of services has gone up from 53.3 per cent in 2004-05 to 59.93 per cent in 2013-14. Therefore, for growth to be all inclusive, the agricultural strategy must focus on 85 per cent of small and marginal farmers

who are increasingly female, and who find it difficult to access inputs, credit, and extension services or to market their output. While some of these farmers may ultimately exit from farming, the overwhelming majority will continue to remain in the sector and the objective of inclusiveness requires that their needs are attended to. The negative growth in agriculture during the year 2008-09 and less than 0.5 percent during 2009-10 was due to severe drought in several parts of the country. The country as a whole received 23 per cent less rainfall as compared to the long period average in 2009. Despite low rate of growth in agriculture, investment in the agricultural sector increased significantly. While the overall growth of investment in India was in the range of 15 to 16 per cent per annum during the last few years, it plunged to - 2.4 per cent in 2008-09 as a result of the external shock-led slowdown. However, there was a welcome rebound in the growth rate of investment in the agricultural sector, which grew at 16.5 per cent and 26.0 per cent in 2007-08 and 2008-09 respectively. This is in contrast to the growth rate of 1.4 per cent recorded in 2006-07. Despite rise in investment, agriculture and allied sector showed poor performance, while growth rate in the first year of eleventh five year plan was impressive, the same could not be sustained in 2008-09 and 2009-10 due to poor monsoon. Opposite to recorded earlier, first year of 12th FYP period was with slower rate of growth in agriculture sector, while second year 2013-14 recovered the decline in rate of growth.

Table 1.6: Sector-wise Rate of Growth at Factor Cost in India (at 2004-2005 prices) (%)

Sector	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Agriculture and Allied services	**5.14**	**4.16**	**5.80**	**0.09**	**0.81**	**8.60**	**5.02**	**1.42**	**4.71**
Agriculture	5.53	4.13	6.34	-0.27	0.41	9.54	5.34	0.91	4.93
Industry	9.72	12.17	9.67	4.44	9.16	7.55	7.81	0.96	0.35
Mining and Quarrying	1.31	7.47	3.69	2.14	5.89	6.54	0.10	-2.16	-1.38
Manufacturing	10.10	14.32	10.28	4.33	11.30	8.86	7.41	1.14	-0.71
Services	10.91	10.06	10.27	9.98	10.50	9.67	6.57	6.96	7.00
GDP	9.48	9.57	9.32	6.72	8.59	8.91	6.69	4.47	4.74

Source: http://planningcommission.nic.in/data/datatable/0814/comp_databook.pdf

1.7 Main Objectives and Scope of the Study

The RKVY is extended to 12th Five Year Plan due to its success in achieving the targeted goal of production enhancement. It is essential to evaluate and measure the extent to which the programme and approach has stood up to the expectations. The study enlightens the policy makers to incorporate necessary corrections to make the programme more effective and successful during and after the 12th Five Year Plan. Given the above broad objectives, the study intends to achieve the following specific objectives listed below:

1) To assess the impact of RKVY on input use, production, income and employment among the beneficiary farmers in Rajasthan;
2) To identify factors influencing the adoption of major interventions (improved technologies) under RKVY and
3) To identify the constraints hindering the performance of this programme in Rajasthan.

The results of the study will provide useful insights on the impacts of the RKVY on farming communities and can suggest policy recommendations for improving the efficacy of the program. It is also expected that this study will provide valuable insights into various factors influencing the decision of the farmers on adoption of recommended package of good agricultural practices for increasing production and productivity of selected crops. This may help the policy planning authorities to consider making suitable changes in the development and implementation of policy on promotion of agriculture sector in general and the identified crops in particular, in the country.

1.8 Data and Methodology

The study is based on secondary and primary level data. The secondary data on fund allocation, release, expenditure and related parameters were collected from the RKVY website (*http://rkvy.nic.in*) and other publications of Ministry of Agriculture, Government of India.

The primary survey data were obtained from 358 selected sample beneficiary farmer households from seven RKVY districts of the Rajasthan State (as shown in Table 1.7) mostly focused on the following heads:

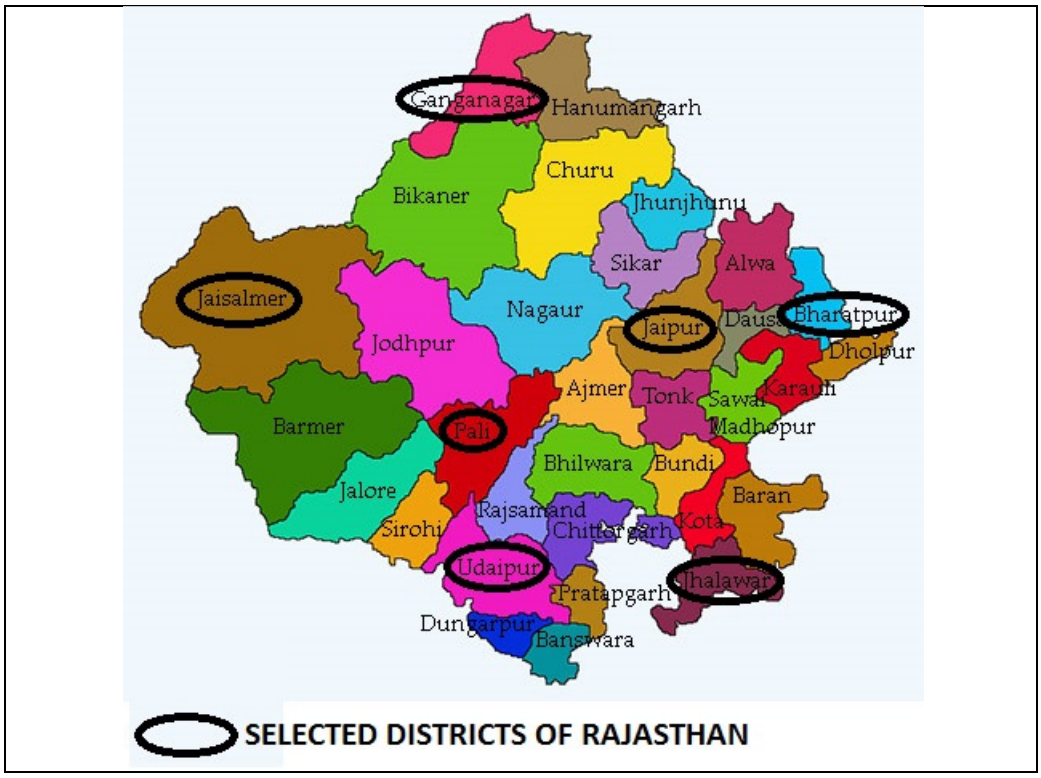
- Agriculture Mechanization
- Micro/Minor Irrigation
- Animal Husbandry
- Natural Resource Management
- Fisheries
- Organic Farming / Bio Fertilizers
- Crop Development
- Sericulture
- Horticulture
- Co-operatives/ Co-operation
- Integrated Pest Management
- Information Technology
- Other Sector (if any)

For the selection of beneficiary farmer household, a multi-stage sampling design was employed. At the first stage, eight districts were selected based on the information provided by the nodal officer of RKVY in the state. The Department of Agriculture has been nominated as the nodal department for coordinating the RKVY activities and one project director has been looking after the work of RKVY in the state. At the first stage, with discussion with the project director of RKVY in Rajasthan state, on the basis of performance of district, seven RKVY districts in Rajasthan were selected for primary data collection.

At the second stage, two talukas from each selected district were selected based on the intensity of activities carried out across different components/line departments as per the information provided by the nodal officer. At the third stage, a group of contiguous villages or cluster of villages was selected from each taluka to collect the data from

minimum 25 farmer beneficiary households. For the selection of households, a beneficiary list of the households was obtained from the nodal officer and/or the concerned departments who carried out different activities under the RKVY. Due consideration was given while selecting farmer beneficiary households, for proper representation of all major and minor sectors and type of investment made in developing infrastructure on irrigation, soil conservation, organic farming, horticulture and other related activities. Giving representation to different size classes and various socio-economic characteristics was also tried while selecting the beneficiary and non beneficiary sample farmers.

Map 1.1: Study Area in Rajasthan



The primary data relating to general information about the sample farmers, socio-economic profiles, cropping pattern, details on various inputs used in wheat crop cultivation, irrigation details, yield, returns, reasons for adoption/non-adoption of RKVY interventions, constrains faced for availing the benefits, suggestions for improvement, etc., were collected from the 358 sample beneficiary farmers using a pre-tested questionnaire. The

primary household data was collected (in January-March 2014) mainly pertaining to the eleventh five year plan period (2007-08 to 2011-12) and general information was collected for the agriculture year 2012-13.

Table 1.7: List of Selected Villages/Talukas/Districts In RKVY In Rajasthan State

Sr. No	Selected Districts	Selected Talukas/ Blocks		Selected Villages
1	Jaipur	1	Kotputli (4)	Paota,Tulsipura, Kuned, Khelna
		2	Phulera (7)	Dehra,Jaitpura, Bhojpura, Thakursingh Ka Bas, Misro Ki Dhani, Bikawas, Bhojpura Kala
2	Bharatpur	3	Kama (6)	Bhandra, Satwas, Jiraheda, Udaka, Nangla Jalim, Dadeda
		4	Nadbai (7)	Kawai, Gadoli, Basaia Jat, Belara, Unch, Naglamai, Mai
3	Jhalawar	5	Khanpur (4)	Dungarpur, Jolpa, Besar, Mehendi
		6	Jhalrapatan (4)	Piplod, Dabli Kala, Jumki, Shayampura
4	Udaipur	7	Salumber (6)	Tulsio ka Namla, Tharoda, Utarada, Thada, Lakhapa, Atkalia
		8	Gogunda (5)	Chorbavdi, Jhadoli, Bagunda, Chitrawas, Dalawato Ka Guda
5	Pali	9	Rohit (6)	Umkali, Chenda, Sari Ki Dhani, Mandawas, Bhindar, Kulthana
		10	Bali (9)	Bedal, Khemal, Falna Gaon, Malari, Mundara, Sesali, Maurkha, Punadiya, Shivtalav
6	Jaisalmer	11	Jaisalmer (7)	Rupsi, Baramsar, 15 SBS, 7 DD, 13-14 SSB, 9 DD, Basanpir
		12	Pokhran (4)	Eka, Lathi, Salvi, Odhania
7	S.Ganganagar	13	Padampur (5)	17 BB, 13 BB, 15 BB, 1 CC, 14 RB
		14	SadulSahar (13)	21 SDS, 5 KRW, 8 LLG, 10 SDP, 15-16 BNW, 18 SDS, Lalgarh Jatan, Banwali, 5 LNP, 8 BNW, 4 LLG, 6 LLG, 8 LNP

Note: Figures in parenthesis indicates no. of selected villages in selected taluka of selected district.

The data were also collected from the various institutions those who had received grants under RKVY scheme during eleventh five year plan period (Table 1.8).

Table 1.8: No. of Institutions Responded on RKVY fund & its utilization: Rajasthan

Sr. No.	Name of the Institution- Rajasthan	No of Questionnaires received
1	Swami Keshwanand Rajasthan Agricultural University, Bikaner	24
2	Rajasthan University of Veterinary and Animal Sciences, Bikaner	8
3	Joint Director (Estimation, Directorate of AH, Jaipur	3
	Total	35

1.10 Organization of Report:

The entire report is organized into nine chapters. Chapter I, which is an introduction, explains briefly the need for Rashtriya Krishi Vikas Yojana. The methodology and the organization of the report are also indicated. Chapter II presents the overview of State of Agriculture in Rajasthan state. Allocation and Expenditure of RKVY funds during XI plan period are discussed in Chapter III. The socio-economic profile of selected households is presented in Chapter IV. Chapter V discusses about the RKVY interventions in major sectors and their impact, while impact of RKVY interventions on minor sector is discussed in Chapter VI. Chapter VII presents the details on other achievements and constraints faced in RKVY. Chapter VIII presents information on infrastructure projects undertaken by various Institutions with RKVY funds. Conclusions and policy implications are presented in Chapter IX.

The next chapter presents the state of agriculture in Rajasthan.

Chapter II

State of Agriculture in Rajasthan

2.1 Introduction

Rajasthan is the largest state of India constituting 10.4 per cent of total geographical area and 5.67 per cent of total population of India (GOI, 2011). The state is divided into 7 divisions, 33 districts, which are further subdivided into 244 tehsils, 249 panchayat sammitees and 9,168 gram panchayats. Physio-graphically, the state can be divided into 4 major regions, namely (i) the western desert with barren hills, rocky plains and sandy plains; (ii) the Aravalli hills running south-west to north-east starting from Gujarat and ending in Delhi; (iii) the eastern plains with rich alluvial soils; and (iv) the south-eastern plateau. Mahi, Chambal and Banas are the three major rivers of the state. The state enjoys a strategic geographical position wherein it is situated between Northern and Western growth hubs in the country and 40 per cent of Delhi Mumbai Industrial Corridor (DMIC) runs through it. The state has well identified 10 agro-climatic zones. The state is endowed with diverse soil and weather conditions comprising of several agro-climatic situations, warm humid in south-eastern parts to dry cool in western parts of the state. About 65 per cent population (i.e. about 56.5 million) of the state is dependent on agriculture and allied activities for their livelihood. The three major canal irrigations, other than the vast area under arid and dry lands offer great help for agricultural development of the state. Agriculture in Rajasthan is primarily rainfed covering country's 13.27 per cent of available land. The diversity in climatic conditions of the state creates potentiality to develop certain belts of horticultural crops. The arid part of the state which receives not more than annual rainfall of 25 cm thrives on agriculture that is done with irrigation systems and painstaking efforts of the poor farmers of Rajasthan. As a major portion of the state is

parched, the risk and instability in agricultural production and productivity are quite high.

As it noted by the researchers that there exists a large variation in food grains production across states and very high risk is involved in food grains production in the states of Rajasthan, Maharashtra, Tamil Nadu, Odisha, Madhya Pradesh and Gujarat (Chand and Raju, 2009). Reducing instability in agricultural production has been a major policy concern over the years since the stability and growth in agriculture are vital for providing food and nutrition security to burgeoning population. The decent agricultural growth is a pre-requisite for inclusive growth, reduction of poverty levels, development of the rural economy and enhancing of farm incomes and to achieve much cherished double digit GDP growth in the country. The growth with inclusiveness can be achieved only when agriculture growth accelerates and is also widely shared amongst people and regions of the country. All these factors point to just one thing that agriculture has to be kept at the centre of any reform agenda or planning process. In this context, this study evaluates the performance of agriculture in the state of Rajasthan in the recent years and also presents what could be the future options, given our objectives of accelerated growth, inclusiveness and reduction of poverty.

2.2 Population: Urban, Rural, Cultivators, Agricultural Labour

As per Census 2011, the population of Rajasthan was 6.86 crore, out of which 75.11 per cent was rural population (GoI, 2011). If we look at the decadal growth rate of the population, it was lower during the decade 2000s (21.44 per cent) as compared to during 1990s (28.41 per cent). The population density in the State has increased by about 22 percent, i.e. from 165 per sq.km in 2001 to 201 in 2011. The overall sex-ratio of the population of Rajasthan (number of females per thousand males) was lower (926) than all Indian average (940) in 2011. The literacy rate of Rajasthan was 67.06 per cent, of which the male and female literacy rates were 80.51 per cent and 52.66 per cent respectively.

It can be seen in Table 2.1 that total number of cultivators were 1.36 crore constituting about 19.9 per cent of total population of the state. Cultivators in rural areas were 1.34 crore in number constituting about 25.9 percent of total rural population in the state. Among the cultivators, about 60.1 lakh were women constituting about 44.8 percent of total cultivators in the state. On the other hand, the total numbers of agricultural labourers in Rajasthan were 49.4 lakh, out of which, 28.1 lakhs were women constituting about 56.8 percent of total agricultural labourers in the state.

Table 2.1: Composition of Total Population in Rajasthan (2011)

Sl. No.	T/R/U	Persons		% of Total	Males	Females
No. of cultivators						
1	Total	13,618,870	(100.0)	19.9	7,518,486	6,100,384
2	Rural	13,358,033	(98.1)	25.9	7,349,824	6,008,209
3	Urban	260,837	(1.9)	1.5	168,662	92,175
No. of agricultural labourers						
4	Total	4,939,664	(100.0)	7.2	2,132,669	2,806,995
	Rural	4,733,917	(95.8)	9.2	2,013,143	2,720,774
6	Urban	205,747	(4.2)	1.2	119,526	86,221
All Others						
7	Total	49,989,903	(100.0)	72.9	25,899,842	24,090,061
8	Rural	33,408,402	(66.8)	64.9	17,278,780	16,129,622
9	Urban	16,581,501	(33.2)	97.3	8,621,062	7,960,439
Total Population						
10	Total	68,548,437	(100.0)	100.0	35,550,997	32,997,440
11	Rural	51500352	(75.1)	100.0	26641747	24858605
12	Urban	17048085	(24.9)	100.0	8909250	8138835

Notes: T, R and U stands for Total, Rural and Urban respectively;
Figures in parentheses are percentages of total population in respective category.

Source: Census of India, 2011.

2.3 State Domestic Product and Per Capita Income

The state economy has exhibited a healthy growth path during the recent years. The state's NSDP at current prices has been more than tripled during 2005-06 to 2010-11. It has increased from Rs 206440 crores in 2005-06 to Rs 651916 crores in 2013-14. This has made Rajasthan as one of the India's fastest growing States in terms of growth in NSDP. The State's

NSDP at constant (2004-05) prices has also increased from Rs 197270 crores in 2005-06 to Rs. 315892 crores in 2010-11 and further to Rs. 385472 crores in 2013-14 (Table 2.2). Total NSDP at constant prices has grown by 95.4 per cent during the period 2005-06 to 2013-14; whereas the total NSDP at current prices has grown by 215.8 per cent during the corresponding period.

Table 2.2: Sectoral Composition of Net State Domestic Product (NSDP) at constant (2004-05) prices

(Rupees in Crore)

Year	Agriculture		Industries		Services	Total NSDP	Growth Rate in GSDP (%) Agriculture including animal husbandry	Per Capita Income (Rs) Total agriculture sector
	Agriculture including animal husbandry	Total agriculture sector	Manufacturing	Total Industries sector				
2007-08	28149.3 (20.0)	33124.1 (23.6)	18171.7 (12.9)	42108.8 (30.0)	65238.6 (46.4)	140471.5 (100.0)	5.1	21922.0
2008-09	29459.8 (19.3)	34474.7 (22.6)	19766.4 (13.0)	44391.6 (29.2)	73417.3 (48.2)	152283.5 (100.0)	9.1	23356
2009-10	28163.65 (17.48)	33258.95 (20.64)	20661 (12.82)	48686.8 (30.21)	79213.8 (49.15)	161159.5 (100.00)	6.7	24304
2010-11	40828.64 (22.03)	46101.77 (24.87)	22377.3 (12.07)	49968.9 (26.96)	89295 (48.17)	185365.7 (100.00)	14.4	27502
2011-12	40205.14 (17.57)	45470.23 (19.87)	23381.6 (10.22)	89295 (39.03)	94038.1 (41.10)	228803.3 (100.00)	8.3	29612
2012-13(P)	39659.75 (18.50)	44971.51 (20.98)	33894.6 (15.81)	66024.7 (30.80)	103395 (48.23)	214391.2 (100.00)	6.4	30839
2013-14(Q)	41831.06 (18.62)	47274.64 (21.05)	33760.4 (15.03)	66540 (29.62)	110817 (49.33)	224632.1 (100.00)	4.8	31836
2014-15(A)	42955.4 (18.08)	48576.09 (20.45)	34093.4 (14.35)	68446.5 (28.82)	120507 (50.73)	237529.8 (100.00)	5.8	33186

Notes: (1)The figures shown in brackets denote percentage of NSDP
(2) P- Provisional Estimates, Q- Quick Estimates, A- Advance estimates
Source : GOR (2015)

The economic growth rate (at constant prices) has fluctuated widely across last decade. It has gone down to 4.3 per cent in 2008-09 from 14.5 per cent in 2005-06, but then recovered sharply to 14.1 per cent in 2009-10. However, it has exhibited declining trend thereafter reaching 5.8 per cent during 2012-13. The per capita income (NSDP) of the state (at constant

prices 2004-05) has increased by around 75 per cent in 2013-14 over 2005-06, i.e. increased from Rs 36102 in 2005-06 to Rs 63168 in 2013-14.

2.4 Rajasthan Agriculture: Performance and Challenges

Agriculture and allied sector plays an important role in State's economy. Though its contribution in NSDP has fallen from about 35 per cent in 1990-91 to around 23 per cent in 2011-12, agriculture yet forms the backbone of state economy. Around two third of its population (56.5 million) is still dependent on agricultural activities for their livelihood. Thus, a higher priority to agriculture will achieve the goals of reducing poverty and malnutrition as well as of inclusive growth. Since agriculture forms the resource base for a number of agro-based industries and agro-services, it would be more meaningful to view agriculture not as farming alone but as a holistic value chain, which includes farming, wholesaling, warehousing, processing, and retailing. Though agriculture forms the source of livelihood of the majority in the state, it is largely dependent on rainfall. Only 34.5 per cent of the net sown area is irrigated. Since the rainfall amount is very scanty and highly erratic, the expansion of irrigation provisions and efficient water management are major challenging tasks for the policy makers.

As highlighted in the Draft State Agriculture Policy (GOR, 2012a), major challenges for agriculture sector in the state are: (i) frequent droughts leading to decline in productivity and reduced performance and even death of animals; (ii) climate change and global warming; (iii) strengthening of comprehensive technology-based developmental approach to promote dryland/ arid agriculture; (iv) deteriorating soil health including imbalanced use of fertilizers, micronutrient deficiency, lack of organic matter content, inadequate soil microbial flora and fauna etc.; (v) low productivity, unfavorable prices and practically very little value addition, distress sales, rising cost of cultivation; (vi) lack of efforts for stabilization of sand dunes and for greening the desert through agro-forestry programmes; (vii) missing mechanisms of export promotion, adherence to sanitation and phyto-

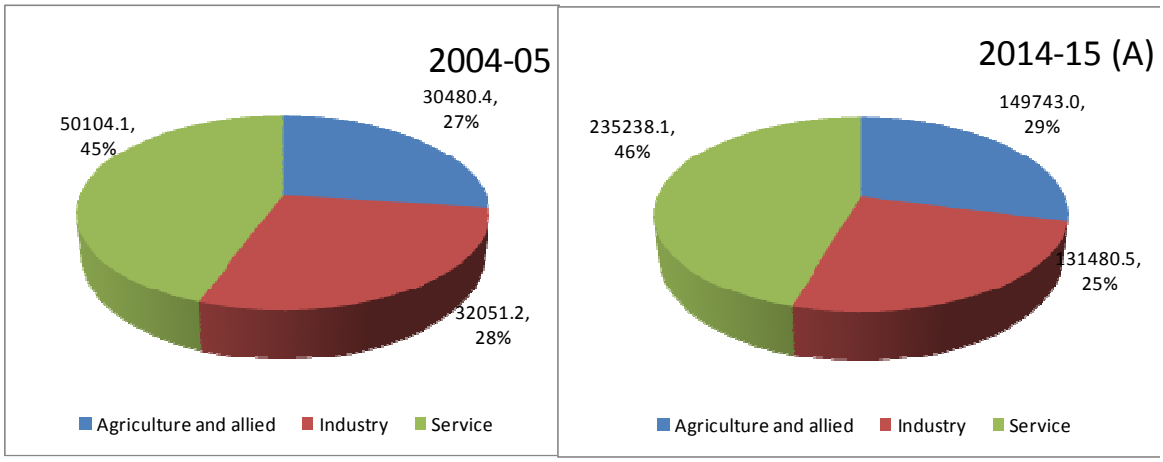
sanitation (SPS) standards and measures for minimizing the export rejections; (viii) lack of integrated farming approach; (ix) lack of up-scaling of farm-validated modern technologies and agricultural Innovations; (x) gender mainstreaming in agriculture; and (xi) proper institutional mechanisms and organizational and management (O&M) reforms for overcoming the felt constraints coming in way of the farm prosperity in the state.

2.4.1 Structure & Structural Transformation of Rajasthan Agriculture

Rajasthan's economy has undergone considerable transformation in the recent past in terms of growing manufacturing and service sectors, with the reducing share of agriculture (including livestock) in the state's NSDP. As discussed earlier, the services sector contributes around 50.7 per cent in NSDP (at constant 2004-05 prices) followed by the industry and agriculture sectors with 28.8 per cent and 20.5 per cent share respectively (Table 2.2). Over the last eight years (i.e. during 2007-08 to 2014-15), the share of agriculture, industry and services sectors to the NSDP has changed from 23.6 per cent, 30.0 per cent, and 46.4 per cent in 2007-08 to 20.5 per cent, 28.8 per cent and 50.7 per cent in 2014-15, respectively. Thus, there has been 3.1 per cent decline in relative share of the agriculture sector in total NSDP during last eight years, while contribution of service sector is constantly increasing. This indicates a shift from the traditional agrarian economy towards a service dominated one. More importantly, the decrease in agriculture's contribution to NSDP has not been accompanied by a matching reduction in the share of agriculture in total employment. About 5.4 million households continue to be engaged in farming, of which roughly half are small or marginal farmers. Increasing agricultural productivity (water, land, labour) is critical for the future of the agriculture sector in Rajasthan. Given the size of the agriculture sector, improved agriculture productivity is also one key element for a further structural transformation of the overall economy of the state (GoR, 2012b).

Though the relative share of agriculture and allied sectors has not changed significantly, the NSDP from agriculture and allied sector has significantly grown during last decade. As could be seen from Figure 2.1, NSDP from agriculture at current prices has been about 5 times during last decade (from Rs 30480.4 crore in 2004-05 to Rs 149743.0 crore in 2014-15). Interestingly, the share of agriculture and allied sectors in NSDP in the State has increased from 27 per cent in 2004-05 to 29.0 per cent in 2014-15.

Figure 2.1: Sectoral Composition of NSDP(at current price) in Rajasthan



The structural changes in Rajasthan agriculture have been in favour of more growing of oilseeds, pulses and horticultural crops. Rajasthan is the India's largest producer of mustard, pearl millet (*bajra*), and three spices (coriander, cumin, and fenugreek), cluster beans, isabgol and second largest producer of maize. The reliance on livestock has also increased because of risky rainfed agriculture. Rajasthan has the second largest herd of livestock amongst Indian states, contributing about 10 percent of the country's milk and 30 percent of mutton production (GOR, 2012b). Agriculture and livestock production take place in major parts of Rajasthan often in extreme agro-climatic conditions. In most of the part of rainfed areas of the state, only one crop can be grown during the year. Therefore, farmers need to make agriculture practices more resilient in the light of ever harsher and changing agro-ecological conditions.

2.4.2 Growth Performance of Agriculture

The growth performance of the agriculture in Rajasthan during last two decades has been fluctuating (Table 2.3). The compound annual growth rate of gross cropped area, total agricultural production and yield has exhibited wide fluctuations during the plan periods. There has been very dismal growth in crop area, yield and production during annual plan 1990-91 and 9th Five Year Plan (FYP). However, thereafter, significant growth has been recorded in area, yield and production, particularly during 10th Five Year Plan and 11th Five Year Plan in the state. The rate of growth in gross cropped area, total agricultural production and yield during 10th Five Year Plan has dramatically increased at 12.98 per cent, 20.43 per cent and 6.60 per cent per annum, respectively. The extent of fluctuation in agricultural production is also quite evident from Figure 2.2.

Table 2.3: Planwise Growth in Area, Production and Yield of Major Crops in Rajasthan

Plan Period	Area	Production	Yield
Annual Plan (1991-1992)	-6.64	-20.42	-5.76
8th FY Plan (1992-1997)	0.65	4.11	3.44
9th FY Plan (1997-2002)	-1.76	-0.83	0.94
10th FY Plan (2002-2007)	12.98	20.43	6.60
11th FY Plan (2007-2012)	2.96	10.21	7.03

Source: Computed from GOR (2009), GOR(2013).

The agricultural production has decreased from 160.38 lakh tons in 1990-91 to 138.09 lakh ton in 2000-01 (Table 2.4). Also, yield level has declined from 748 kg/ha in 1990-91 to 718 kg/ha in 2000-01. However, after 2000-01, the growth in area, production and yield has been steady. The growth in production and yield has been quite impressive from 2000-01 to 2012-13. The agricultural production and yield has increased from 138.1 lakh ton and 718 kg/ha in 2000-01 to 326.1 lakh ton and 1353 kg/ha in 2012-13 respectively.

Figure 1.2: Growth in Agricultural Area, Yield and Production in Rajasthan (1991-2010)

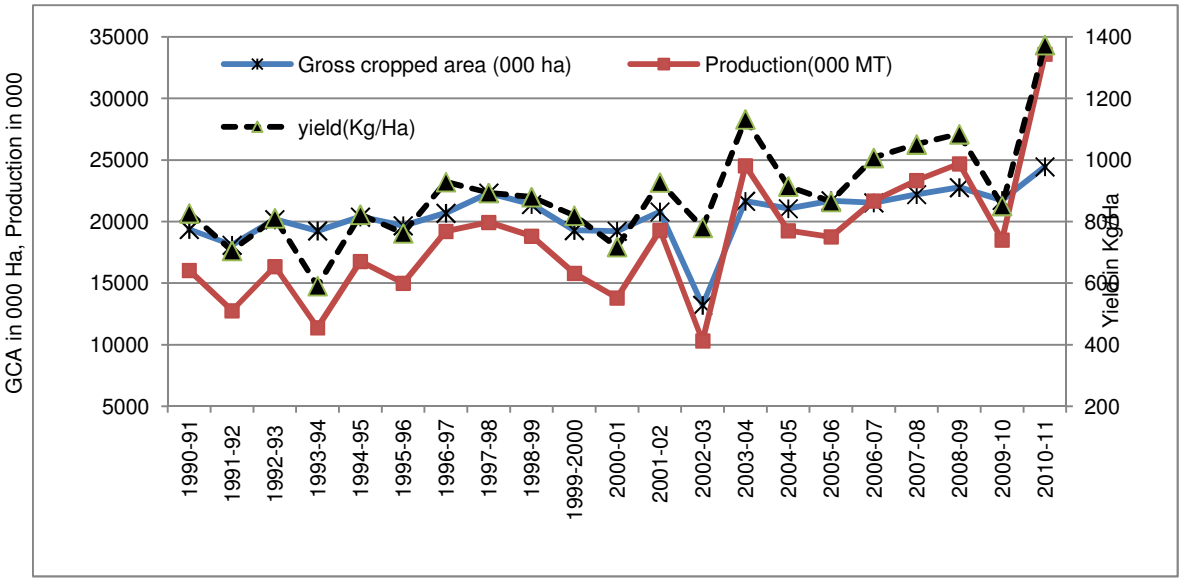


Table 2.4: Growth in Area, Yield and Production in Rajasthan, 1990-91 to 2012-13

Years	Gross cropped area (000 ha)	Production (000 MT)	Yield (Kg/Ha)
1990-91	21429	16038	748
1995-96	19673	14996	762
2000-01	19230	13809	718
2005-06	21699	18763	865
2006-07	21534	21694	1007
2007-08	22208	23344	1051
2008-09	22771	24694	1084
2009-10	21745	18515	851
2010-11	24459	33607	1374
2011-12	24960	34434	1380
2012-13	24101	32606	1353

Source: GOR (2009), GOR (2013).

If we consider the case of food grains production alone, it can be seen from Table 2.5 that the growth in food grains production is quite impressive in Rajasthan than at national level. The food grains production in Rajasthan has increased by about 117 percent during two decades period, i.e. from 10.9 million tons in 1990-91 to 23.6 million tons in 2010-11. The share of the State food grains production in national basket has increased by 3.6

percent points, i.e. from 6.2 per cent in 1990-91 to 9.8 per cent in 2010-2011. However, thereafter, the state's share has declined to 7.8 per cent in 2012-13.

Table 2.5:Foodgrain Production in Rajasthan and India

(Million tons)

Year	Rajasthan	India	Rajasthan's share in India (%)
1990-91	10.9	176.4	6.2
2000-01	10.0	196.8	5.1
2006-07	14.9	217.3	6.9
2007-08	16.1	230.8	7.0
2008-09	16.7	234.4	7.1
2009-10	12.4	218.1	5.7
2010-11	23.6	241.6	9.8
2011-12	21.9	259.29	8.5
2012-13	20.0	255.36	7.8

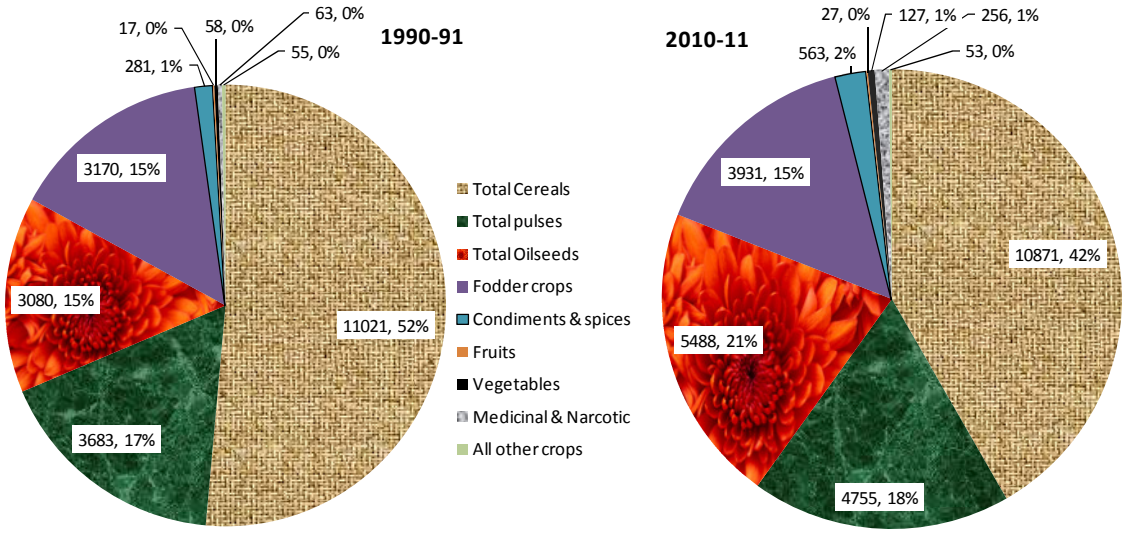
Source: GoI (2012a).

2.4.3 Crop Specific Growth in Rajasthan

The major crops grown in different parts of Rajasthan are bajra, wheat, jowar, maize, cotton, rapeseed and mustard, groundnut and horticultural crops (Map 2.1). As per the cropping pattern in the state, the crop groups such as total cereals, oilseeds, pulses and fodder crops account for about 42 per cent, 21 per cent, 18 per cent and 15 per cent of GCA respectively during the year 2010-11(Figure 2.3). Among the cereals, bajra (50.5%), wheat (27.9%), maize (10.5%) and jowar (6.7%) are the major crops; while rapeseed and mustard (45.4%), taramira (21.7%), soyabean (14.0%), sesamum (10.0%) and groundnut (6.3%) are the major oilseeds grown in the state. Among total pulses, gram, moth and moong are the major crops, accounts for about 37.5 per cent, 33.5 per cent and 22.1 per cent respectively during 2010-11. It is evident from Figures 4 that the share of total cereals has declined drastically by 10 percent points (from 52 per cent in 1990-91 to 42.0 per cent in 2010-11); while the share of oilseeds has increased by 6 percent points (from 15 per cent in 1990-91 to 21 per cent in 2010-11). Thus, it can be assumed that there is shift in area from cereals to oilseeds

Map 2.1: Agricultural Map in Rajasthan

Figure 2.3: Changes in Cropping Pattern (1990-91 & 2010-11)



The share of fodder crops has remained unchanged at around 15 per cent of GCA. The share of pulses has increased slightly from 17 per cent in 1990-91 to 18 per cent in 2010-11. Among the cereals, the shares of bajra, wheat, maize and barley have increased from 44.1 per cent, 16.5 per cent,

8.9 per cent and 2.1 per cent in 1990-91 to 50.5 per cent, 27.9 per cent, 10.5 per cent and 3.0 per cent in 2010-11 respectively. On the other hand, the share of jowar and small millets has decreased during last two decades.

Among the oilseeds, the shares of taramira, soybean and castor has increased from 4.0 per cent, 4.7 per cent and 0.9 per cent in 1990-91 to 21.7 per cent, 14.0 per cent and 2.7 per cent in 2010-11 respectively. However, the share of rapeseed mustard, sesamum and groundnut has decreased sharply during last two decades. The share of rapeseed-mustard and sesamum in total area under oilseeds has declined from 62.3 per cent and 18.9 per cent in 1990-91 to 45.4 per cent and 10.0 per cent in 2010-211 respectively. It is disheartening to note that the area under total cotton has been declined in absolute as well as its share in GCA. Area under cotton declined from 4.54 lakh ha (2.12% of GCA) in 1990-91 to 3.36 lakh ha (1.37% of GCA) in 2010-11.

Table 2.6 present the plan-wise growth in area, production and yield of major crops in Rajasthan. It can be seen from the table that growth in area, production and productivity of major crops was quite impressive during the 10th and 11th Five Year Plans. As expected, significant growth in production of major crops was due to high rate of growth in yield of major crops. It can be also seen that area under food grains in the state has declined at the rate of 1.87 per cent per annum during the 9th FYP. However, same has suddenly positively jumped and increased at the rate of 10.22 per cent and 1.4 per cent during the 10th and 11th FYP respectively. Similarly, the area under oilseeds has increased significantly by 2.72 per cent per annum during 9th FYP, about 16.61 per cent per annum during 10th FYP and 3.6 per cent during 11th FYP.

Table 2.6: Compound Growth Rate in Area, Production and Yield (%) of major crops in Rajasthan

Time Period	Bajra	Maize	Wheat	Total Cereals	Kharif Pulses	Rabi Pulses	Total pulses	Total Foodgrains	Kharif Oilseeds	Rabi Oilseeds	Total Oilseeds	Cotton	Sugarcane	Condiments & spices	Fruits	Vegetables	Medicinal & Narcotics	All Crops
Area																		
Annual Plan 1991-92	-5.3	-3.5	-1.9	-23.3	-11.3	-37.1	-23.1	-10.8	13.9	16.5	15.7	4.4	36.8	3.4	-4.6	5.3	-7.3	-6.6
8th Five Year Plan(1992-97)	-1.5	-0.7	2.4	-0.8	2.8	1.5	2.2	0.0	4.7	3.3	3.7	8.3	2.3	3.9	1.6	8.2	14.6	0.6
9th Five year Plan(1997-02)	2.2	1.2	-3.9	0.1	2.8	-18.5	-6.4	-1.9	2.7	-13.5	-8.5	-5.7	-21.0	10.5	4.0	6.0	0.7	-1.8
10th Five year Plan(2002-07)	11.2	1.2	9.2	8.7	12.7	22.6	15.5	10.2	9.0	20.6	16.6	-2.4	2.2	-8.0	5.6	7.1	6.4	13.0
11th Five year Plan (2007-12)	-0.4	-0.2	3.2	0.5	3.4	4.0	3.6	1.4	8.7	0.0	3.6	11.4	-11.4	14.1	7.2	7.3	16.7	3.0
Production																		
Annual Plan 1991-92	-57.0	-41.1	3.9	-23.3	-69.2	-32.8	-46.7	-27.0	-24.1	28.4	15.1	-8.0	13.1	-27.8	-64.1	0.9	-40.6	-20.4
8th Five Year Plan(1992-97)	-5.4	0.5	7.1	2.3	2.9	8.2	6.1	2.8	4.5	10.0	8.6	7.6	3.4	5.2	15.0	11.7	-0.8	4.1
9th Five year Plan(1997-02)	11.1	4.9	-1.2	2.5	0.5	-21.0	-14.2	-0.1	1.8	-3.0	-1.3	-24.6	-21.9	10.3	-12.6	12.7	-7.8	-0.8
10th Five year Plan(2002-07)	48.0	6.5	12.3	17.5	48.5	25.8	32.2	18.6	32.9	30.3	31.0	31.2	10.5	0.9	67.7	27.3	-16.1	20.4
11th Five year Plan (2007-12)	10.4	-4.2	9.3	7.7	8.4	14.6	11.0	8.1	10.5	6.0	8.1	85.4	-6.6	15.9	296.7	24.3	300.6	10.2
Yield																		
Annual Plan 1991-92	-54.6	-39.0	6.0	-0.1	-65.3	6.8	-30.6	-18.2	-33.3	10.2	-0.5	-11.8	-17.3	-30.2	-62.3	-4.2	-35.9	-5.8
8th Five Year Plan(1992-97)	-4.0	1.2	4.6	3.2	0.1	6.7	3.7	2.8	-0.1	6.5	4.7	-0.6	1.0	1.3	13.1	3.2	-13.4	3.4
9th Five year Plan(1997-02)	8.7	3.6	2.8	2.4	-2.2	-3.1	-8.3	1.8	-0.9	12.1	7.8	-20.0	-1.1	-0.2	-15.9	6.3	-8.4	0.9
10th Five year Plan(2002-07)	33.1	5.2	2.8	8.1	31.8	2.6	14.5	7.6	22.0	8.1	12.3	34.4	8.1	9.7	58.9	18.9	-21.1	6.6
11th Five year Plan (2007-12)	10.8	-4.0	5.9	7.1	4.9	10.2	7.1	6.5	1.7	5.9	4.3	66.5	5.3	1.6	269.9	15.8	243.1	7.0

The growth in area under cotton has been very impressive at the rate of 11.4 percent per annum during 11th FYP. The production and yield of cotton has also increased at very high rate, i.e. 85.4 per cent and 66.5 per cent respectively during the corresponding period. In the case of sugarcane, the plan period wise growth performance has been very poor. The area and production of sugarcane have declined during 11th FYP at the rate of 11.4 per cent, 6.6 per cent, respectively though its productivity has increased by 5.3 percent during the corresponding period. The production and yield of fruits and vegetables in the state has exhibited a sharp increase during 10th FYP.

Though the rate of growth in area under medicinal and narcotic plants has increased by 0.68 per cent per annum during 9th FYP, 6.4 per cent per annum during 10th FYP, the production and productivity of these crops have exhibited negative trends. However, during 11th FYP period, the growth in area, production and yield of medicinal and narcotics has been remarkable.

2.5 Drivers of Growth in Agriculture

Agricultural growth in any region can occur because of (i) growth in crop output; (ii) diversification of agriculture towards high valued crops and livestock products and (iii) increase in value of the given output (Bhalla and Singh, 2009). Examining these three aspects of agricultural growth in Rajasthan reveals that the overall growth in area, yield and production of major crops in the state is quite impressive in recent past. The share of oilseeds, pulses and horticultural crops in GCA has increased substantially during the last two decades which proves that the process of diversification of agriculture towards high valued crops is in right direction, while there is a need of increasing the pace of diversification towards high valued cash crops in the state. National Food Security Mission (NFSM) and the National Horticulture Mission (NHM) have also emerged as the path breaking interventions which have helped in agricultural diversification towards cash crops in Rajasthan (Swain et al, 2011; Dutta and Kapadia, 2011). The growth in livestock in the state is also remarkable (discussed in separate section). So far as the increase in value of the agricultural output is concerned, it is noteworthy that the prices of agricultural commodities have increased successively over the years in the state (Table 2.7) resulting in the rise in the value of output. However, the majority of farmers don't get remunerative prices because of constraints in marketing channels and infrastructures resulting in lower value of their output. Farmers are unable to get Minimum Support Price (MSP) because of monopolistic behaviour of the informal buyers/ traders who purchase the agriculture production at the lower as compare to prevailing market price (GoR, 2012b).

The one of the key drivers of agricultural growth is the Gross Fixed Capital Formation (GFCF) in agriculture as a percentage to agri-GDP. The GFCF in agriculture & allied sector as percentage of agri-GDP has more than doubled during last decade at all India level (GoI, 2012a). However, the same has declined from 9.7 per cent in 2005-06 to 6.0 per cent in 2010-11 in Rajasthan. The GFCF in agriculture & allied sector as percentage of total GFCF has also declined from 10.8 per cent in 2005 to 6.2 per cent in 2010-

11 in Rajasthan (GOR, 2012c). Purohit and Reddy (1999) found that the gross capital formation in agriculture in the state depicted the declining trend during 1990s also.

It is worth mentioning here that the marginal returns evident in terms of poverty alleviation or accelerating agricultural growth is much lower from input subsidies than from investments in rural roads or agri-R&D or irrigation (Shenggen *et al*., 2008). Thus, agricultural subsidies should be targeted more towards poor farmers and public investment in agriculture should be accelerated for sustained long-term agricultural growth. This would help in expansion of irrigation facilities which is very critical for agricultural growth in Rajasthan, particularly keeping in view the fact that major part of cultivable area (65.5%) is rainfed and the annual average rainfall in the State is very scanty (57.35 cm) and erratic in nature.

Table 2.7: Change in Yearly Average Prices of Agricultural Commodities

(Rs. per quintal)

	Average Price			Change (%)	
Commodity	1990-91	2000-01	2012-13	1990-2000	2000-2012
Wheat	299	603	1487	101.7	146.6
Gram	281	466	3604	65.8	673.4
Barley	658	1592	1117	141.9	-29.8
Bajra	472	1214	1273	157.2	4.9
Jowar	236	580	1428	145.8	146.2
Maize	231	406	1391	75.8	242.6
Mustard	237	493	3442	108	598.2
Tarameera	949	1133	3056	19.4	169.7
Groundnut	1076	1318	4476	22.5	239.6
Til/Sesamum	773	1075	8588	39.1	698.9

Source: Directorate of Agriculture Marketing , Government of Rajasthan, Jaipur

2.6 Marketing and Warehouse Facilities

As discussed in the preceding section, adequate return on farmers' produce is one of the driving forces for better agricultural growth. Better marketing channels and warehouse facilities are essential for ensuring adequate returns on agricultural output of farmers. However, it was found

that the existing marketing and warehouse facilities in the state are inadequate to meet the demands of the farmers. It may be noted from Table 2.8 that about 535 godowns with warehousing capacity of 11.03 lakh tons are in operation in Rajasthan. This implies that about 39 godowns with capacity of 81011 tons are available for 1 lakh cultivators in the state. In contrary, if we look at the market arrivals of crop output in Agricultural Produce Marketing Committee (APMCs)/market yards in Rajasthan, it was found that the total market arrival in the state has been more than doubled during the span of nine years period, i.e. increased from 689.3 lakh quintals in 2002-03 to 1444.9 lakh quintals in 2011-12. Thus, there is a need of further expansion of network of warehouses in the state.

In order to provide better marketing facilities and adequate returns on farmers produce, the Directorate of Agriculture Marketing (DAM) has mandate to implement 'Mandi Regulation and Management' effectively. The Rajasthan State Warehousing Corporation (RSWC), which is involved in creating godowns and warehouses in the state (for scientific storage of agricultural produces, seeds, manures, fertilizers, agricultural implements and other notified commodities of the farmers, co-operative societies, traders, government and other institutions) is operating 468 warehouses in 31 districts of the State with total storage capacity of 9.25 lakh tons (as on August 2015) and its utilization of the storage capacity is 81 per cent.

Table 2.8: Warehousing Capacity under Rajasthan State Warehousing Corporation (as on 31st August, 2015)

Sl. No.	Particulars of Godowns	No. of Godowns	Warehousing Capacity (in M.Ts.)	Utilization Warehousing Capacity	
				(M.Ts.)	(%)
1	Own constructed(RSWC)	468	924570	745009	81
2	Other Than Own Constructed				
	(a) Hired From KUMS/PWD/ GOVT/Corpn.	14	21790	21215	97
	(b) Private	53	156930	176293	112
3	Total (a+b)	535	1103290	942517	85

Source: Department of Agriculture, Government of Rajasthan, Jaipur.

2.7 Emerging Demand-Supply Imbalances

With change in taste and preference of consumers and higher expenditure elasticity for fruits & vegetables and livestock as compared to cereals, there is an increasing pressure on the prices of such high value perishable commodities. It is observed that the per capita monthly consumption of cereals has declined from 14.80 kg in 1983-84 to 12.11 kg in 2004-05 and further to 11.35 kg in 2009-10 in the rural areas of India. In the urban areas as well, it has declined from 11.30 kg in 1983-84 to 9.94 kg in 2004-05 and to 9.37 kg in 2009-10 (GOI, 2012a). Similar pattern has been observed in Rajasthan where the per capita monthly consumption of total cereals has declined from 14.9 kg in 1993-94 to 12.7 kg in 2004-05; whereas the per capita monthly consumption of fruits and vegetables has increased from 1.1 kg and 2.5 kg in 1993-94 to 2.2 kg and 4.0 kg in 2004-05 respectively (NSSO, 1993; 2004). However, the agricultural production basket in the state is not fully aligned to the emerging demand patterns.

2.8 Natural Resource Management

Land, water resources, soil and biodiversity which are the natural resources for agriculture are under considerable strain. The demand for meeting food and water for a growing population from shrinking natural resource base has shifted the focus to enhance agricultural production in sustainable manner.

2.8.1 Agro-Climate and Soils

The arid zone of Rajasthan spread over 12 districts occupied about 61 per cent of total geographical area of the State. The semi-arid and humid regions account for about 16 per cent and 15 per cent of the total area, while sub-humid region constitutes about 8 per cent of total landmass. Rajasthan has varying topographic features though a major part of the state is dominated by parched and dry region. The extensive topography includes rocky terrain, rolling sand dunes, wetlands, barren tracts or land filled with

thorny scrubs, river-drained plains, plateaus, ravines and wooded regions. The distinctive features of 10 Agro-Climatic Zones are presented in Table 2.9.

Table 2.9. Salient Features of Agro-Climatic Zones of Rajasthan

Zone	Area	Total Area (million ha)	District Covered	Average Rainfall (mm)	Temperature		Major Crops		Soils
					Max.	Min.	Kharif	Rabi	
IA	Arid western plain	4.74	Barmer & part of Jodhpur	200-370	40	8	Pearlmillet Mothbean Sesame	Wheat, Mustard, Cumin	Desert soils and sand dunes aeolian soil, coarse sand in texture some places calcareous
IB	Irrigated north western plain	2.1	Sriganganagar, Hanumangarh	100-350	42	4.7	Cotton, Clusterbean	Wheat, Mustard, Gram	Alluvial deposites calcareous, high soluble salts & exchangeable sodium
IC	Hyper arid partial irrigated zone	7.7	Bikaner, Jaisalmer, Churu	100-350	48	3	Pearlmillet Mothbean Clusterbean	Wheat, Mustard, Gram	Desert soils and sand dunes aeolian soil, loamycoarse in texture & calcareous
IIA	Internal drainage dry zone	3.69	Nagaur, Sikar, Jhunjhunu, Part of Churu	300-500	39.7	5.3	Pearlmillet Clusterbean Pulses	Mustard, Gram	Sandy loam, sallow depth red soils in depressions
IIB	Transitional plain of Luni basin	3	Jalore, Pali, Part of Sirohi, Jodhpur	300-500	38	4.9	Pearlmillet Clusterbean sesame	Wheat, Mustard	Red desert soils in Jodhopur, Jalore & Pali sierzems in Pali,Sirohi
IIIA	Semi arid eastern plains	2.96	Jaipur, Ajmer, Dausa, Tonk	500-700	40.6	8.3	Pearlmillet Clusterbean Sorghum	Wheat, Mustard, Gram	Sierozens, eastern part alluvial, west north west lithosols, foot hills, brown soils
IIIB	Flood prone eastern plain	2.77	Alwar, Dholpur, Bharatpur, Karoli, S.Madhopur	500-700	40	8.2	Pearlmillet Clusterbean Groundnut	Wheat, Barley, Mustard, Gram	Alluvial prone to water logging, nature of recently alluvial calcareous has been observed
IVA	Sub-humid southern plains	3.36	Bhilwara, Sirohi, Udaipur, Chittorgarh	500-900	38.6	8.1	Maize, Pulses, Sorghum	Wheat, Gram	Soil are lithosolsat foot hills & alluvials in plains
IVB	Humid sothern plains	1.72	Dungarpur, Udaipur, Banswara, Chittorgarh	500-1100	39	7.2	Maize, Paddy Sorghum Blackgram	Wheat, Gram	Predominantly reddish medium texture, well drained calcareous, shallow on hills, deep soils in valleys
V	Humid south eastern plain	2.7	Kota, Jhalawar, Bundi, Baran	650-1000	42.6	10.6	Sorghum Soyabean	Wheat, Mustard	Black of alluvial origin, clay loam, groundwater salinity

Source : www.krishi.rajasthan.gov.in

The average rainfall in the state varied from 100 mm to 1100 mm across various zones. Temperature also varied widely from as low as 3 °C to

as high as 48° C across the zones. Five distinct specifications of soils viz., Aridiosols, alfisols, entisols, inceptisols and vertisols are found in the state.

2.8.2 Land Use Pattern and Cropping Intensity

Total reporting area in Rajasthan was 190.7 lakh hectares in 2010-11 (Table 2.10). The net sown area (NSA) and gross cropped area (GCA) accounted for about 49.4 per cent and 56.2 per cent of reporting area, respectively. The districts namely Kheda, Amreli, Gandhinagar, Surat, Mehasana, Patan, Anand and Bhavnagar have more than 70 per cent of their area under cultivation. It is encouraging to note that the share of NSA has depicted an increasing trend since 1990-91, whereas it is disheartening to note that the share of area sown more than once has been falling since 2007-08. The forest area has hovered around 6 per cent of total reporting area.

Table 2.10: Land Use Pattern in Rajasthan

(Area in lakh hectares)

Year	1990-91		2000-01		2010-11		2011-12		2012-13	
Total Reported Area	342.5	(100.0)	342.6	(100.0)	342.7	(100.0)	342.7	(100.0)	342.7	(100.0)
Forest	23.5	(6.9)	26.1	(7.6)	27.4	(8.0)	27.5	(8.0)	27.5	(8.0)
Area under Non-Agricultural uses	14.9	(4.4)	17.4	(5.1)	18.9	(5.5)	18.8	(5.5)	18.6	(5.4)
Barren & Un-Culturable land	27.9	(8.1)	25.7	(7.5)	23.8	(6.9)	23.9	(7.0)	24.1	(7.0)
Permanent Pastures and other Grazing Land	19.1	(5.6)	17.1	(5.0)	16.9	(4.9)	16.9	(4.9)	16.9	(4.9)
Land under Misc.-Tree Crops & Grooves	0.2	(0.1)	0.1	(0.0)	0.2	(0.1)	0.2	(0.1)	0.2	(0.1)
Culturable Waste Land	55.7	(16.3)	49.1	(14.3)	42.3	(12.4)	41.7	(12.2)	41.5	(12.1)
Fallow Land Other than Current Fellows	19.3	(5.6)	24.4	(7.1)	17.3	(5.0)	18.5	(5.4)	20.2	(5.9)
Current Fellows	18.1	(5.3)	24.2	(7.0)	12.4	(3.6)	14.8	(4.3)	18.7	(5.5)
Net Sown Area	163.8	(47.8)	158.6	(46.3)	183.5	(53.5)	180.3	(52.6)	174.8	(51.0)
Aera Sown More than once	30.0	(8.8)	33.7	(9.8)	76.5	(22.3)	64.7	(18.9)	64.7	(18.9)
Gross Cropped Area	193.8	(56.6)	192.3	(56.1)	260.0	(75.9)	245.1	(71.5)	239.5	(69.9)
Net Irrigated area*	NA		NA		66.6	(19.4)	71.2	(20.8)	75.0	(21.9)
Gross Irrigated Area**	NA		NA		83.2	(24.3)	89.0	(26.0)	94.6	(27.6)
Cropping Intensity (%)	118.3		121.2		141.7		135.9		137.0	

Notes: (1) Figures in parentheses are percentages of total reported area.
(2) * Figures in parentheses are percentages of NSA and **Figures in parentheses are percentages of GCA.
Source : GoR (2015b), and earlier issues

However, the gross cropped area has increased by about 13.3 percent points (to reporting area) in 2012-13 over 1990-91. The increase in GCA

was due to significant increase in area sown more than once. The cropping intensity has also considerably increased over the years. It has increased from 121.2 per cent in 2000-01 to 137.0 per cent in 2012-13. The gross irrigated area has increased from 193.8 lakh hectares in 1990-91 to 239.5 lakh hectares in 2012-13 On the other hand, land put to non-agricultural uses has successively increased from 14.9 lakh hectares in 1990-91 to 18.6 lakh hectares in 2012-13.

2.8.3 Operational Land Holdings and Land Ceiling Limit

Though several factors are attributed for lowering of agricultural productivity in some parts of the state, many consider skewed distribution of agricultural land, small size of operational holding, high incidence of share tenancy and rural poverty as the major impediments to agricultural growth. The size-wise distribution of operational holdings and area operated (Table 2.11) shows that during the year 2010-11, the majority of farm operators belonged to marginal and small land holding categories (cultivating less than 2 hectares of land). They constituted about 58.4 per cent of total number of operational holdings, but operated only 16.1 per cent of total operational area. On the other hand, the large farmers (operating land area more than 10 hectares) constituting only 5.9 per cent of total holdings occupied a substantial proportion (i.e., 33.3%) of total operational area. Thus, the distribution of land area has been much skewed in favour of large farmers. However, the number of large farmer holdings has declined by 5.84 per cent between 2005-06 and 2010-11.

The average size of operational holdings in the State was 3.38 hectares during 2005-06, that has declined to 3.07 ha in 2010-11. The average size of land holdings in the case of large farmers and medium farmers was 17.45 hectares and 6.14 hectares respectively, while that in the case of marginal and small farmers is just 0.49 hectares and 1.43 hectares respectively in 2010-11 in the state.

Table 2.11: Land Holding Pattern in Rajasthan (2005-06 and 2010-11)

Sr. No.	Size Class	Total Holdings		Average Size of Holdings (Ha)	% Share in total operational area
		Number	Area (Ha)		
Year 2005-06					
1	Marginal (0-1 ha.)	2073099	1016368	0.49	4.85
2	Small (1-2 ha.)	1321126	1895062	1.43	9.05
3	Semi medium (2-4 ha.)	1260369	3569694	2.83	17.05
4	Medium (4-10 ha.)	1103263	6796010	6.16	32.46
5	Large (10 ha >)	428625	7661858	17.88	36.59
6	All Size Group	6186482	20938992	3.38	100.00
Year 2010-11					
1	Marginal (0-1 ha.)	2511512	1237578	0.49	5.86
2	Small (1-2 ha.)	1511068	2161876	1.43	10.23
3	Semi medium (2-4 ha.)	1335144	3774350	2.83	17.86
4	Medium (4-10 ha.)	1127122	6918368	6.14	32.73
5	Large (10 ha >)	403590	7044064	17.45	33.33
6	All Size Group	6888436	21136235	3.07	100.00
Percentage Change between in 2010-11 over 2005-06					
1	Marginal (0-1 ha.)	21.15	21.76	0.51	20.63
2	Small (1-2 ha.)	14.38	14.08	-0.26	13.01
3	Semi medium (2-4 ha.)	5.93	5.73	-0.19	4.75
4	Medium (4-10 ha.)	2.16	1.80	-0.35	0.85
5	Large (10 ha >)	-5.84	-8.06	-2.36	-8.92
6	All Size Group	11.35	0.94	-9.34	0.00

Source :Source: GOR (2013) and GOI (2015)

The distribution of land holdings and average size of operational holdings in the state clearly indicate that there is disparity and inequality. Large number of cultivators owing relatively less land, while big land owners which are small in number owning larger acreage of land. It leads to disparities in the incomes in the rural areas. In view of this, attempt was made in the past to distribute the excess land through land reform. The first Five-Year Plan categorically emphasizes that there should be an absolute limit to the size of land which any individual may hold. As stated in Table 2.12, the actual land ceilings in Rajasthan have been earmarked keeping in view the suggested national guidelines of 1972. However, the higher limits of suggested national guidelines have been picked up in Rajasthan for irrigated lands. But for the dry lands that is much larger in size in Rajasthan

compared to other states, the ceiling limits have been stretched from 21.85 hectares to 70.82 hectares.

Table 2.12. Ceiling Limits on Land Holdings

(in Hectares)

	Irrigated with two crops	Irrigated with one crop	Dry land
Suggested in National Guidelines of 1972	4.05 to 7.28	10.93	21.85
Actual Ceilings in Rajasthan	7.28	10.93	21.85 to 70.82

Source: Anonymous (2015)

2.8.4 Water Resources

The state represents 10.4 per cent of the total land mass with 5.5 per cent population and 18.7 per cent of livestock of the country, but it has only 1.2 per cent of total surface water available in the country. The state is divided into 14 river basins. Except in canal command area in the north, surface water potential is very low in the central, western and southern parts of the state (CAZRI, 2009). Total surface water availability in the State is 21.71 Billion Cubic Metres (BCM), out of which 16.05 BCM is economically utilizable. The state has so far harnessed 72 per cent of economically utilizable portion (GoR, 2010b). The rivers of the state are rain-fed and there is no perennial river except Chambal. Out of total 142 desert blocks of the country, 85 blocks are in the state, which aggravates the level of water crisis in the state. Further, water scarcity in the state constrains the development of agriculture, inhibits improvements in sanitation and health, and causes special hardship to women who have to travel long distances to fetch water.

The availability of ground water resources in the state is also at quite alarming stage. The situation has been worsened in the last two decades. The level of ground water exploitation, which was just 35 per cent in 1984, has reached a level of 138 per cent in 2008. Out of 237 blocks in the state, only 30 blocks are in safe category, 140 blocks have been placed under overexploited' category and 50 blocks under 'critical' category (GoR, 2010b). This scenario envisages an urgent need to replenish the ground water resources.

2.8.5 Weather and Climate

As mentioned earlier, the state has a tropical desert climate. The arid and semi-arid areas constitute about two-third of total geographical area of the state. The analysis on two major climatic factors, viz., rainfall and temperature has been made in this section. The analysis on rainfall pattern in Rajasthan reveals that the average rainfall in the state is 57.8 cm (Table 2.13), compared to the all-India average of 110 cm. The period of monsoon is very short ranging around 60 to 75 days. On an average, its onset is late and withdrawal is early as compared to other states and one or two dry spells is a common phenomenon.

Rainfall in large parts of Rajasthan is not only inadequate but also varies sharply from year to year. Consequently, droughts are perceived as a normal and cyclical occurrence. It may be noted that the deviation of annual rainfall from long-term normal varied greatly up to (-) 42.5 per cent. The coefficient of variation of annual rainfall during monsoon period is about 21.6 per cent in Rajasthan. The percent of the total rainfall received during monsoon season varied from 87.1 per cent to 96.2 per cent of total rainfall.

Table 2.13: Rainfall Pattern in Rajasthan

Year	Normal	Rainfall (cm)				
		June to September	October to January	February to May	June to May (total)	% Deviation from Annual Normal
1990-91	57.51	69.93	0.98	1.82	72.73	20.9
		(96.2)	(1.3)	(2.5)	(100.0)	
2000-01	57.51	35.15	0.3	4.9	40.35	-42.5
		(87.1)	(0.7)	(12.1)	(100.0)	
2005-06	57.51	53.12	0.24	3.42	56.95	-1.0
2006-07	57.51	62.5	0.68	5.62	68.8	16.4
2007-08	57.51	47.82	0.14	3.43	51.38	-11.9
2008-09	57.51	53.44	1.09	0.99	55.52	-3.6
2009-10	57.35	38.5	4.67	0.49	43.66	-31.4
2010-11	46.36	60.26	7.08	2.32	69.66	50.26
2011-12	46.36	69.78	0.3	1.92	72	55.3
2012-13	46.36	46.54	0.2	NA	46.74	0.8
		(88.2)	(10.7)	(1.1)	(100.0)	
CV (%)		22.2	116.3	48.7	21.0	

Notes: The figures in parentheses are the percentages of total; CV stands for Coefficient of Variation.

Source: www.krishi.rajasthan.gov.in

The analysis on variation in annual rainfall across different regions reveals that it is most erratic in the western region with frequent dry spells, punctuated occasionally by heavy downpour in some years associated with the passing low pressure systems over the region (Rathore, 2004). As stated in Table 2.9, Bikaner, Jaisalmer, Churu, Hanumangarh and Sri Ganganagar districts in arid western plain and north-western plain receive annual rainfall varying from 10 cm to 30 cm. On the other hand, the districts in humid south-eastern plain such as Dungarpur, Udaipur, Banswara and Chittorgarh receive the annual rainfall in the range of 65 cm to 100 cm.

As far as the pattern of temperature is concerned, it can be seen from the Table 2.9 that temperature in the state varies widely from as low as 3°C to as high as 48°C across the agro-climatic zones. The temperature keeps rising progressively from March through April, May and June. West of Rajasthan and the eastern side of Aravalli Range, in the region of Bikaner, Phalodi, Jaisalmer and Barmer, the maximum daily temperature hovers around 40°C to 45°C. Sometimes, it even reaches as high a 49°C during the summer months. Night temperature during summer fall considerably around 20°C to 29°C. As noted by Pant and Hingane (1988), a gradual decreasing trend in the mean annual temperature for the region of northwest India including Rajasthan has been observed. After Jammu and Kashmir, Rajasthan is the second state where maximum number of cold waves has occurred (De, *et al.,* 2005).

2.8.6 Disaster and Calamity Management

In Rajasthan, there have been 48 drought years of varied intensity during last century (i.e. from 1901 to 2002), which means that the chance of occurrence of a meteorological drought in the state is 47 per cent (Rathore, 2004). The state has the maximum probability of occurrence of droughts in India (Singh et al., 2010). A detailed analysis has revealed that during the past 24 years period (1981-82 to 2013-14), not a single year was fully free of drought occurrence. On an average, 20 districts out of 33

districts of the State were affected by drought of different intensity (Table 2.14).

Table 2.14:Loss due to Famine/Scarcity Condition in Rajasthan

Agriculture Year	No. of Districts Affected	No.of village Affected	Population Affected (In lakh)	Land Revenue Suspended* (lakh)
1981-82	26	23246	200.12	646.15
1991-92	30	30041	289	325.87
1992-93	12	4376	34.66	29.06
1993-94	25	22586	246.81	491.36
1994-95	-	-	-	-
1995-96	29	25478	273.82	209.12
1996-97	21	5905	55.29	28.88
1997-98	24	4633	14.91#	2.79#
1998-99	20	20069	215.07	168.52
1999-00	26	23406	261.79	227.95
2000-01	31	30583	330.41	310.48
2001-02	18	7964	69.7	45.84
2002-03	32	40990	447.8	429.26
2003-04	3	649	5.82	8.8
2004-05	31	19814	227.65	167.77
2005-06	22	15778	198.44	123.21
2006-07	22	10529	136.73	36.49
2007-08	12	4309	56.12	39.86
2008-09	12	7402	100.12	47.69
2009-10	27	33464	429.13	459.04
2010-11	2	1249	13.67	9.53@
2011-12	11	3739	49.95	30.77@
2012-13	12	8030	120.9	65.44@
2013-14	17	10225	159.38	101.44

Notes: 1. *Figures for financial year, # 1865 villages affected from Cyclone and Hailstorm not included
@ Likely/Provisional
Source: GOR (2013)

The number of severe and very severe drought years is larger in the western and southern part of Rajasthan, even though the southern region receives high average rainfall (GoR, 2011). Many places in Rajasthan have witnessed flash floods due to heavy rainfall events. Floods in July 1981 in Jaipur, Tonk, Nagaur and in 2006 over Barmer are few examples. All these floods have resulted in unprecedented loss of lives and property (GoR, 2011). Keeping in view the increase in the frequency and intensity of disasters such as droughts, floods, frost etc. in the recent years, the Draft

State Agriculture Policy (GoR, 2012a) has proposes to make the information and communication systems more effective and reliable, to put in place the needed climate services and to strengthen the contingency planning and resources availability.

2.9 Farm Inputs and Management

In addition to harsh agro-climatic conditions, limited access to inputs (land, irrigation water, seeds and fertilizers), technology, farm credit and markets has limited the growth of agriculture development in Rajasthan. The limited access to inputs and unstable climatic conditions have resulted in a predominance of low productivity, risk-minimizing and subsistence-oriented farming systems (often integrating crop and livestock production) capable of resilience (within limits) against droughts as well as able to produce a marketable surplus in years of good monsoon rainfalls (GoR, 2012b). Thus, there is need to strengthen the input delivery system in the state.

2.9.1 Seeds and Fertilizer

Seed is considered to be a catalyst of change in agriculture. The Green Revolution in India during the late sixties and seventies bears witness to this truth. And lately, during the decade of 2000s, Bt cotton seeds and hybrid maize seeds have shown spectacular results (GoI, 2012a). However, the availability of quality/certified seeds has been limited in various part of Rajasthan. It can be seen from the Figure 2.4 that there has been significant shortfall in availability of quality/certified seeds in Rajasthan during 2011-12.

The shortfall of seed to total requirement during kharif and rabi season was 12.6 per cent and 31.8 per cent respectively. Thus, unavailability of seed in time and adequate quantity has the potential negative effects on agricultural output. However, the seed replacement rate (SRR) has improved during the recent past. The SRR of jowar, bajra,

groundnut, soyabean has increased by 104.7 per cent, 27.3 per cent, 46.0 per cent and 64.8 per cent respectively from 2008-09 to 2012-13. The SRR of some major crops during the corresponding periods has been presented in Figure 2.5. Comparatively, the SRR has been better in case of rapeseed-mustard, cotton, bajra cowpea, maize and castor. However, the SRR needs improvement in the majority of cases.

Figure 2.4: Requirement and Distribution of Certified /Quality Seeds (in quintals)

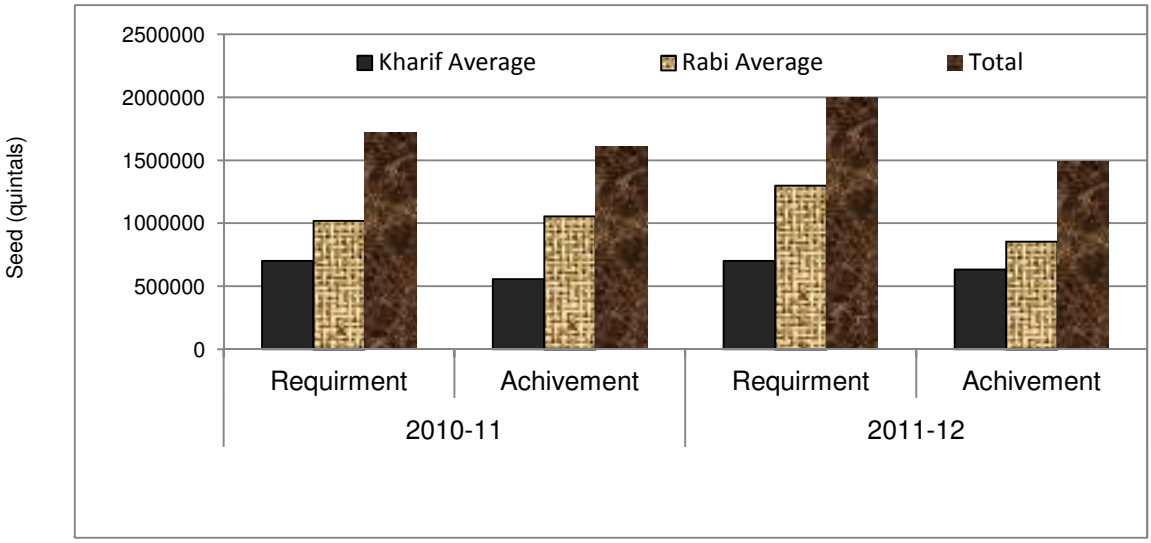
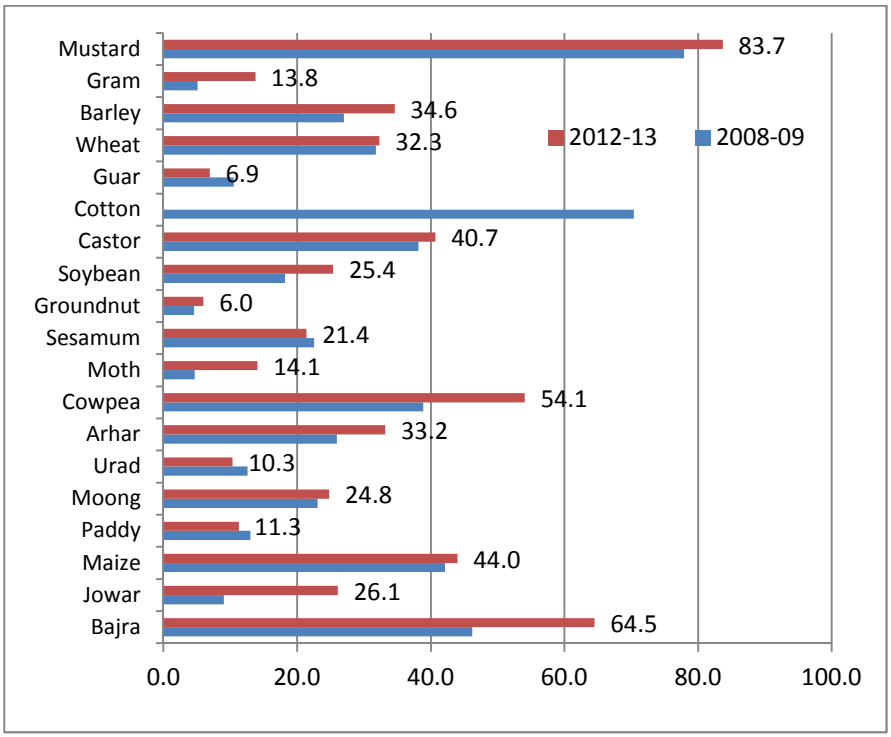


Figure 2.5: Seed Replacement Rate (%) in Rajasthan (2008-09 and 2012-13)



Among various inputs, fertiliser use was one of the major factors that changed the complexion of agriculture since Green Revolution period. More adoption of HYV seeds was supported by increased application of chemical fertilisers to raise agricultural output substantially across the country. The per hectare consumption of fertiliser has grown from 44.4 kg/ha in 2007-08 to 55.2 kg/ha in 2011-12 in Rajasthan (Table 2.15). In absolute terms, the NPK consumption in the state has increased from 9.86 lakh tones in 2007-08 to 13.89 lakh tones in 2011-12.

Table 2.15 :Consumption of Fertilizers in Rajasthan

(Qty. in M. Tonnes)

N/P/K	2007-08	2008-09	2009-10	2010-11	2011-12 (Estimated)	2012-13 (Target)
			Kharif			
N	283658	307874	287824	326658	342042	410302
P	136400	187262	170951	227449	202006	270860
K	13556	12269	17010	21654	22172	39020
Total	433614	507405	475785	575761	566220	720182
			Rabi			
N	421677	401659	434138	543734	582688	613655
P	124064	131760	145233	185854	207220	225315
K	7356	11201	17738	13296	22660	28315
Total	553097	544620	597109	742884	812568	867285
			Kharif & Rabi- Total			
N	705335	709533	721962	870392	924730	1023957
P	260464	319022	316184	413303	409226	496175
K	20912	23470	34748	34950	44832	67335
Total	986711	1052025	1072894	1318645	1378788	1587467
NPK Use in kg/ha GCA	44.43	46.2	49.34	53.91	56.77	-

Notes:N - Nitrogenous, P -Phosphetic, K –Potasic; 2011-12 data is estimated and 2012-13 is Target requirement.
Source: Directorate of Agriculture, Krishi Bhavan, Government of Rajasthan, Jaipur.

2.9.2 Farm Mechanization

There is a strong correlation between the farm mechanization and agricultural productivity. The states with greater availability of farm power show higher productivity as compared to the others (GoI, 2012a). Among various types of farm machinery, tractors, power tillers and diesel engines and electric motors are the major ones. India is the largest manufacturer of tractors in the world, accounting for about one-third of the global

production. The pace of farm mechanization has been satisfactory during last couple of decades. The share of agricultural workers and draught animals in total labour force have come down from 63.5 per cent in 1971-72 to 13.67 per cent in 2009-10; whereas that of tractors, power tillers, diesel engines and electric motors has gone up from 36.51 percent to 86.33 per cent during the same period at all India level (Singh et al., 2011).

The sale of tractors and power tillers in India has increased significantly from 296.1 thousands and 22.3 thousands in 2005-06 to 545.1 thousands and 55 thousands in 2010-11 respectively. Out of the total sale of tractors, Madhya Pradesh and Rajasthan accounts for 21 per cent. The electric power consumption is also one of the major aspects of the farm mechanization. Compared to the 20.98 per cent of total power consumption used in agriculture at all India level during 2009-10, Rajasthan consumes about 39.42 per cent of its total electricity in agriculture alone (GoI, 2012b).

As suggested in State Agriculture Policy (GoR, 2012a), seed-cum-fertilizer drill, zero till drill, lazer levelers and various farm implements and tools need to be popularized along with bullock drawn implements for small and marginal farmers. Seed dressers, sprayers, weeding implements, and other drudgery reduction implements are to be popularized. Custom hiring system is to be promoted and popularized using the concept of Agri-Clinics.

2.9.3 Irrigation

Irrigation is also the important input in crop production. Out of the total gross cropped area (239.54 lakh ha) in the state during 2012-13, about 36.4 per cent area was irrigated. The net irrigated area was about 94.6 lakh hectares constituting about 54.1 per cent of net sown area in 2012-13 (Table 2.16). The cropping intensity in the state has increased from 129.9 per cent in 2007-08 to 137.0 in 2012-13. However, the irrigation intensity has gradually declined from 125.5 per cent in 2007-08 to 79.3 per cent in 2012-13. It can be seen from Figure 6 that irrigation from canal and open wells has drastically declined from 38 per cent and 49 per cent in 1990-91 to 31 per cent and 27 per cent respectively in 2012-13. On the

other hand, the gross irrigated area under tube wells has sharply increased from 9 per cent in 1990-91 to 40 per cent in 2012-13 (Figure 2.6). Thus, the pressure on groundwater exploitation has considerably increased in Rajasthan.

Ground water level is available only at a depth of 30m to 61m. Rajasthan farmers depend on different sources of irrigation that include tube wells, wells and tanks. The Punjab Rivers in the north, the Narmada River in the south and the Agra Canals from Haryana and Uttar Pradesh provide water to the dry land of Rajasthan. Northwestern Rajasthan is irrigated by the Indira Gandhi Canal.

Figure 2.6: Change in Gross Irrigated Area by Sources (1990-91 & 2012-13)

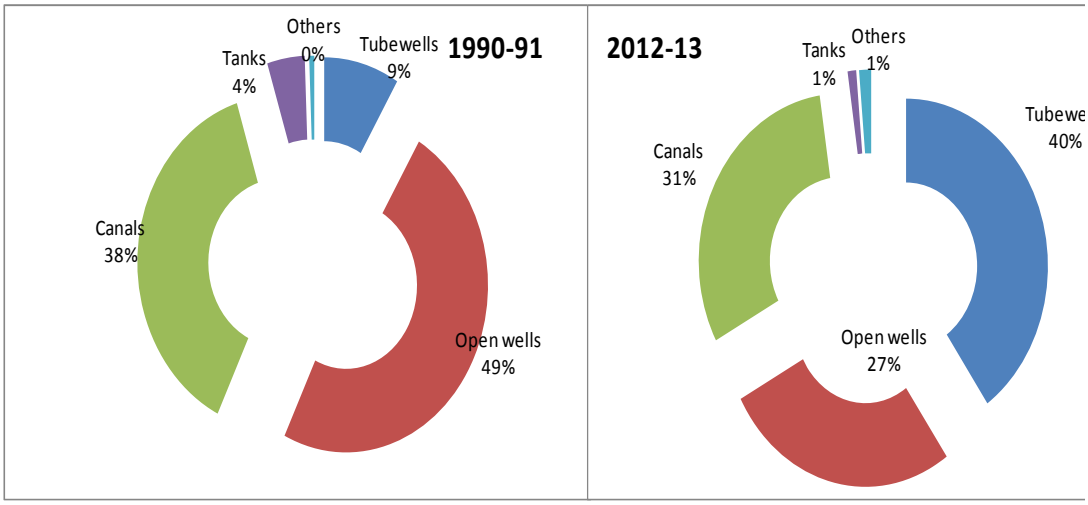


Table 2.16: Irrigated Area in Rajasthan during 2007-08 to 2012-13

(Area in '000 ha.)

Sr. No.	Year	Gross Irrigated area (GIA)	Net Irrigated area (NIA)	Gross crop area (GCA)	Net sown area (NSA)	GIA as a % to GCA	NIA as a % to NSA	Cropping Intensity (%)	Irrigation intensity (%)
1	2007-08	8088.5	6444.1	22208.3	17095.7	36.4	37.7	129.9	125.5
2	2008-09	7909.9	6245.0	22771.3	17551.4	34.7	35.6	129.7	126.7
3	2009-10	7308.8	5849.9	21744.9	16974.5	33.6	34.5	128.1	124.9
4	2010-11	6660.7	8321.8	26001.8	18349.0	25.6	45.4	141.7	80.0
5	2011-12	7121.6	8902.9	24505.4	18034.4	29.1	49.4	135.9	80.0
6	2012-13	7499.1	9455.5	23953.6	17478.8	31.3	54.1	137.0	79.3

Source: GOR (2015) and earlier issues

2.9.4 Labour and Agricultural Wages

The total working population in Rajasthan has increased by 70.8 per cent in 2001 over 1991, i.e. increased from 139.2 lakh in 1991 to 237.7 lakh in 2001(GoI, 2001). Total number of cultivators has increased from 81.8 lakh in 1991 to 131.4 lakh in 2001. However, the share of total cultivators in total workforce has declined from 58.8 per cent in 1991 to 55.3 per cent in 2001. On the other hand, the share of agricultural labourers and other labourers in total workforce has increased from 10.0 per cent and 31.2 per cent in 1991 to 10.6 per cent and 34.1 per cent in 2001 respectively. It is worth mentioning that the share of total female workers has sharply increased by 232 per cent, i.e. increased from 27.33 lakh in 1991 to 90.7 lakh in 2001. The share of female cultivators has increased by 220.7 per cent (increased from 18.95 lakh in 1991 to 60.77 lakh in 2001). The share of female agricultural labourers in total labourers has increased by 195.0 per cent from 4.98 lakh in 1991 to 14.69 lakh in 2001.

As far as agricultural wages are concerned, the minimum agricultural wages for all operations was Rs 100/- in 2010 that has increased to Rs 135/- with effect from January 2011. However, the actual labour rates vary from Rs 175/- to Rs 225/- per man days in different districts of the state. Especially after implementation of Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA) in 2006, the availability of farm labourers has been reduced considerably (Swain and Sharma, 2011), mainly at the time of intercultural operations and harvesting of the crops.

2.9.5 Credit and Insurance

Credit availability and agricultural insurances are important drivers of growth in agriculture. However, the formal credit is readily available to elite class people such as large and wealthy farmers who are trusted by the institutional lenders because of their greater repayment capacity. On the other hand, the access of poor marginal and small farmers to institutional credit is quite limited (Swain, 2001; Swain and Swain, 2007). If we look at

the disbursement of institutional credit in rural Rajasthan (Table 2.17), it is evident that only about 54.4 per cent of targeted amount of agricultural loans has been disbursed during 2011-12. The analysis on the composition of agricultural loans by sources reveals that about 49.1 per cent of total agricultural loans and about 44.1 per cent of total crop loans were disbursed by commercial banks. The cooperative banks disbursed about 30.3 per cent of total loans as agricultural loans.

Table 2.17: Source wise Agricultural Credit Disbursement in Rajasthan during 2011-12

(Rs in Crore)

Type of Loans	Target/ Achievement	Commercial Bank	Regional Rural Banks	Cooperative Bank	Others	Total
Crop Loan	Target	10612	4288	7807	9	22716
	Achievement	5785	2871	4450	0	13106
		(54.5)	(67.0)	(57.0)	(0.0)	(57.7)
Term Loan	Target	4642	809	1221	24	6696
	Achievement	2071	429	406	0	2906
		(44.6)	(53.0)	(33.3)	(0.0)	(43.4)
Total Agriculture loan	Target	15254	5097	9028	33	29412
	Achievement	7856	3300	4856	0	16012
		(51.5)	(64.7)	(53.8)	(0.0)	(54.4)

Note : Figures in parentheses are the percentages of targeted loan amount
Source: Directorate of Agriculture, Government of Rajasthan, Jaipur.

As far as the status of agricultural insurance and weather based crop insurance is concerned, it may be noted from Table 2.18 and Table 2.19 that performance of weather based crop insurance has been much better than that of National Agricultural Insurance Scheme (NAIS). The number of farmers insured under the weather based crop insurance has increased from 1.67 lakh during *Rabi* 2007 to 27.33 lakh during *Rabi* 2011.

Similarly, the number of farmers insured under the same scheme has increased from 0.19 lakh during *Kharif* 2008 to 47.38 lakh during *Kharif* 2011. On the other hand, the growth in number of farmers insured and area insured under NAIS has been almost stagnated over the last couple of years.

Table 2.18: Performance of National Agricultural Insurance Scheme in Rajasthan

Sl. No.	Crop/ Season/ Year	Farmers Insured (Lakh No.)	Farmers Benefitted (Lakh No.)	Area Insured (Lakh Ha.)	Sum Insured (Rs. In Crore)	Premium Paid (Rs in Crore)	Claims (Rs in Crore)	State share (Rs in crore)
1	*Kharif 2007*	21.47	2.30	39.65	1777.00	52.11	88.41	18.15
2	*Kharif 2008*	13.86	4.57	27.61	1394.00	40.19	247.49	103.65
3	*Kharif 2009*	25.93	21.03	46.73	2724.00	79.51	1399.20	659.85
4	*Kharif average*	20.42	9.30	38.00	1965.00	57.27	578.37	260.55
		(75.6)	(82.8)	(77.3)	(64.4)	(64.9)	(89.5)	(92.6)
5	*Rabi 2007*	6.88	2.81	11.39	1014.00	22.04	77.53	28.76
6	*Rabi 2008*	8.64	2.20	15.36	1527.00	46.30	76.52	14.38
7	*Rabi 2009*	4.21	0.79	6.77	720.00	24.63	50.49	19.36
8	*Rabi average*	6.58	1.93	11.17	1087.00	30.99	68.18	20.83
		(24.4)	(17.2)	(22.7)	(35.6)	(35.1)	(10.5)	(7.4)
9	Gross total	27.00	11.23	49.17	3052.00	88.26	646.55	281.38
		(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Source: Directorate of Agriculture, Government of Rajasthan, Jaipur.

Table 2.19: Performance of Weather Based Crop Insurance Scheme in Rajasthan

Sl. No.	Crop/ Season/Year	Farmers Insured (Lakh No.)	Farmers Benefitted (Lakh No.)	Sum Insured (Rs. in Crore)	Premium Paid (Rs in Crore)	State Share (Rs in Crore)	Central Share (Rs in Crore	Claims (Rs in Crore)
1	*Rabi 2007*	5.91	1.67	1626.40	46.13	51.36	51.36	83.49
2	*Kharif 2008*	0.19	0.06	40.45	1.51	2.00	2.00	1.94
3	*Rabi 2008*	0.24	0.10	157.09	3.52	5.66	5.66	8.19
4	*Kharif 2009*	3.20	2.42	517.52	18.80	20.58	20.58	44.58
5	*Rabi 2009*	6.59	2.42	1160.97	33.52	50.14	50.14	105.93
6	*Kharif 2010*	35.15	7.81	2728.91	93.23	104.96	104.96	37.09
7	*Rabi 2010*	27.33	11.71	4257.76	99.46	117.95	117.95	228.33
8	*Kharif 2011*	47.38	12.10	4288.54	131.79	150.05	150.05	90.79

Source: Directorate of Agriculture, Government of Rajasthan, Jaipur.

2.10 Agricultural Research, Education and Extension

With a view of rising population pressure on land, there is very rare chance of increasing area under cultivation. Thus, it is highly desirable to increase the crop productivity through use of befitting technologies for developing better crop varieties, better methods of cultivation and better methods of reduction in cost of cultivation. Considering the growing importance of agricultural research for inclusive growth and development, the Draft State Agriculture Policy (GoR, 2012a) has proposed to accord

highest priority and double the resource allocation to State Agriculture Universities (SAUs) in the next five years. The state-specific agricultural research systems are proposed to be revisited and reoriented to achieve desired goals for sustainable agriculture. It has proposed to up-scale the technologies for large scale adoption in crops, livestock, horticulture, fisheries, agro-forestry and agro-processing sectors of agriculture, and women empowerment. The emergence of globalization in agriculture and challenges of climate change have necessitated to emphasize on raising the level of efficiency and resilience in agriculture that have been kept as the priority areas of agricultural research in the SAUs, KVKs and ATCs in the state.

2.11 Animal Husbandry, Dairying and Fisheries

Animal Husbandry is not only a subsidiary source of livelihood in rural Rajasthan, it is a major economic activity, especially in the arid and semi-arid regions of the state. This sector plays a vital role in the rural economy of the State and has significant impact on employment generation for marginal, sub-marginal and landless farmers. The western districts of the state are famous for indigenous cattle breed. The Eighteenth Livestock Census has placed total livestock population in India at 529.7 million and total of poultry birds at 648.8 million (GoI, 2009). Out of total, Rajasthan state accounts for 10.9 percent of livestock (579.0 lakh) and 0.4 percent of poultry birds (26.5 lakh). It may be noted that total livestock population in the state has increased by 15.3 per cent in 2007 over 2003 (increased from 491.4 lakh in 2003 to 566.6 lakh in 2007); while total poultry has been reduced by 19.3 per cent, i.e. declined from 61.92 lakh in 2003 to 49.94 lakh in 2007(GoI,2005; 2009).

For further development in the sectors of animal husbandry, Government of Rajasthan has formulated 'Livestock Development Policy' for the welfare of farmers. Some schemes and programmes have also been introduced to strengthen the sector in the state. The programmes such as Rajiv Gandhi Mission on Agriculture and Animal Husbandry, *Pashu*

Chikitsalaya Pashu Palak ke Dwar scheme, *Pashu Seva Kendra*, and National Protein Supplementation Programme have been introduced. Animal treatment camps have also been organized regularly in gram panchayaths where Government Veterinary Institution is not available (GoR, 2012c). Under the "*Pashu Seva Kendra*" scheme, the State Government has sanctioned 1,290 *Pashu Seva Kendra* across various districts of the state.

Table 2.20 : Performance of Dairy Development Sector in Rajasthan

Activity	Unit	Target	Achievement
		2011-12	2011-12 (Upto Dec., 2011)
Milk Procurement	Lakh Kg.	7,790	4,118 (52.9)
Milk Marketing	Lakh Lt.	6,168	4,322 (70.1)
Cattle Feed Sale	000' MT	263	133 (50.6)
Revived Societies	Number	588	488 (83.0)
New Societies	Number	898	141 (15.7)
Artificial & Natural Insemination	000' Number	453	467 (103.1)

Note: Figures in parentheses are the percentage of target achieved.
Source: GoR (2011b).

The Dairy Development Programme in Rajasthan has been implemented through Cooperative Societies. Under this programme, up to December, 2011, 12,478 Primary Dairy Cooperative Societies have been affiliated with 21 District Milk Producers Cooperative Unions spread over in 33 districts of the state (GoR, 2012c). It can be noted from Table 2.20 that about 4,322 lakh litres of milk have been marketed during 2011-12 (till December).

As per the Economic Review Report 2011-12, there is about 4.23 lakh hectares of water area for fishing (excluding rivers & canals in 0.87 lakh hectares) in the form of major, medium reservoirs (3.29 lakh hectares), small tanks & ponds (0.94 lakh hectares) in the state. During the year 2011-12 (till December), about 11,500 metric tons of fish and 438.68 million fish seeds were produced against the target 30,000 metric tons fish and 400 million fish seed respectively(GoR, 2012c).

2.12 Post Harvest Management and Value Addition

Agriculture has become demand driven rather than supply driven. It is essential to produce and process agricultural commodities keeping in view the changing pattern of taste and preferences. Though increase in agricultural production and productivity is the priority of the agriculture sector today, improved post-harvest handling and processing is essential to ensure high-quality products and further value addition. Value of agricultural output can be increased considerably by following improved methods of post harvest practices.

Employment generation, reduction of postharvest losses and enhancing of household food security are some of the reasons why small holder farmers process their horticultural crops. Horticultural crops for which post-harvest handling and processing is essentially required are grown in an area of about 10 lakh hectares with an annual production of about 14 lakh metric tons in Rajasthan. Horticulture production in Rajasthan during last 10 years has increased at the rate of 5.8 per cent per annum. State is a leading producer of seed spices like coriander, cumin, and fenugreek and has a substantial area under vegetable crops. To facilitate proper handling, packaging and storage of seeds it is essential to equip the units with modern facilities like cleaning and grading facilities, drying platforms, threshing floors, shades etc. For developing such facilities and infrastructures, there is provision of 100 per cent assistance for the public sector (Rajasthan State Seed Corporation, State Agriculture Universities etc.) and the credit linked back ended subsidy limited to 25 per cent of cost assistance to the private sector. The policy for Agro-processing and Agri-business (GOR, 2010c) has also proposed many incentives including electricity duty concession, stamp duty concession, incentives for new employment creation etc. to the eligible agro-processing enterprises.

Chapter III

Allocation and Expenditure of RKVY Funds during XIth Plan

3.1 Introduction

Rajasthan is the largest State of the Republic of India by area and is located in the northwest of India. Rajasthan covers 342,239 sq km area and accounts for 10.4 per cent of the total geographical area of the country. Rajasthan State comprises of 33 districts. The State is surrounded by five Indian States, viz. Gujarat to the southwest, Madhya Pradesh to the southeast, Uttar Pradesh and Haryana to the northeast and Punjab to the north and it shares its western border with Pakistan. The Aravali Range runs across the State from the southwest peak Guru Shikhar (Mount Abu) to Khetri in the northeast. This range divides the State into
60 percent in the northwest of the range and 40 percent in the southeast. The northwest tract is sandy and unproductive with little water due to rain shadow effect but improves gradually from desert land in the far west and northwest to comparatively fertile and habitable land towards the east.

Total population of Rajasthan as per 2011 census is 68,548,437 of which male and female constitute 51.86 and 48.14 percent of the total population, respectively. The population of Rajasthan forms 5.66 percent of India's population in 2011. The density of population in Rajasthan is 200 persons per sq km which is lower than national average 382 per sq km. Literacy rate in Rajasthan is 66.11 percent as per 2011 population census. As elsewhere in the country, male literacy is higher (79.19 percent) when compared with that of female literacy (47.76 percent).

The economy of Rajasthan is primarily agricultural and pastoral. Wheat and barley are cultivated over large areas, as are pulses, sugarcane, oilseeds, cotton and tobacco are the State's cash crops. Rajasthan is among the largest producers of edible oils in India and the second largest

producer of oilseeds. Rajasthan is also the biggest wool producing State in India. There are mainly two crop seasons. The water for irrigation comes from wells and tanks. The Indira Gandhi Canal irrigates north western Rajasthan. Net Sown Area (NSA) accounts for 53.61 per cent of the State's total geographical area. The cropping intensity of the State is estimated at around 141.71 per cent, meaning that about 42 per cent of the net sown area was planted more than once. The growth of the agricultural economy during the last decade has been presented in Table 3.1.

Table 3.1: Year over Year Growth in State Agricultural Economy

(at 2004-05 Prices)

Year	Growth in agricultural GSDP (%)	Growth in overall GSDP (%)	Net sown area (lakh ha)	Gross cropped Area (lakh ha)	Cropping Intensity (%)	Land Productivity* (Rs/ha)
2002-03	-33.5	-9.9	108	132	122.3	19338
2003-04	81.4	28.7	174	217	124.5	21791
2004-05	-13.6	-1.9	165	211	127.3	19778
2005-06	0.3	6.7	168	217	128.9	19500
2006-07	7.5	11.7	168	215	128.5	21055
X Plan Average	**8.4**	**7.1**	**157**	**198**	**126.3**	**20292**
2007-08	1.6	5.1	171	222	129.9	20980
2008-09	4.2	9.1	176	228	129.7	21293
2009-10	-2.7	6.7	170	217	128.1	21424
2010-11	33.4	15.3	183	260	141.7	26441
2011-12	0.5	6.1	183	260	141.7	26584
XI Plan Average	**7.4**	**8.5**	**177**	**237**	**134.2**	**23344**

Source: Directorate of Economics and Statistics, GOI

Note:*land productivity = agricultural GSDP/ha of NSA**);** 10^{th} and 11^{th} plan value indicates average of five years

Agriculture is the main stay of livelihood for more than 70 per cent of the population in Rajasthan. However, share of agriculture to GSDP ranged from 20.7 per cent in 2002-03 to 29.1 per cent of the GSDP in 2003-04. On average agriculture and allied sectors contributed Rs. 3193168 lakh accounting for 24.7 per cent of the (Rs. 12950659 lakh) GSDP during the X Five Year Plan (FYP) in Rajasthan. Industries and

service sector shared 31 percent and 44.3 per cent respectively of the GSDP during the X FYP. The mean GSDP of Rajasthan for the XI FYP was Rs. 19266784 lakh per year. The contribution of agriculture and allied sectors to GSDP increased in absolute terms from Rs. 3193168 lakh during X FYP to Rs.4137972 lakh per year during XI FYP Plan but its share declined from 24.7 per cent of the GSDP in X FYP to 21.5 per cent of GSDP during XI Five Year Plan. On the contrary, shares of industry and service sector improved over the years. Average Gross State Domestic Product contributed by industries sector was Rs. 6076796 lakh per year as against Rs. 9052016 lakh shared by service sector in the XI FYP.

3.2 Allocation and Expenditure of RKVY Funds during 11th Plan

This section focuses on allocation and expenditure of RKVY funds on different projects across sectors. In fact, the allocations made and expenditure incurred indicates the priority accorded by the State Governments to these sectors so as to achieve targeted growth of 4 per cent or more during the XI FYP. It is expected that the allocation made and expenditure incurred would move in the same direction. However, it may not be true in all the cases and there may be deviations in allocation and actual expenditure due to one or the other reasons. Hence, our emphasis is more on actual expenditure incurred along with allocations made for the projects in agriculture and allied sectors. Analysis of allocation and actual expenditure would bring out whether the priorities set initially stood the ground or there was any diversion in the priorities. Based on the available information, it is observed that RKVY funds were concentrated on 7 major areas in the State of Rajasthan. The major projects identified are Micro/minor irrigation, Horticulture, Seed, Crop development, Dairy development, Extension and Fertilizers & INM. The projects under these broad area covered 82 per cent of the total expenditure and remaining 11 minor sectors utilized only 18 per cent of the total expenditure in the State (Table 3.2). Micro/minor irrigation, horticulture, seed and crop development shared 29.7 per cent, 12 per cent, 9.1 per cent,

and 8.5 per cent respectively of the total expenditure on RKVY during XI FYP in Rajasthan. Though Rs. 5 crores were allocated to information technology, accounting for 0.2 per cent of the total allocations under RKVY, nothing has been spent under this head. Further, projects under micro/minor irrigation incurred highest expenditure i.e., Rs. 61.4 crores per project whereas the integrated pest management sector incurred the lowest expenditure of Rs. 0.3 crores per project

Table 3.2: Sector-wise Expenditure under RKVY in Rajasthan during XI FYP

Sectors	No. of projects	% of project	Expenditure (Rs. crore)	% of expenditure	Expenditure per project (Rs. crore)
Micro/Minor Irrigation	12	5.2	736.8	29.7	61.4
Horticulture	31	13.4	298.4	12.0	9.6
Seed	18	7.8	226.1	9.1	12.6
Crop Development	13	5.6	210.6	8.5	16.2
Dairy Development	10	4.3	198.7	8.0	19.9
Extension	20	8.7	194.6	7.8	9.7
Fertilizers & INM	10	4.3	158.6	6.4	15.9
Animal Husbandry	29	12.6	127.8	5.2	4.4
Research	27	11.7	69.7	2.8	2.6
Cooperatives & Cooperation	8	3.5	61.5	2.5	7.7
Marketing & PHM	8	3.5	56.1	2.3	7.0
Agriculture Mechanization	9	3.9	37.6	1.5	4.2
Organic Farming / Bio Fertilizer	4	1.7	32.8	1.3	8.2
NRM	6	2.6	24.1	1.0	4.0
Fisheries	11	4.8	17.9	0.7	1.6
Innovative Programmes	10	4.3	17.7	0.7	1.8
Integrated Pest Management	5	2.2	5.6	0.2	1.1
IT	0	0.0	5.0	0.2	0.0
Total	**231**	**100.0**	**2479.4**	**100.0**	**10.7**

Source: www.rkvy.nic.in as on April, 2013.

The expenditure pattern by subsectors clearly reveals that the State emphasized on development of water resources and water management, sprinkler and drip irrigation under the head of micro irrigation to use available water efficiently. Horticulture is a sunrise sector and needs encouragement to diversify agriculture in the production of high value crops. Priority given to projects related to milk production, animal health, breed improvement, feed and fodder under dairy development and animal husbandry. Rajasthan has rightly prioritised the sector which would boost growth of agriculture sector in the State. However, some priority should have been given to drought proofing measures and more emphasis on natural resource management.

3.3 Trends in Budgetary Expenditure

The overall X Plan period growth rate in agriculture in Rajasthan averaged at 8.4 per cent partly because of very high 81.4 per cent annual growth achieved in the year 2003-04. During the XI Plan period the five year average growth rate per annum was recorded at 7.4 per cent that was less than the X Plan average (Table 1.1).

Table 3.3 shows that revenue expenditure have increased and capital expenditure have decreased in the XI Plan compared to X Plan and State total budget outlay increased by 14.6 per cent in the XI Plan over X Plan, however, percentage of agriculture share in the State budget declined from 16 per cent in the X Plan to 12.9 per cent during the XI Plan. Out of total expenditure in agriculture in the State, RKVY shared 5.8 per cent to the total expenditure. Although agriculture share in State total budget declined in the XI Plan and the agriculture expenditure as a share of State GSDP decreased from 7.6 per cent in the X Plan to 6.7 per cent in the XI Plan. This also suggests that GSDP from other sectors have increased faster than the GSDP from agriculture in the State from X to XI Plan. Nevertheless, RKVY assistance provided incentive to the State Government to increase the allocation for agriculture sector during the XI FYP to initiate new programmes or scheme and scale up the State

sponsored schemes which were restricted due to paucity of funds. Among the sub sector budgetary expenditure, a few sectors received significant increase in the allocation during XI FYP when compared to X FYP.

Table 3.3: Trend in Budgetary Expenditure on Agriculture and Allied Sector (at 2004-05 prices)

Year	Revenue expenditure (Rs crore)	Capital expenditure (Rs crore)	Total (Rs. Crore)	Total State budget (Rs crore)	% agri. Expenditure to State budget	% agri. Expenditure to agri GSDP	% of RKVY expenditure to agri. expenditure
2002-03	1318	412	1730	11909	14.5	8.3	
2003-04*	1477	1006	2483	14486	17.1	6.6	
2004-05	1546	1011	2556	15241	16.8	7.8	
2005-06	1704	1059	2763	16151	17.1	8.4	--
2006-07	1670	763	2434	17102	14.2	6.9	
10th Plan	**7715**	**4251**	**11966**	**74890**	**16.0**	**7.6**	
2007-08	1640	791	2432	19515	12.5	6.8	
2008-09	1847	740	2587	20683	12.5	6.9	
2009-10	1985	647	2632	21172	12.4	7.2	
2010-11	2564	573	3136	20857	15.0	6.5	**5.8**
2011-12*	2309	613	2922	24208	12.1	6.0	
11th Plan	**10344**	**3364**	**13708**	**106435**	**12.9**	**6.7**	
% change over 10th	**34.1**	**-20.9**	**14.6**	**42.1**			

Source: State Finances, RBI

Note: *Revised estimates, rest all accounts. Agriculture and allied activities includes irrigation and flood control. Budgetary expenditure is accounts only Developmental expenditure. Percentage of RKVY expenditure to agriculture expenditure=RKVY expenditure/agriculture expenditure*100, State budget may or may not include RKVY fund

3.4 Recent Trends in Input use

The net irrigated area in Rajasthan has increased from 56.6 lakh hectares in the X plan to 63.7 lakh hectares during XI plan. However, the gross irrigated area increased from 69.1 lakh hectares in X FYP to 79.9 lakh hectares during the XI FYP (Table 3.4). Fertilizer consumption per hectare of gross cropped area increased during XI FYP when compared with per hectare consumption of fertilizer during the X FYP.

Table 3.4: Trend in Inputs Use in Rajasthan

Years	Net irrigated Area (lakh ha)	Gross irrigated Area (lakh ha)	% net irrigated to net sown area	Irrigation intensity (%)	%gross irrigated to gross sown area	Fertilizer consumption (Kg/ha of GCA)
2002-03	43.7	52.7	40.5	120.6	39.9	28.5
2003-04	52.4	63.9	30.1	122.0	29.5	37.4
2004-05	58.8	70.9	35.5	120.6	33.7	31.3
2005-06	62.9	78.2	37.4	124.2	36.0	36.3
2006-07	65.0	79.6	38.7	122.5	37.0	43.7
X Plan Average	**56.6**	**69.1**	**36.4**	**122.0**	**35.2**	**35.4**
2007-08	64.4	80.9	37.7	125.5	36.4	44.4
2008-09	62.5	79.1	35.6	126.7	34.7	47.4
2009-10	58.5	73.1	34.5	124.9	33.6	48.3
2010-11	66.6	83.2	36.3	124.9	32.0	60.6
2011-12	66.6	83.2	36.3	124.9	32.0	62.4
XI Plan Average	**63.7**	**79.9**	**36.1**	**125.4**	**33.8**	**52.6**

Note: Column 4 = Net irrigated area /Net sown area*100; Column 6= Gross irrigated area /Gross sown area*100
Source: Directorate of Economics and Statistics, GOI

3.5 Recent Trends in Crop Production

Table 3.5: Average Annual Growth in Area, Production and Yield of Major Crops (%)

	X Plan			XI Plan		
Particulars	Area	Production	Yield	Area	Production	Yield
Rice	-3.0	16.9	13.1	5.1	10.4	5.7
Wheat	3.5	3.4	-0.3	3.2	6.3	3.2
Jowar	3.6	125.6	81.1	-2.3	58.4	63.7
Bajra	6.0	141.4	61.5	0.7	19.5	17.4
Maize	0.4	9.2	5.2	0.4	18.3	17.1
Small Millets	-1.4	171.3	162.1	0.3	43.7	50.5
Barley	6.4	6.4	0.0	6.4	15.7	3.9
Coarse Cereals	3.7	51.7	21.3	0.4	17.0	15.4
Total Cereals	3.3	13.2	3.2	1.1	7.6	6.4
Gram	17.1	21.5	11.1	15.3	31.4	5.9
Arhar/Tur	-2.9	38.1	28.4	1.1	24.1	19.8
Other Pulses	7.8	177.7	71.6	-13.2	144.4	117.2
Total Pulses	10.0	59.0	18.6	8.1	58.6	33.5
Total Food grains	4.2	15.7	3.6	2.8	9.4	5.7
Groundnut	5.7	16.1	13.5	7.2	21.9	-5.2
Sesamum	5.3	207.7	122.3	16.1	26.2	16.6
Rapeseed & Mustard	16.5	23.6	4.8	0.0	2.2	1.4
Linseed	7.1	26.9	3.8	33.9	86.6	11.6
Castor	26.9	54.7	6.7	-4.6	11.4	-10.4
Soyabean	1.7	28.1	22.5	7.6	14.7	7.0
Total Oilseeds	11.6	23.4	7.5	2.2	5.3	1.9
Cotton	-5.2	35.7	48.0	10.0	14.4	-10.6

Source: Directorate of Economics and Statistics, GOI (2012-13)

The growth rate in area, yield and production was also a mixed bundle where productivity only increased in wheat, maize and barley whereas it was declined in all others like coarse cereals, rice, jowar, bajra etc., (Table 3.5). Coarse cereals experienced deceleration in the growth of area and the productivity. Productivity of pulses increased despite deceleration in the growth of area and production under pulses. Area under cotton grew by 10 per cent per annum but production decelerated due to deceleration in the productivity during the XI FYP.

3.6 Recent Trends in Livestock Production

Average Annual growth in production of livestock products and fishery in Rajasthan presented in Table 1.6 indicates that there is significant increase in milk, meat, and fish production when compared across X and X FYP whereas there is decrease in egg production. The rate of growth is highest in milk and meat production followed by fish production.

Table 3.6: Average Annual Growth in Production of Livestock Products & Fishery (%)

Year	Milk	Meat	Egg	Fish
2002-03	0.4	11.7	5.6	79.4
2003-04	3.4	0.2	5.7	-44.1
2004-05	3.2	1.6	3.1	14.6
2005-06	4.8	6.3	1.4	12.9
2006-07	7.6	1.5	-5.7	20.0
10th plan	**3.9**	**4.3**	**2.0**	**16.5**
2007-08	1.7	15.9	1.5	15.8
2008-09	25.1	5.0	-4.2	-6.2
2009-10	3.3	9.5	4.1	11.7
2010-11	7.3	16.3	-0.2	4.8
2011-12	NA	NA	NA	69.7
11th plan*	**9.4**	**11.7**	**0.3**	**19.1**

Source: BAHS, www.Indiastat.com
Note: *For Milk, Meat and Egg 2011-12 data are not available

The next chapter presents the socio-economic profile of selected households in Rajasthan.

Chapter IV

Socio-Economic Profile of Selected Households

4.1 Socio Economic Profile of the Sample Households

Tables 4.1 presents the numbers of districts, taluks, villages and beneficiaries selected in Rajasthan. A total number of 7 districts and 14 taluks were selected to draw a sample of 358 beneficiary households from 87 villages. On average 4 beneficiary farmers were surveyed in each village as the RKVY activities were too sparse and the main target was to cover all the activities undertaken in the programme. In many cases especially related to infrastructural activities like establishment of poly or green house, shade net, micro/minor irrigation, organic unit and a dairy or poultry house, there was only one beneficiary in a village and to cover the same our team visited the village to cover that particular beneficiary household.

Table 4.1: Details of selected households in Rajasthan

Particulars	Number
No. of Districts Covered	07
No. of Taluks covered	14
No. of Villages Covered	87
No. of Beneficiaries Covered	358

Source: Field survey data.

The actual number of beneficiaries surveyed were 358 from 7 districts (minimum 50 from each district). However, some of the sample households benefited from more than one programme implemented under RKVY (391). The number of beneficiaries varied across sectors. At the aggregate, the highest numbers of beneficiary surveyed belonged to crop development followed by minor/ micro irrigation. The crop development and Micro/minor irrigation together represented more than 75 per cent of

the beneficiaries in sample (Table 4.2). Households benefitting from horticulture and animal husbandry programmes/schemes shared together about 21 per cent of the total beneficiaries. Agricultural mechanization, cooperatives and cooperation and fisheries together accounted for roughly 4 per cent of the total sample.

Table 4.2: Sector-wise details of selected households (broad classification)

Sl. No.	Sectors	% of total beneficiaries	% of total beneficiaries (Multiple entries)*
1	Crop Development	45.0	58.7
2	Micro/Minor Irrigation	30.2	34.6
3	Horticulture	12.3	14.0
4	Animal Husbandry	8.4	8.9
5	Agriculture Mechanization	3.6	3.6
6	Cooperatives and Cooperation	0.3	0.3
7	Fisheries	0.3	0.3

Note: Some Sample households benefited from more than one programme implemented under RKVY.
Source: Field survey data.

The socio-economic characteristics of the selected beneficiary sample households are presented in Tables 4.3 to 4.8. The sample consisted of 75 per cent males and 25 per cent of female respondents. It can be seen that average household size was 7.8 members per family. Looking at the age structure of the registered beneficiaries whose name the subsidy was given to the households, a majority of them (47.2 per cent) were in the middle age of 40 to 60 years, 18.2 per cent were in the old age group of above 60 years and the remaining 35 per cent were in the young age of less than 40 years (Table 4.3).

It is mandatory for any government sponsored rural development programmes to extend benefits to stake holders belonging to Schedule Castes and Scheduled Tribes and RKVY is noexception. The survey also collected details related to caste of beneficiaries to just have some approximate idea on the proportion of SC/STs covered under RKVY

programme. It is clear from the statistics in Table 4.4 that the share of SC and ST households among our selected sample was nearly 17 per cent while the OBC shared 51 per cent of the sample beneficiaries followed by 32 per cent respondents from other categories (Table 4.4).

Table 4.3: Age and Gender classification of sample beneficiaries

(Percentage to total sample)

Sr. No.	Category	Percent
1	Age Below 40 Years	34.6
2	Age Between 40 to 60 Years	47.2
3	Age Above 60 years	18.2
4	Total	100.0
5	Male	75.4
6	Female	24.6

Source: Field survey data.

Table 4.4: Classification of beneficiaries based on caste

(Percentage to total sample)

Sl.No.	Category	Per cent
1	SC	8.4
2	ST	8.9
3	OBC	50.8
4	Others	31.8
	Total	100.0

Source: Field survey data.

Data pertaining to educational standards of sample beneficiaries is shown in Table 4.5. Among the sample households, illiterate beneficiaries were 13 per cent. Around 19 per cent beneficiaries were literate up to primary standard, 21 per cent were up to middle and 25 per cent were educated up to secondary level. The beneficiaries who had studied up to higher secondary or +2 were 11 per cent and only around 11 per cent were graduate or above. Looking at the occupation details of the selected beneficiary households (Table 4.6), about 99 per cent of the beneficiaries had their main occupation as agriculture and allied activities. Only 0.6 per cent was engaged in self business mainly in shop or petty business and 0.8 per cent indicated service / regular job as their main occupation.

Table 4.5: Classifications of sample beneficiaries based on education status

(Percentage to total sample)

Sl.No.	Category	Per cent
1	Illiterate	12.6
2	Primary	19.4
3	Middle	20.9
4	Matriculate	24.9
5	Higher Secondary	11.1
6	Degree	10.3
7	Above Degree	0.9
	Total	100.0

Source: Field survey data.

Table 4.6: Occupation details of sample beneficiaries

Sl. No.	Category	Per cent
1	Average Family Size (Nos.)	7.8
2	Agriculture and allied Activities (%.)	98.6
3	Self business (%.)	0.6
4	Service (%.)	0.8
5	Others (%)	0.0
6	Total (%)	100.0
7	Average No. of members working in Agriculture (Nos.)	3.9

Source: Field survey data.

4.2 Land Holding Pattern of the Sample Households

RKVY programme is implemented mainly for agriculture and allied activities and thereby the beneficiaries were mostly cultivators. However, among our selected households some beneficiaries did not own any land and were cultivating land through tenancy, besides some beneficiaries were engaged in allied agriculture activities like animal husbandry. Table 2.7 shows that only 3.3 per cent beneficiaries did not own land. Per household owned area among the selected beneficiaries averaged at 10.6 acres while the operated area was 10.8 acres where the difference accounted for the land under tenancy and it is clear from the owned and operated area that the leased-in land exceeded the leased-out land.

Table 4.7: Land holding details of sample beneficiaries

Sl. No.	Category	Per cent
1	Beneficiaries owning Land (%)	96.7
2	Owned land per households (Acres)	10.6
3	Operational area (irrigated) per HH in Acres	8.6
4	Operational area (un-irrigated) per HH in Acres	2.2
5	Operational area (irrigated +un-irrigated) per HH in Acres	10.8
6	Cropping intensity	1.5

Source: Field survey data.

4.3 Sources of Irrigation for Sample Households

Around 80 per cent of the operated area was irrigated. The main source of irrigation in Rajasthan was tube well and more than 62 per cent of the beneficiary households used tube wells for irrigation and area irrigated accounted for 59.2 per cent of the total irrigated area on the sample farms. Canals ranked second most important source of irrigation both in terms of number of farmers using the source as well as area covered under irrigated. Open well and tank irrigation accounted for 8.1 and 0.8 per cent of the total irrigated area on sample farms (Table 4.8).

Table 4.8: Sources of Irrigation (percentage of area irrigated)

Sl. No.	Source of irrigation	% of Sample Households	% of Area irrigated
1	Open well	17.4	8.1
2	Tube well	62.1	59.2
3	Canal	18.6	30.8
4	Tank	0.6	0.8
5	Others	1.4	1.1

Source: Field survey data.

4.4 Land Holding Size distribution

In order to provide further insights, we divided our selected sample into four categories based on the operational area by the selected households. The households were divided into marginal farmers operating less than 2.5 acres of land, small farmers operating 2.5 to 5.0 acres, medium farmers operating 5.0 to 10.0 acres and large farmers operating above 10.0 acres of land. Table 2.9 provides details of beneficiary distribution by farm size holdings. Around 21 per cent holdings fell in the category of marginal farmers and 20 per cent in small farmers. Thus, less than half (41per cent) of beneficiary households operated less than 5 acres per household area and the proportion of area these households cultivated was only 10.6 per cent. On the other extreme, 36 per cent households operated more than 10 acres per household area and they shared 76 per cent to the total area. The households operating 5 to 10 acres of land accounted for 19 per cent share in the holdings and 13.5 per cent share in the cultivated area (Table 4.9).

Table 4.9: Distribution of beneficiaries by farm size holdings (Percentage)

Sl. No.	Category	% of Sample Households	% of Area
1	Without Land	3.6	0.0
2	Marginal	21.0	3.4
3	Small	19.8	7.2
4	Medium	19.3	13.5
5	Large	36.3	76.0
6	Total	100.0	100.0

Source: Field survey data.

4.5 Details on holding of Livestock and Farm Assets

Animal husbandry is an important allied activity in agriculture sector in Rajasthan. The livestock reared by our selected beneficiary households are categorized into cow, buffalo, sheep, goat, pig, poultry and drought animals. Table 4.10 provides details of livestock holdings by the selected

households. On average, households reared around two cows, two buffaloes and a young stock. The average value of all livestock was Rs. 1,02,768 per household. The value of cows averaged at Rs. 34,309 per household, buffaloes Rs. 56,110 per household and young stock valued at Rs. 6,805 per household.

Table 4.10: Livestock holding by sample households (per household)

Sl. No.	Particulars	No. of Animals	Value in Rs.
1	Cow	1.6	34039
2	Buffalo	1.6	56110
3	Young stock	1.4	6805
4	Male Drought	0.2	2256
5	Sheep	0.1	137
6	Goat	0.9	3418
7	Pig	0.0	0
8	Poultry	0.1	4
9	Others	0.0	0
10	Total	5.8	102768

Source: Field survey data.

Table 4.11: Farm assets holding by sample households (per household)

Sl. No.	Particulars	Numbers	Value in Rs.
1	Tractor	0.5	176561
2	Trolley / Trailer and other implements	0.9	50813
3	Weeder	0.0	1511
4	Manual / Power Sprayers	0.5	4470
5	Threshers	0.1	10690
6	Electrical Pump sets	0.5	24651
7	Diesel Pump sets	0.3	7916
8	Sprinkler sets / Drip Irrigation Equipments	3.0	20775
9	Cane Crusher / Agro-processing	0.0	391
10	Rice / flour mills	0.0	0
11	Fodder Choppers	0.3	2469
12	Bullock cart	0.1	865
13	Farm house (Cattle Shed)	0.5	23841
14	Others	0.1	6749
15	Total	6.6	331702

Source: Field survey data.

Table 4.11 presents farm asset holdings among our selected households. The aggregate value of farm assets was found almost Rs. 3,31,702 per household. The value of farm assets per household was that of tractor Rs. 1,76,561 followed by Trolley/ Trailer and other implements Rs.50,813, electric pump sets Rs. 24,651, farm house /cattle shed Rs. 23,841, sprinkler sets/ drip irrigation equipments Rs. 20,775, threshers Rs. 10,690 and so on. The other implements owned by the selected households included fodder chopper, manual/ power sprayers, diesel pump sets, weeders and other agro processing equipments like, flour mill and cane crusher etc.

4.6 Cropping Pattern of Selected households

The cropping pattern provides us profile of crops grown by the households. RKVY programme provided subsidy to the households through crop development, agricultural mechanization, organic farming, micro and minor irrigation and through many other activities which were not targeted for any particular crop. Thus, most of the crops grown by the farmers including that of food grains, oilseeds, commercial crops, horticulture, plantation and other miscellaneous crops were covered under the programme. The cropping pattern followed by the selected beneficiaries was not particularly affected by the RKVY programme. Looking at the cropping pattern followed by the selected households in Rajasthan, it is observed that around 29 per cent of the area is under cereals (including coarse cereals) and 10.8 per cent area under pulses. Sugarcane occupied around 20 per cent of the gross cropped area whereas,16 per cent under rapeseed & mustard, 6 per cent under soybean, around 2 per cent under fruits and little more than 3 per cent under vegetables (Table 4.12). Around 4 per cent of the cropped area was under cotton and 5 per cent was under fodder, spices, plantation and other crops.

Table 4.12: Cropping pattern among selected households

Sl. No.	Crop	% to gross cropped area
1	Paddy	0.2
2	Wheat	14.2
3	Jowar	1.4
4	Bajra	9.2
5	Maize	1.9
6	Minor Cereals	2.3
7	Gram	6.7
8	Other pulses	4.1
9	Groundnut	0.2
10	Soyabean	6.4
11	Rape & Mustard	15.7
12	Other Oilseeds	3.3
13	Cotton	4.4
14	Sugarcane	19.7
15	Fruits	2.3
16	Vegetables	2.9
17	Spices	2.5
18	Plantation	0.4
19	Fodder	2.1
	Total	100.0

Source: Field survey data.

4.7 Details on sources of Household income

The data pertaining to household income of sample beneficiaries was collected for the reference period July 2012 to June 2013. The information was collected under three categories viz., agricultural activities, agricultural allied activities and non-farm activities. The income through agricultural source included cultivation of food grains, oilseeds, various commercial crops, horticultural crops, plantation crops and miscellaneous other crops. Dairy, livestock rearing, fishery, poultry and related activities formed income from allied activities. Sources such as self-business, salary and pension from various government and private services, agricultural and non agricultural wages, etc., were considered as non-farm income. It is to be noted that agricultural income was calculated by subtracting the cost of production incurred by the households from gross returns. The gross returns were equal to output produced multiplied by the price received. Similarly, income for allied activities and non farm income was collected as net income.

At the aggregate, average household income for the selected beneficiaries was recorded slightly above Rs. 3.6 lakh per annum (Table 4.13). The agricultural activities contributed Rs.3.13 lakh which accounted for 86 per cent of the aggregate income. Allied activities contributed around Rs. 34 thousand per annum with a share of 9 per cent to the aggregate while non-farm income was most important source of household income and shared nearly Rs. 18 thousand per annum amounting to nearly 5 per cent share in the aggregate income. Thus, income from agriculture supplemented by allied activities was closer to their employment share.

Table 4.13: Details of household income from various sources

Rs per household)

Sr. No.	Sources of households income (2012-13)	Amount (Rs)	Percentage
1	Agriculture per HH (Rs.)	313472	85.9
2	Allied activities per HH (Rs.)	33723	9.2
3	Non-agri activities per HH (Rs.)	17756	4.9
4	Aggregate all sources	364950	100.0

Source: Field survey data.

Table 4.14 presents productivity in value terms as well cost of cultivation and net profitability per acre. It is apparent from the data that aggregate farm productivity in value terms was Rs.42,718 per acre. In comparison, cost of cultivation was Rs. 13,548 per acre. Per acre profitability was Rs. 9,179.

Table 4.14: Details of area, value of production and net returns (2012-13)

Sr. No.	Category	Share
1	Cultivated area Per HH (Acres)	10.8
2	Value of Production Per Acre (Rs)	42718
3	Cost of Cultivation Per Acre (Rs)	13548
4	Net income Per Acre (Rs)	29170

Source: Field survey data.

4.8 Level of Crop Yield

An analysis of productivity and profitability of individual crops grown by the selected beneficiaries was carried out. The crop productivity is presented mainly for the crops for which we had sufficient numbers of observations. It is to be noted here that the yield rate presented in Table 4.15 is the average yield without differentiating between different crop varieties grown. On average, productivity of paddy was recorded as 11.6 quintals per acre. Wheat productivity was 17.4 quintals per acre. Jowar yield rate was recorded only as 9.3 quintals, bajra8.9 quintals, maize 7.2 quintals, and cotton 10.8 quintals per acre. Average yield of major pulses i.e., tur and gram hovered around 7.7 quintals per acre. Average yield for sugarcane was around 7 quintals, rape & mustard 8.8 quintals, fruits 67.5 quintals and vegetables 58.4 per acre.

The net returns for the major crops grown by the selected beneficiary households are presented in Table 2.16. Among food grain crops, profitability was highest among pulses for gram and paddy among the cereals. In both these crops net profit that is worked out by subtracting cost of cultivation from the value of output was above Rs. 10,951 in the case of gram and around Rs. 10755 in the case of Paddy. The net profit in the case of coarse grains, namely jowar, bajra and maize was much lower that ranged between Rs. 16 thousand to Rs. 17 thousand. Profitability of oilseeds i.e., groundnut and soybeans was Rs. 4505and Rs.10853. Profitability of cotton, sugarcane was Rs. 25972 and Rs. 30451. Profitability from high value crops like vegetables and fruits as well spices ranged between Rs. 30 thousand to43 thousand. However, the cropping pattern indicated much lower area under these crops as these crops were associated with high risk and required much higher fixed capital investment. Moreover, there were many factors that played a role in determining farmers' decision togrow or not to grow such crops such as geographic location, availability of market, climate factor, rainfall pattern, and soil suitability and so on. Overall crop profitability averaged at Rs.19 thousand per acre of cropped area.

Table 4.15: Crop Yield among the selected households (Quintals per acre)

Sl. No.	Crop	Yield (Qtl/acre)
1	Paddy	11.6
2	Wheat	17.4
3	Jowar	9.3
4	Bajra	8.9
5	Maize	7.2
6	Ragi	0.0
7	Tur	1.5
8	Gram	6.2
9	Other pulses	3.8
10	Groundnut	2.8
11	Sunflower	0.0
12	Soyabean	6.2
13	Rape & Mustard	8.8
14	Other Oilseeds	9.7
15	Cotton	10.8
16	Jute & Mesta	0.0
17	Sugarcane (tons)	17.8
18	Fruits	67.5
19	Vegetables	58.4
20	Flowers	10.4
21	Spices	7.2
22	Plantation	0.0
23	Fodder	54.2
24	Forest species	0.0
25	Others	0.0

Source: Field survey data.

Table 4.16: Crop Profitability among the selected households (Rs per acre)

S. No	Crop	Profitability (Rs/acre)
1	Fruits	42400
2	Spices	34131
3	Vegetables	31519
4	Sugarcane	30451
5	Other Oilseeds	28396
6	Cotton	25972
7	Fodder	23078
8	Rape & Mustard	19099
9	Wheat	16050
10	Minor Cereals	15907
11	Gram	10951
12	Other pulses	10937
13	Soyabean	10853
14	Paddy	10755
15	Jowar	6795
16	Bajra	5083
17	Groundnut	4505
18	Maize	4395
	Overall Average	**19381**

Source: Field survey data.

4.9 Awareness about RKVY programme

Before closing the chapter we provide some details about households' awareness level about the RKVY programme and from where they obtained information about the programme. Table 4.17 provides details on percentage of household awareness about the RKVY programme. Although we surveyed only the beneficiary households under RKVY programme but we could observe that out of the selected beneficiaries around 49 per cent had some knowledge or they had heard about the RKVY programme before accessing the subsidy.

Table 4.17: Awareness about RKVY programme

Sl. No.	Source of awareness	% to total sample
1	% Beneficiaries who are aware about RKVY	48.9
2	News Paper	9.7
3	Agriculture department	69.7
4	SAU	4.0
5	KVK	0.0
6	KSK	0.6
7	Friends	5.7
8	Input suppliers	0.0
9	TV / Radio	0.6
10	Agri. Exhibitions	1.7
11	ZP / TP /GP	2.9
12	Other Sources	5.1
13	Know about RKVY, but source not mentioned	0.0
	Total	100.0

Source: Field survey data.

Majority of the beneficiaries even after availing the subsidy were not aware that they have obtained subsidy under the RKVY programme. We approached those households only on the basis of having the list of RKVY beneficiaries otherwise it would have been difficult to collect information from them as they were not able to identify themselves as beneficiary of RKVY programme due to multiplicity of programmes being implemented in agriculture sector having subsidy element. In most of the cases, households accessed the concerned departments that provided input or subsidy under RKVY programme through the agriculture assistant/ someone else.

The next chapter presents the interventions in major sectors and its impact.

CHAPTER V

RKVY Interventions in the Major Sectors & their Impact

5.1 Interventions under Mechanization

Agricultural mechanization is included in most of the programmes/ schemes being implemented for agriculture and allied sectors. Table 5.1 presents details of interventions carried out for making provision of mechanical implements to the farmers under RKVY programme. Among our selected households, around 4 per cent availed the benefits under the broad category of mechanisation. The intervention cost for mechanisation per household on average was around Rs. 13 thousand out of which subsidy provision under the RKVY programme was 42.8 per cent of the total cost amounting to Rs. 5,462 per household. Looking at the kind of implements for which subsidy provision was made: the highest numbers of households invested in ploughs, in which subsidy was given to around 2.2 per cent of the selected households. Among other implements, 1.1 per cent of the households invested in seed drill. Similarly 0.3 per cent of the beneficiary households purchased harrow.

The highest amount of subsidy was given for seed drill, which was Rs. 12,678. Harrow received subsidy amount of Rs. 13 thousand per household. The ploughs bought under RKVY programme received Rs. 974 subsidy. Looking at the percentage of subsidy to total investment by the households, the subsidy percentage was highest in the case of ploughs (50 per cent), harrow (48 per cent) and seed drill (41 per cent). The overall subsidy provided under the RKVY programme accounts for 43 per cent of the total investment made by the beneficiary households. In most of the cases, the equipments bought in the subsidy programmes under RKVY were found in the custody of the households and they were very well in working conditions and were being used by the households.

Table 5.1: Interventions made under Agricultural Mechanization - Implement details

Name of the Implement	% of Beneficiaries availed*	Average Cost (Rs. Per household)	Average Subsidy (Rs. Per household)	Subsidy as a per cent of cost	% of equipment in working condition
Ploughs	2.2	1959	974	49.7	100.0
Harrow	0.3	26000	12500	48.1	100.0
Seed drill	1.1	31075	12678	40.8	100.0
Total	3.6	12767	5462	42.8	100.0

Note: *% of beneficiaries to total may not tally with figures presented earlier due to multiple entries within sector.
Source: Field survey data.

RKVY programme provides incentive to the farmers to adopt best practices in agriculture in order to raise their productivity and to achieve higher growth in agricultural sector. Under the programme of mechanisation, various state departments provided subsidy to the farmers to adopt mechanised farming. In a bid to find out the usage of the machines purchased under the subsidy programme, we collected information from the beneficiary households for how manydays the machines purchased under subsidy have been used either for own farm or given on customary hiring basis (Table 5.2).

Table 5.2: Usage of Farm Equipment procured under Agricultural Mechanisation

Sl No	Name of the implements	No. of days used per implement per annum	Area covered (acres per implement)	Imputed value own use in (Rs. per implement per annum)	Rented value (Rs. per implement per annum)	Percentage increase in productivity (Modal Value)
1	Ploughs	14.2	2.7	331	0	No change
2	Harrow	56.3	40.0	600	0	10 % to 20 %
3	Seed drill	20.6	21.0	200	12500	No change
	Total	19.4	11.2	312	3846	No change

Source: Field survey data.

On average, harrow was used for around 56 days (8 hours per day) in a year's period and it cultivated around 40 acres of area during the reference year. Imputed value of own use of the harrow was worked out at Rs. 600 per annum. Seed drills were used for around 21 days. The average area covered was around 21 acres with an imputed cost of Rs. 200. Seed drills were hired out to others on custom hiring basis and earned about Rs. 12,500 income. The ploughs were used on average for 14 days on own farms and imputed value was Rs. 331. Harrows as well as ploughs were not used for custom hiring purpose. Majority of the households indicated up to 20 per cent increase in their productivity after buying the harrow.

Table 5.3: Benefits derived from Agricultural Mechanization (% of hh)

Name of the Implement	Solved labour problems	Enabled timely operations	Saved water	Helped in controlling weed	Helped in good plant growth	Reduced Drudgery	Reduced cost of Cultivation	Increased Cropping intensity
Ploughs	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
Seed drill	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Field survey data.

The farmers were asked that how these implements have helped them in their agricultural operations. All the selected farmers pointed out that the seed drill have solved labour problem. A majority of selected farmers pointed out that implement like ploughs have not solved labour problems. Nevertheless, all the farm machinery purchased by the beneficiary farmers enabled the farmers in completing their sowing, harvesting and transportation operations well in time. To summarise, a majority of the farmers indicated that the investment in mechanical implements helped them in timely completion of timely sowing and harvesting operations and solved labour problems (Table 5.3). None of the farmers admitted that mechanization helped them for water saving,

controlling weeds, good plant growth, reduce cost of cultivation, reduce drudgery or increasing the cropping intensity.

5.2 Interventions under Crop Development

Crop development mainly addresses augmentation of agricultural production in a sustainable way. The main focus of crop development under RKVY programme has been towards increasing productivity and growth through efficient use of inputs and better management of natural resources viz., improving soil health by balanced use of micro and major nutrients, use of bio-fertilizer and bio agents, adoption of high yielding variety seeds and adoption of area based incentive approach. Table 5.4 presents details of interventions carried out and benefits received under crop development sector by the selected households. Broadly, five types of benefits were availed by the households under RKVY crop development programme, namely good quality seeds/planting materials, fertilizers and plant protection materials, micro nutrients, bio-fertilizers and bio-control agents, etc.

Table 5.4: Interventions made under Crop Development

Sl No	Benefits	% of beneficiaries*	Area covered per HH in acres	Quantity supplied per HH in Kgs.	Actual cost (Rs. Per HH)	Subsidy (Rs. Per HH)	Subsidy as a per cent of actual cost	% increase in productivity
1	Seeds / planting materials	34.4	0.9	8.1	1371	1362	99.4	10 % to 20 %
2	Fertilizers and plant protection	2.5	0.0	10.0	104	104	100.0	No Response
3	Micro nutrients	12.9	0.9	10.7	376	209	55.6	10 % to 20 %
4	Bio-fertilizers and bio-control agents	8.9	0.2	0.2	117	117	100.0	Less than 10 %
	Total	58.7	0.8	7.6	908	866	95.4	10 % to 20 %

Note: *% of beneficiaries to total may not tally with figures presented earlier due to multiple entries within sector as well as merging of different groups within sector.

Source: Field survey data.

Among selected households, about 59 per cent availed benefits under the broad category of crop development. This indicates that every second selected household had availed some subsidy under crop development. Although programme intervention made under crop development was much smaller (8.5 per cent) of the total expenditure on RKVY in Rajasthan compared to other interventions such as micro / minor irrigation (28 per cent), horticulture (12 per cent), seed (9 per cent), etc. But the scale in terms of coverage of beneficiaries of the intervention was much larger. The amount of investment by the selected households in the case of other interventions much higher for example beneficiaries of farm mechanization received on average a subsidy of Rs. 5,462 as against roughly Rs. 900 from crop development intervention. The subsidy provided to the households accounted for 95 per cent of the total investment. It is pertinent to note that whereas in the case of mechanisation, households created new assets in order to avail the subsidy benefit but in crop development subsidy was given for the components like seed, fertiliser, bio-fertiliser and micro nutrients most of which were used by the households for growing their usual crops.

Among different components, the highest numbers of households (around 34 per cent) obtained subsidy for seeds and planting materials. The beneficiary households spent Rs. 1371 on seeds and planting material for which they received subsidy amount of Rs. 1362 that was around 99 per cent of the total cost incurred. In many cases households were given the planting material in place of subsidy in monetary terms. On average, 8 kg of seed or planting material was supplied per beneficiary household and 0.9 acres per household area was covered by the subsidised seed and planting material. Fertiliser/plant protection materials and micronutrients were provided to around 2.5 and 13 per cent of the selected households, respectively. Bio-fertilisers and bio-control agents were given to 9 per cent of the beneficiary farmers. Around13 per cent of the beneficiaries received micro-nutrient kits which covered 0.9 acres of area. The total investment made by the farmers was Rs. 376 of which Rs. 209 formed the subsidy

component. Bio fertilizer and bio control agents were provided free of cost (100 per cent subsidy) amounting to Rs. 117 per beneficiary farmer. Similarly, 2.5 per cent of the farmers benefited from fertilisers and plant protection and received all the material/ inputs free of cost accounting for Rs. 104 per head.

About farmers' reaction to the impact of use of better quality seeds, micro nutrients, majority of the beneficiary households reported around 10 to 20 percent enhancement in their productivity as a result of use of these inputs during the reference period (Table 5.5). Surprisingly, farmers were non-committal about the contribution of bio-fertilizers and bio-agent in the enhancement of yield levels.

Thus, the main purpose of crop development programme was to provide better quality seeds to the farmers to increase their productivity and improve and strengthen the soil quality to make the agriculture sustainable. The investment requirement from farmers for undertaking activities of crop development was small and the nature of investment was not incremental. It also involved subsidy amount on the part of the State Government, thereby State Government under took this activity on a large scale to register and showcasing implementation of RKVY programme in the State. Last but not the least, provision of inputs or subsidy under crop development in Rajasthan included a long list of crops as well as activities.

Impact of crop development activities on crop productivity based on farmers' opinion has been presented in Table 5.5. Around 22 per cent of the farmers indicated less than 10 percent, another 26 per cent indicated 10 to 20 per cent and around 10 per cent indicated 20 to 30 per cent increase in their productivity with the use of subsidised seeds/planting materials, fertilizers, micronutrients and other incentives. Negligible number of the total beneficiary households (8.1 per cent) indicated more than 30 per cent increase in productivity due to crop development intervention. On the opposite, around 11 percent households indicated that these interventions did not make any significant difference in their production or productivity level. About 19 per cent of the

households who received seed and planting material opined that there was no change in the productivity whereas, 25 per cent of the farmers who benefited through supply of seed and planting material indicated less than 10 percent increase in productivity. Only 2 per cent of the households who received micro nutrients opined that there was no change in the productivity whereas, 39 per cent of the farmers who benefited through supply of seed and planting material indicated 10 to 20 per cent increase in productivity.

Table 5.5: Impact of Crop Development on Crop Productivity

Sl No	Benefits	No change	Less than 10%	10% to 20%	20% to 30%	30% to 50%	Above 50%	Not responded
1	Seeds / planting materials	18.7	25.2	28.5	12.2	8.1	4.1	3.3
2	Fertilizers and plant protection	0.0	0.0	0.0	0.0	0.0	0.0	100.0
3	Micro nutrients	2.2	23.9	39.1	10.9	2.2	2.2	19.6
4	Bio-fertilizers and bio-control agents	0.0	12.5	3.1	0.0	0.0	0.0	84.4
5	Total	11.4	21.9	25.7	9.5	5.2	2.9	23.3

Source: Field survey data.

5.3. Interventions under Horticulture

Horticulture sector remains one of the thrust areas of RKVY programme. According to our field observations, the subsidy scheme under horticulture had two components, first creating infrastructure for horticultural crops like field nursery, shed net, poly house, green house etc., and second like crop development providing planting material, fertiliser and other nutrients to encourage farmers to grow more horticultural crops. Table 5.6 presents details of interventions carried out under horticulture sector facilitating farmers to invest in infrastructure for the horticultural crops. In Rajasthan around 9 per cent of beneficiary households made

investment under horticulture of which 2.2 per cent of the households invested in construction of storage bins, 0.3 per cent each of the households invested in construction of green house and ripening chambers and other 5 per cent benefited from other interventions. The amount of investment for green house per beneficiary household was Rs.6 lakh, plastic crates Rs. 7,485, storage bins Rs. 1,050 and where as it was Rs. 5.7 lakh for other intervention in horticultural infrastructure development. The subsidy component was 67 per cent of the investment for green house, 60 per cent for plastic crates and 48 per cent for storage bins as against 56 per cent subsidy for other investments. The overall subsidy accounted for 57 per cent of the investment. Unfortunately, almost all the households reported no improvement in productivity but it helped in decreasing the cost of marketing as well as decrease in post-harvest losses by around 10 to 20 per cent on average.

Table 5.6: Interventions made under Horticulture Infrastructure

Benefits	% of Beneficiaries	Actual cost per HH (Rs.)	Subsidy per HH (Rs.)	Subsidy as a per cent of actual cost	Increase in productivity	Decrease in cost	increase in income	Decrease in post-harvest losses
Green house	0.3	600000	400000	66.7	No Response	No Response	No Response	No Response
Plastic crates	0.8	7485	4500	60.1	No change	Less than 10 %	Less than 10 %	Less than 10 %
Storage bins	2.2	1050	500	47.6	No change	10 % to 20 %	Less than 10 %	10 % to 20 %
Ripening chamber	0.3	0	0	0.0	No response	No response	No response	No Response
Others	5.0	570000	319200	56.0	No change	10 % to 20 %	No change	20 % to 30 %
Total	8.7	351318	198810	56.6	No change	10 % to 20 %	Less than 10 %	Less than 10 %

Note: *% of beneficiaries to total may not tally with figures presented earlier due to multiple entries within sector as well as bifurcation of sector in different groups.

Source: Field survey data.

To cross check the impact of interventions, farmers' response was sought in terms of percentage increase in the productivity of crops and the responses has been presented in Table5.7. It can be seen from the table that majority (55 per cent) of the farmers indicated no change in the productivity of horticultural crops. Around 29 per cent of the beneficiary farmers reported decrease in cost and increase in income. Around 48 per cent, 16 per cent, 13 per cent and 19 per cent of the beneficiary farmers reported 10 to 20 per cent decrease in cost, increase in the productivity, increase in income and decrease in post-harvest losses respectively. Similarly, 26 per cent and 23 per cent of the farmers reported 20 to 30 per cent increase in the income and decrease in post-harvest losses respectively. Around 3 per cent of the farmers reported above 50 per cent increase in productivity. There was no significant increase in productivity as a result of intervention as no significant efforts were made for developing horticulture under crop development in the RKVY programme in the State. As per information provided by the horticultural Department, Government of Rajasthan, the horticulture subsidy was provided mainly under the NHM programme for the development of horticulture infrastructure viz., green house, poly house etc., thereby RKVY intervention was used mainly for mechanisation and crop development.

Table 5.7: Overall Impact of Horticultural Infrastructure Intervention

Sl No	Impact of intervention	No change	Less than 10%	10% to 20%	20% to 30%	30% to 50%	Above 50%	Not answered
1	Increase in Productivity	54.8	9.7	16.1	6.5	3.2	3.2	6.5
2	Decrease in cost	6.5	29.0	48.4	9.7	0.0	0.0	6.5
3	Increase in income	22.6	29.0	12.9	25.8	3.2	0.0	6.5
4	Decrease in post-harvest losses	19.4	22.6	19.4	22.6	0.0	9.7	6.5

Source: Field survey data.

In addition to providing support for green house, plastic crates, storage bins and other infrastructure facilities, Government of Rajasthan also provided subsidy to the farmers for the development of horticultural crops like seeds and planting materials. It is seen in Table 5.8 that around 5.3 per cent households' availed benefits for horticulture crop development mainly for seeds and planting materials. Although significant numbers of households were provided subsidy for seed and planting material, however, the size of intervention itself was less than Rs. 500 and subsidy provision was 100 per cent of that amount.

Table 5.8: Interventions made under Horticulture Crop Development

Sl No	Benefits received	% of Benefici-Aries*	Area covered per HH in acres	Quantity supplied per HH in Kgs.	Actual cost (Rs. Per HH)	Subsidy as a per cent of actual cost	% increase in product-ivity	% Decrease in cost
1	Seeds / planting	5.3	5.7	2.2	456	100.0	No change	No change
	Total	5.3	5.7	2.2	456	100.0	No change	No change

Note: *% of beneficiaries to total may not tally with figures presented earlier due to multiple entries within sector as well as bifurcation of sector in different groups.

Source: Field survey data.

Among the horticulture crop development beneficiaries, around 76 of the beneficiaries responded to the questions related to improvement in crop yields. As stated earlier, Majority of the farmers benefiting from infrastructure projects in horticulture had indicated no change in the productivity of horticultural crops, income or harvest losses. On the contrary, only 11 per cent of the beneficiaries have not experienced any change in the productivity of horticultural crops due to horticulture crop development RKVY interventions (Table 5.9). About 22 per cent of the households indicated that they realised less than 10 per cent increase in the productivity.

About 25 per cent of the beneficiaries of seed and planting material, 24 per cent of the beneficiaries of micro nutrients and 13 per cent of the beneficiaries of bio fertilizers and bio control agents reported less than 10 per cent improvement in production of horticultural crops due to the concerned intervention. Nearly, 29 per cent of the household those received seed and planting material reported 10 to 20 per cent increase in the crop output and 8.1 per cent experienced more than 30 per cent improvement in the production.

Table 5.9: Overall Impact of Horticultural Crop Development Intervention

S No	Benefits received	% beneficiary reported increase in productivity						
		No change	Less than 10%	10% to 20%	20% to 30%	30% to 50%	Above 50%	Availed but not responded
1	Seeds / planting materials	18.7	25.2	28.5	12.2	8.1	4.1	3.3
2	Fertilizers and plant protection	0.0	0.0	0.0	0.0	0.0	0.0	100.0
3	Micro nutrients	2.2	23.9	39.1	10.9	2.2	2.2	19.6
4	Bio-fertilizers and bio-control agents	0.0	12.5	3.1	0.0	0.0	0.0	84.4
5	Total	11.4	21.9	25.7	9.5	5.2	2.9	23.3

Source: Field survey data.

5.4 Interventions under Micro and Minor Irrigation

Development of micro/ minor irrigation was a flag ship or major programme under RKVY in Rajasthan. More than one third (29.7 per cent) of the total expenditure of RKVY was incurred on micro and minor irrigation. Tables 5.10 and 5.11 illustrate the details of interventions carried out for provision of better irrigation facilities to the farmers under RKVY

programme. Among our selected households, roughly one third of the households availed the benefit under the broad category of micro/minor irrigation. Government of Rajasthan provided subsidy to the farmers for constructing farm ponds which led to 36 per cent increase in irrigated area per beneficiary household. Around 8 per cent of the households constructed farm ponds. Farm pond helps to increase irrigated area of the beneficiary households. The average cost of intervention was Rs. 2,55,282 and subsidy accounted for 54.3 per cent of the investment. The beneficiary of pump sets reported 10 to 20 per cent increase in the productivity, less than 10 per cent reduction in cost and it led to less than 10 per cent rise in the household income.

Table 5.10: Interventions made under Micro/Minor Irrigation

Sl No	Details of intervention	% of beneficiaries*	Average irrigated area PER BENEFIC IARY HH in acres	Average increase in % irrigated area Per Beneficiary HH	Average Cost per HH in Rs	Subsidy as a percent of cost	% Increase in productivity	% decrease in cost	% increase in income
1	Farm pond construction	8.1	5.9	36.1	255282	54.3	10 % to 20 %	Less than 10 %	Less than 10 %
2	Others (drip, sprinkler, pumpset, drilling borewell, etc).	26.3	6.2	51.7	295701	50.4	10 % to 20 %	Less than 10 %	Less than 10 %

Note: *% of beneficiaries to total may not tally with figures presented earlier due to multiple entries within sector as well as bifurcation of sector in different groups.

Source: Field survey data.

Around 26 per cent of the beneficiary received benefits from other programmes implemented under the head of micro/ minor irrigation. The investment cost was around Rs. 3 lakh with a subsidy element of 50 per cent. Irrigated area increased by 52 per cent on the beneficiary farms. The beneficiary households reported 10 to 20 per cent rise in the productivity, less than 10 per cent reduction in cost and household income. The overall investment in micro / minor irrigation was Rs. 2.9 lakh with 51 per cent subsidy. The average productivity increased by 10 to 20 per cent, reduced

cost up to 10 per cent and resulted in less than 10 per cent increase in the income of the households.

Table 5.11: Overall Impact of Micro/Minor Irrigation

Sl No	Details of intervention	No change	Less than 10%	10% to 20%	20% to 30%	30% to 50%	Above 50%
1	Increase in Productivity	4.1	24.4	28.5	19.5	13.0	10.6
2	Decrease in cost	17.1	40.7	19.5	15.5	2.4	4.9
3	Increase in income	8.1	26.8	26.0	17.9	8.9	7.3
4	Increase in irrigated area	2.4	17.1	0.0	10.6	38.2	31.7

Source: Field survey data.

5.5 Intervention under Animal Husbandry and Dairy

Animal husbandry was the most important programme implemented under RKVY in Rajasthan. Under animal husbandry sector there were multiple interventions, e.g., the households were provided subsidy for buying local or high yielding breed of milch and other animals like cow, buffalo, sheep, goat, pig and other poultry animals. A large amount of subsidy was provided to the farmers for constructing cattle shed and all animals bought under subsidy scheme were insured for life and there was also subsidy provision for the insurance premium as well as insurance chip. Subsidy was also given for other items such as fodder chopper and milking instruments. Most of the interventions were made by either Department of Veterinary and Animal Husbandry or Dairy Department.

The RKVY programme targeted to modernise animal husbandry by complementing farmers with financial help to buy better yielding breed of animals, adopting better varieties of feed and fodder and construction of cattle shed that can improve their milk and meat quantity and quality. It is evident from Table 5.12 that around 9 per cent selected households availed

subsidy benefits under animal husbandry. As mentioned above the main emphasis of animal husbandry programme was to increase the yield of milk by incentivizing farmers to buy better breed of the milch animals. About 3 per cent of the households also opted for cattle insurance which was subsidised to the extent of 45 per cent. Around 3.1 per cent each of the households invested in fodder chopper and other components like de-worming of milch animals, mineral kits, milk cans etc.

Table 5.12: Interventions made under Animal Husbandry and Dairy

S l No	item	% of beneficiaries* availed	Average No. per HH	Average cost per HH (Rs.)	Average subsidy per HH (Rs.)	Subsidy as a percent of cost	Increase in productivity (Modal Value)	Fall in labour cost (Modal value)	Better cattle health (modal value)
1	Insurance of Cattle	2.6	1.2	370	165	44.6	Less than 10 %	No response	No response
2	Fodder Chopper	3.1	1.0	6600	1851	28.1	Less than 10 %	Less than 10 %	Less than 10 %
3	Others	4.1	1.2	406	406	100.0	No change	No change	No change
	Total	9.7	1.1	2524	828	32.8	Less than 10 %	No change	No change

Note: *% of beneficiaries to total may not tally with figures presented earlier due to multiple entries within sector as well as bifurcation of sector in different groups.

Source: Field survey data.

Around 3 per cent of the beneficiary households invested Rs. 370 on cattle insurance per household and received a subsidy of Rs. 165. Further, beneficiary households invested Rs.6,600 on fodder chopper and Rs. 406 on "other" items like de-worming of milch animals, provision of mineral kits, milk cans, etc. and received a subsidy of Rs. 1851 and Rs. 406 respectively (Table 5.12). The most of the other items were fully subsidised and were given free of costs to the households having milch animals. The aggregate per household investment in animal husbandry stood at Rs. 2,524 and beneficiary households received subsidy amount of Rs. 828 that was around 33 per cent of the total investment. The productivity increased and labour cost reduced up to 10 per cent as a result of

intervention under animal husbandry. The intervention in cattle shed, de-worming of milch animals, supply of minerals and other medicines improves animal health that ultimately leads to longer life for the animal, more productive period, better productivity in milk and outcome of all this is increased household profitability from animal husbandry.

Table 5.13 presents frequency table about impact of livestock intervention on the household income among the beneficiary households. Out of around 18 per cent selected households who participated in animal husbandry, around 13 per cent reported having milk production during the reference year. Around 8 per cent of such households indicated around 20 per cent increase in their household income after intervention. Another 38 per cent indicated around 10 per cent increase in their income as a result of intervention while 6 per cent indicated 20 to 30 per cent increase in household income due to higher milk production. Among the households who produced milk more than 4 per cent indulged in selling milk products. Among those who sold milk products, around 13 per cent of them indicated up to 20 per cent increase in their household income as a result of intervention under RKVY. There was also additional household income due to production and sale of manure prepared from animal waste.

Table 5.13: Impact of Animal Husbandry Components on Household Income (% households)

Sl No	Name of the item	% of beneficiaries who are deriving income	No change	Less than 10%	10% to 20%	20% to 30%	Above 30%	Benefited but not responded
1	Milk	13.4	18.8	37.5	8.3	6.3	2.1	27.1
2	Milk Products	4.2	20.0	0.0	13.3	0.0	0.0	66.7
3	Manure	0.8	0.0	0.0	0.0	0.0	0.0	100.0
	Total	18.4	18.2	27.3	9.1	4.6	1.5	39.4

Source: Field survey data.

Apart from financial assistance for the above mentioned interventions, farmers were also given feed supplements like protein, calcium to overcome the nutritional deficiency in animals along with vaccine and tablets to boost animal health (Table 5.14). Overall only 3.4 per cent of the sample farmers received feed supplements with average cost of Rs. 185 and share of subsidy was 100 per cent.

Table 5.14: Details of Feed Supplement availed by the Beneficiaries under Animal Husbandry

Sl No	Name of the item	%. of beneficiaries	Quantity per HH in Kgs.	Total cost per household in Rs.	Subsidy per HH in Rs.	Percent subsidy to total cost
1	Calcium	1.1	1.1	500	500	100.0
2	Protein	0.3	0.1	0	0	0.0
3	Vaccine	0.8	2.7	0	0	0.0
4	De-worming tablets	0.8	16.7	74	74	100.0
5	Others	0.3	1.0	0	0	0.0
	Total	3.4	5.3	185	185	100.0

Source: Field survey data.

The next chapter presents the interventions in minor sectors and its impact.

CHAPTER VI

RKVY Interventions in the Minor Sectors & their Impact

6.1 Introduction:

We have classified mainly six sectors into minor sectors based on the size of intervention under these sectors viz., Fertilizer and integrated nutrition management, NRM including watershed development, integrated pest management, sericulture and cooperatives/ cooperation. Out of these minor sectors, in our primary survey in the State, we obtained representation of only a few sectors namely, watershed development, soil testing, sericulture and cooperatives and cooperation. In the following sections we discuss the intervention, subsidy and impact evaluation of these interventions.

6.2 Intervention under Watershed Development

Due to scarcity of surface water, Agriculture production to a great extent in Rajasthan is critically dependent on the vagaries of monsoon and ground water resources. Only one third of the cultivated area is irrigated of which one third is canal irrigated and rest is dependent on ground water sources such as wells, tube wells, etc. Thus over 90% of State's cultivated area is dependent on rainfall. Proportion of irrigated area is low and most of the agriculture is rain- fed. Considering the erratic pattern of monsoon and scanty rains, Rajasthan Government adopted watershed development programmes as a drought proofing measure. Watershed development is a holistic approach to improve and develop the economic and natural resource base of dry and semiarid regions. Six projects were implemented under the head of NRM and Rs. 24.1 crores were spent on the execution of these projects in Rajasthan. The programmes have primarily stressed upon improvement of wasteland, runoff reduction, water conservation and protective irrigation mechanism in all areas including desert prone areas

and drought prone areas. Watershed programme is in fact a dynamic strategy for minimizing risks in rain- fed agriculture through increasing production and stabilizing income of farmers. Around 35 per cent beneficiary households in Rajasthan benefited under watershed development programme and created irrigation / water storage facilities which includes construction of farm ponds, digging of open wells (5 per cent), diggies (22.6 per cent), construction of community tanks and restoration/ renovation of small tanks (1.1 per cent each), pipes/ pre casted distribution system (4.5 per cent) and desilting of ponds/ tanks (0.3 per cent). The intervention was carried out by the Soil Conservation Department. It can be seen from Table 6.1 that the intervention cost per household for farm ponds/ digging open well and construction of community tanks was around Rs. 1.1 lakh each per beneficiary household, Rs.3.9 lakh per beneficiary households for diggies, Rs. 2 lakh for restoration/ renovation of small tanks, Rs. 1 lakh for desilting of ponds/ tanks and Rs. 56 thousand per beneficiary households for pipes/ precasted distribution system.

The subsidy given was averaged at Rs. 2.9 lakh per beneficiary household that was 49 per cent of the intervention cost. Expansion of cropped area, augmentation of productivity per unit of area, reduction in cost of cultivation and increased farm incomes are the main indicators that ascertain impact of watershed development interventions in the area as a result of the intervention. Results demonstrate that beneficiaries noticed above 50 per cent increase in crop area as well as less than 10 per cent reduction in the cost. Farm ponds and open wells facilitated 10 to 20 per cent increase in the productivity as against and 20 to 30per cent increase by the community tanks and desilting of ponds. The same was true in terms of incremental income added due to these interventions.

Table 6.1: Details of Interventions undertaken under Watershed Development

Sl No	Interventions	% of beneficiaries	Av. Cost in Rs.	Cost per HH in Rs.	Subsidy as a percent of cost	% Increase in crop area	% Increase in productivity	% decrease in cost
1	Farm ponds / Dug wells	5.0	107226	42.2	20 % to 30 %	10 % to 20 %	Less than 10 %	Less than 10 %
2	Diggies	22.6	389827	49.5	Above 50 %	10 % to 20 %	Less than 10 %	10 % to 20 %
3	Community tanks	1.1	108750	74.7	20 % to 30 %	20 % to 30 %	No change	Less than 10 %
4	Restoration / renovation of small tanks	1.1	182500	27.4	30 % to 50 %	No change	Less than 10 %	No change
5	Pipes/ Precasted distribution system	4.5	56393	33.4	No change	10 % to 20 %	10 % to 20 %	10 % to 20 %
6	Desilting of ponds / tanks	0.3	100000	75.0	20 % to 30 %	20 % to 30 %	20 % to 30 %	30 % to 50 %
	Total	34.6	287688	48.6	Above 50 %	10 % to 20 %	Less than 10 %	10 % to 20 %

Note: *% of beneficiaries to total may not tally with figures presented earlier due to multiple entries within sector as well as bifurcation of sector in different groups.
Source: Field survey data.

6.3 Intervention under Fisheries

The subsidy was given for fixed capital investment and recurring expenses under the fishery sector. It was observed during the primary field survey that the major items of capital investments were: (i) construction of new ponds or tanks, (ii) repair and renovation of existing ponds or tanks, (iii) purchase of equipments like nets, gears, ice boxes and so on and (iv) purchase of small pedal boats in few cases. Purchase of fingerlings, manure and feed concentrates were the major recurring expenses. Table 6.2 presents details of interventions carried out and benefits received under fishery sector by the selected households. Only two types of benefits were availed by the households under RKVY fishery programme, namely

Fingerling / seed and Nets / gears /crafts and others. Among our selected households, around 1 per cent availed the benefits under the category of fishery. The intervention cost for fishery per household on average was around Rs. 60 thousand. Around 0.3 per cent each of the beneficiary households obtained benefits under fingerling / seed and nets / gears /crafts and others. It can be seen from the table that the intervention cost per beneficiary household for fingerling/ seed was Rs. 75 thousand and Rs. 45 thousand per beneficiary household for nets / gears /crafts and others.

Table 6.2: Details of Interventions under Fishery Development

Benefits	% of beneficiaries	Average cost (Rs.)
Fingerling / seed	0.28	75000
Nets / gears /crafts and others	0.28	45000
Total	0.28	60000

Note: *% of beneficiaries to total may not tally with figures presented earlier due to multiple entries within sector as well as bifurcation of sector in different groups.
Source: Field survey data.

The other achievements and constraints faced are discussed in net chapter.

CHAPTER VII

Other Achievements and Constraints

7.1 Introduction

One of the objectives of RKVY programme was to address various components of agriculture and allied sectors in a holistic manner. In the process of implementation of the program most of the components/sectors played both direct and indirect role in contributing to the overall development of agriculture. Farmers were provided incentives under various schemes like buying new machines, HYV seed and fertilizer etc., laying down sprinkler or drip irrigation, installing up green house/poly house and so on. In many cases such investment taken up by the beneficiary households also led to ancillary benefits to the neighbouring farmers and agricultural labourers in terms of better information, better access to the machinery and other resources on rental basis, better capacity building of the farmers, better marketing and transportation facilities and at times additional employment to the agricultural wage earners.

In our field questionnaire we tried to capture some of these advantages that RKVY programme might have generated in the implementation process. Some of these findings are interpreted in this chapter along with the discussion on the constraints faced by the farmers in availing RKVY scheme. The other miscellaneous information related to different sectors, perception of beneficiaries towards the program, suggestions given by the households during our course of survey and the details of other benefits availed from various other Government schemes by the RKVY beneficiaries' farmers. The information presented in the chapter is based on the primary household survey carried out by our team.

7.2 Training to Beneficiaries

Agricultural productivity can be enhanced substantially if the human resources employed in agriculture are well trained. Trainings help in

creating the awareness, imparting the essential skills, and update and educate farmers about the recent technologies. Depending upon the requirement, many of the sectors had customized training and skill development of stakeholder (farmers/ farmer groups/ extension workers/ entrepreneurs/ dealers/ processors/ exporters etc.) for easy transfer of technology and adoption. These trainings were conducted through the assistance of identified institutions by state departments, for example, State Agricultural Universities (SAUs), Indian Council for Agricultural Research (ICAR) institutions (Krishi Vignan Kendras (KVKs)/ Zonal Research Stations (ZRS), State Department of Agriculture (DoAs), technology specific training institutes, for instance, The National Plant Protection Training Institution (NPPTI) for plant protection, National Institute of Agricultural Marketing (NIAM) for Agricultural marketing, etc.

Various types of trainings organized for the farmers and self-help group (SHG) beneficiaries under RKVY program includes, promotion of mechanization; conservation of soil and other natural resources essential for agriculture; increasing production and productivity, post harvest management of agricultural products, processing of farm products with a view to facilitate their marketing; improvement of income and employment opportunities; effective use of land and other natural resources; encouraging rural youth into various branches of agriculture and allied sectors; updating technical developments and their use in practice; livestock and enterprise development (animal husbandry, dairying and fisheries); fodder development; seed production; integrated pest management; use of organic farming and bio- fertilizers etc. However, in most of the states, RKVY funds are used to supplement Agriculture Technology Management Agency (ATMA) funds for such trainings. The summary of the trainings participated by farmers under RKVY during 11th FYP in Rajasthan are presented in Table 7.1.

Table 7.1: Trainings Participation by the Beneficiaries

Percentage of beneficiaries undergone training		42.2
Avg. no of days of training		3
Type of training (%)	Demonstration	20.5
	Field visit	2.7
	Krishi mela	3.3
	Others	73.5
Percentage of farmers who found training helped adoption		80.8

Source: Field survey data.

Most of these trainings were undertaken by different sectors in the form of demonstration, field visits, participation in Krishi Melas (exhibitions), exposure visits/ study tours and other forms such as classroom instruction, workshop, seminars, conferences etc. Among our selected beneficiary households in Rajasthan, around 42 per cent attended the training programmes. On an average, these trainings were conducted for 3 days. Among the beneficiaries, 20.5 per cent attended demonstration, 2.7 per cent participated in field visits, 3.3 per cent benefited by visiting krishi melas and around 74 per cent of the beneficiary farmers benefited through other forms of training such as workshops, seminar, conference etc., Even though, very few households attended training of some sort, around 81 per cent of them indicated that the training was one of the effective tools for transfer of technology to the farmers.

7.3 Information Technology (IT)

Exploiting the potential of Information Technology is crucial to develop agriculture sector. Monitoring through information and communication technology along with online training and extension are the most precise objectives of RKVY programme. Dissemination of weather and market related information is another important purpose of supporting IT by RKVY schemes. No projects were implemented under ITC

sector in Rajasthan. Though Rs. 5 crores were allocated to information technology, accounting for 0.2 percent of the total allocations under RKVY, nothing has been spent under this head.

Access to mobile phone by the farmers is vital to extend information technology services to farming community. Therefore, in the sample survey we enquired beneficiaries whether they own a mobile phone if yes how did it help them to gather information related to agriculture. The detailed responses of the selected farmers are presented in Table 5.2. This information was gathered from all beneficiaries to know whether mobile phone is being used for accessing the agriculture related information irrespective of the sector they had received the subsidy benefits. The data was collected from all the selected beneficiary households and our responses here represent almost 100 per cent of the total sample beneficiary households irrespective of the sectors. It can be observed from the Table 7.2 that nearly 34 per cent of the beneficiaries at aggregate did not own a mobile and therefore were not reachable through mobile phone.

With the advent of telecommunication technology and falling prices of mobile phones, the access to mobile has improved substantially. But the main concern is that the beneficiaries receiving agriculture related information through short messages (SMS) stood only around 15.3 per cent of beneficiaries owning mobiles in Rajasthan. Beneficiaries were receiving messages in text and voice format. About 53 per cent of the beneficiaries received voice messages in local languages and about 28 per cent were receiving text messages. The beneficiaries who were receiving messages opined to have received text form and voice form messages. All the beneficiary farmers reported that they were receiving messages text messages in their local languages. The survey enquired if the farmers were spending for receiving messages and about 14 per cent of the farmers responded in affirmative and were paying roughly Rs. 2 per month as a service charge to get SMS.

Table 7.2: Details on Usage of Mobile Phone for Agriculture related Information

% of beneficiaries covered to their respective sample size	100.0
%. of beneficiaries owning mobile to interviewed farmers	65.9
%. of beneficiaries receiving agricultural related SMS (% to those who own mobile)	15.3
%. of beneficiaries receiving text messages (to those receiving SMS)	27.8
%. of beneficiaries receiving voice messages	52.8
% Receiving text message in local language (to those who receiving	100.0
% Not receiving text message in local language	0.0
% of beneficiaries paying for SMS	13.9
Average amount paid per month for SMS (Rs.)	1.7

Source: Field survey data.

The survey tried to know the type of agricultural information being received by the farmers. The information was classified into: weather related, market related, input related. Since the numbers of beneficiaries receiving SMS itself was very low the percentage of beneficiaries under each category was almost negligible. To conclude, the survey revealed that the farmers were equipped with mobile phones but Information technology was yet to reach to them or benefit them.

7.4 Employment Generation under RKVY

The most significant link between economic growth and poverty reduction is employment generation. Recognizing the fact that agriculture still remains the basis of livelihoods of such a large number of people, the Government of India has stepped up its efforts to strengthen Indian agriculture. Rashtriya Krishi Vikas Yojana under National Agricultural Development Program (NADP/RKVY) during the XI FYP was an important initiative towards decentralization of planning of agricultural development in a holistic manner including the focus on livelihood in relation to the growth of agricultural sector. RKVY includes both farm and non-farm activities under agriculture and allied domain to generate employment opportunities in the rural areas in order to increase livelihood, food and nutritional security, reduce the regional disparity and alleviate rural poverty in the country.

Under RKVY, many of the sectors such as crop development, horticulture, micro & minor irrigation, agriculture mechanization, natural resource management, organic farming & bio- fertilizers, extension (in the form of enterprise training), information technology, and other agriculture allied activities like livestock production and management, fisheries, marketing and post harvest management and sericulture have directly or indirectly helped in creating employment, additional income generating opportunities at the village level. Some of these activities contributed to bring about quantifiable changes in agricultural production and productivity in terms of educating the farmers, creating awareness and updating farmers about the emergence of new technologies in various fields.

Each sector as mentioned above created both farm and non-farm employment but in some cases like agricultural mechanization also introduced labour saving technologies. However, in the case of agricultural mechanization, adoption of farm mechanization especially tractor may lead to increased operational land holdings and thereby results in creation of on-farm employment in terms of all agricultural operations. In addition, the demand for non-farm labour for manufacturing, services, distribution, repair and maintenance, as well as, other complementary jobs substantially increased due to mechanization. Furthermore, farm mechanization led to increase in inputs due to higher average cropping intensity, larger area, and increased productivity of farm labour. Undoubtedly, farm mechanization displaced animal power from 60 to 100 per cent but resulted in less time for farm work. In the case of RKVY there were some instances of increased employment due to intervention activities which are summarized below.

Micro and minor irrigation helps farming community in improving water efficiency and hence enables them to expand their farming activities with the limited water availability. Marketing and post-harvest management sector creates employment and increases farm returns in terms of accessibility, minimization of post-harvest losses, quality production and better farm prices. In marketing and post-harvest management, there is

tremendous scope for the construction of godowns, pavement and auction platforms at market yards, setting up of wholesale and primary rural markets, hypermarkets, installation of modern mills, processing units, strengthening of regulated markets, agro processing units, promotion of storage bins, plastic crates etc., which directly and indirectly generate employment. In addition, many other agriculture and subsidiary activities such as dairying, livestock production and fisheries help in employment generation. Under RKVY programme there were some cases in which Government provided support for establishing bulk milk cooling units, construction of fish ponds, seed and fodder production farms, mechanization of dairy farms, quality control labs etc., and also gave financial assistance to start-up such initiatives under infrastructure projects.

The activities like watershed and natural resource management lead to participatory, sustainable and equitable use of resources as well as enhance income and livelihood. These activities help in conversion of waste land into productive agricultural land through land development using means of conservation of water and soil health management. Organic farming and bio-fertilizers also create employment in terms of production and sale of organic manure, vermi-compost and other bio-fertilizers. Many SHGs and women farmers have taken-up these activities in a commercial manner whereby RKVY programme further contributed in the expansion of such activities. Adoption of these technologies, address the issues of environment and economic dimensions of agricultural sustainability in the long-run. Crop development sector also provided seeds and other inputs for expansion and enhancement of yield of various crops that possibly also created opportunities for additional employment. RKVY provided area expansion programs in crops such as cereals and pulses, etc. by providing improved high yielding varieties. Additionally, there were many crop development programs on sugarcane, oil seeds, etc.

The extension activities like trainings were undertaken by cooperatives and cooperation sector covered under RKVY program. Training related to on-farm and off-farm activities like agriculture and allied enterprises, technology dissemination, information technology, integrated pests management (IPM), agribusiness, agro-processing etc., impart and encouragethe rural youth to take-up these activities as self-employment and consultancy services by offering both training and financial assistance under different schemes.

The results of the primary survey with respect to additional annual employment generation per household in agriculture under RKVY are presented in Table 7.3. As discussed earlier, different sectors have contributed both directly and indirectly in generating the employment through RKVY. It is to be noted here that in the generation of additional employment, RKVY was one of the contributors and was not solely responsible for the same. The other resources like additional area of the farmers, other inputs used and management and entrepreneurial contribution of the farmers also contributed equally in the generation of additional man-days of employment at the farmers end. Looking at the statistics presented in the Table 7.3 it is apparent that at the aggregate, all sector together created an average number of 3 days of additional employment per household constituting 1 days of own and 2 days of hired labour annually. Interestingly, the households' opinion about the increase in employment as a result of RKVY intervention, the selected beneficiaries indicated no increase in employment. One should see these results from the point that RKVY was not an employment generation programme and there exists many other programmes of both Central and State Governments specifically for that purpose in the country. Some of the activities under RKVY were not at all related to employment generation such as seed distribution, crop protection programmes, R&D in agriculture and so on.

Table 7.3: Annual Employment Generation under RKVY per Household

Employment generated (days/annum)	Own	1
	Hired	2
	Total	3
Modal Response	% increase in employment_ own	No Change
	% increase in employment_ hired	No Change

Source: Field survey data.

7.5 Agricultural Marketing details of RKVY Beneficiaries

Indian agriculture suffers a lot due to underdeveloped marketing system. In India, agricultural marketing comprises of poor infrastructure, poor transport and communication, limited rule of law, limited access to finance etc. This results into market failure. Agricultural marketing policy in India has been characterized by State participation in marketing activities; State intervention in procurement and distribution of food grains; directing agricultural economy through regulatory mechanism such as licensing and control movement, storage, creation of facilitating centres in the form of regulated markets, encouraging cooperative marketing, creation of supporting infrastructure like storage and warehousing and construction of link roads, market information, marketing extension, etc.

Information about the marketing practices adopted by the farmers was gathered from the sample households. Table 7.4 presents the results of overall agricultural marketing details. It is observed that there were interventions under RKVY in different sectors like crop development, micro/minor irrigation, horticulture, animal husbandry, agriculture mechanization, natural resources management (NRM), marketing and post-harvest management, fisheries, cooperatives and cooperation, sericulture and information technology (IT). The purpose of the benefit availed were directly related to production activities and the output was sold through different marketing channels such as village market, APMC mandis, private & their channels through different sources like commission agents, government agencies & other private traders/wholesalers etc. These

marketing channels generally did not receive any direct benefits under RKVY.

It can be seen from the table that the average turnover by RKVY beneficiaries in different marketing channels at the aggregate of all the sectors was Rs. 1.1 lakh per household. It is to be noted here that out of the farmers total produce only that part have been accounted here for which some intervention in the form of seed, fertilizer, pesticide, irrigation, mechanization or any other advantage was availed by the farmers under RKVY. A majority (52 per cent) of the farmers for which RKVY intervention was availed sold their produce through APMC mandis. Village markets were used by only 28 per cent of the beneficiaries followed by Private and other markets used by 15 per cent of the total beneficiaries.

Table 7.4: Agricultural Marketing details of RKVY beneficiaries

Avg. amount of sale (Rs per hh)		112843
% of beneficiaries marketing channels	Village market	28.2
	APMC Mandi	51.8
	Private and others	15.3
% of beneficiaries selling through different agents	Commission agent	46.4
	Govt. Agency	6.0
	Private traders and other	43.3
Average distance covered for the sale		14.8

Source: Field survey data.

Most of the small and medium farmers market their farm produce and purchase inputs also from local markets. The prominence of private and other channels exploit farmers in many forms and reap the maximum share of consumer rupee. The same trend was noticed across the sectors also. The highest share of 46 per cent of the output was marketed through dominant intermediaries like commission agents, followed by private traders 43 per cent and government agencies only 6 per cent. The private traders usually act like wholesalers without holding license they buy from the farmers and sell to the retailers directly. The commission agents facilitate the sales transactions through different auction methods and charge commission from both buyers and sellers.

7.6 Constraints Faced under RKVY

Incomplete and lack of information about their rights and complex procedures involved to access the same are possible reasons why poor people do not fully access the public services due to them. To understand the complexities involved in RKVY programme and the constraints being faced by the farmers in accessing the programme, we designed our questionnaire with a series of qualitative and quantitative questions about the farmers' views and opinion about the programme and the difficulties faced by them in the implementation of intervention at their farm level. A list of questions were prepared to understand the transaction costs incurred, comprising of cost involved in gathering the information regarding the program, cost in preparing and submitting the documents, bribe paid to get access to the programme and difficulties faced in availing the benefits under RKVY.

To avail the benefit under RKVY, the beneficiaries incurred some transaction costs. One of the items of transaction cost was bribe paid by the farmers to have access to the benefit. Most of the farmers were hesitant to reveal this kind of information and many put condition of anonymity in expressing the same. However, details of those who paid cash and revealed the information about the amount paid as bribe for availing the benefit at various levels of service delivery were collected during the survey. Other constraints as expressed by the respondents while availing the benefits under RKVY are summarized in Table 7.5.

Awareness remains the necessary condition for farmers' access to the development programmes whatsoever. In the case of RKVY, households' lack of awareness about the programme was the biggest constraint and the same was also observed by our field team as even though households availed subsidy benefits but they were not aware that the subsidy was given to them under the RKVY programme. However, it can be seen from the table that very few or a negligible proportion of the households expressed that they faced constraints while availing the benefits under RKVY programme. About 27 per cent beneficiaries quoted that information

about RKVY programme details were not available, around 20 per cent opined that contact details of the department which pay subsidy were not available and another 12 per cent beneficiaries indicated that the eligibility criterion for availing RKVY subsidy was not known to them. Around 7 per cent of the beneficiaries reported that capacity building programmes failed to provide technical advice. Among the other constraints, Information about RKVY programme details, contact officer were not available. Similarly, there was long time-gap between the purchase and receiving the subsidy amount; and subsidy was paid only after the purchase whereas the initial payment remained the highest problem for buying the instrument or investing in the assets as other major important constraints. The beneficiaries pointed out that procedure for availing subsidy was very tedious; numbers of documents required for availing subsidy were too many.

Table 7.5: Constraints Faced in availing RKVY Benefits

S.N.	Particulars	No. of beneficiaries reported the constraint	% of beneficiaries reported the constraint
1	Information about RKVY programme details not easily available	95	26.5
2	Contact details of the department which pay subsidy not available	72	20.1
3	Eligibility or criteria for availing subsidy not known	44	12.3
4	Procedure for the subsidy is very tedious	20	5.6
5	No. of documents required for availing subsidy are too many	29	8.1
6	Subsidy paid after purchase while initial payment remains highest problem	37	10.3
7	Prescribed machinery asset is not easily available in the market	30	8.4
8	Institutional financing facility not available	27	7.5
9	Capacity building technical advice not provided	25	7.0
10	Long time gap between purchase and receiving subsidy amount	36	10.1
11	Biased towards large land owners	19	5.3
12	Poor quality of materials / machinery are supplied	13	3.6
13	Implementing agencies are located far away	22	6.2
14	Others	16	4.5

Source: Field survey data.

7.7 Sources of Funds

As discussed earlier, some of the programmes were beneficiary oriented whereas others were institutional programmes. Under the beneficiary oriented programmes, goods and services were provided at the subsidized rates. In other words, different departments provided subsidies in varying amounts to beneficiary farmers under the RKVY programme. The beneficiary farmers shared roughly half of the total cost of machinery and equipments, milch animals, etc., and the rest was met by the implementing agencies. In some cases small garden implements like spade, sickles, water cans, shovels were given free of cost, i.e., without beneficiary contribution.

The average investment made by the beneficiary farmers to purchase the assets in Rajasthan was more than Rs. 1 lakh (Table 7.6). Among the beneficiary farmers, a few purchased high cost machinery like threshers, tractors, power tillers, seed drills whereas others invested in milch animals, development of private irrigation facilities/ infrastructure etc. In many cases average amount of investment as discussed in this and previous two chapters was inflated by large investments by a small number of beneficiaries. It was observed that the beneficiary households mobilized 85 per cent of the funds from non-institutional sources like money lenders, friends and relatives etc., and around 15 per cent from the institutional sources such as commercial banks and cooperatives and there is no contribution from their own funds.

Table 7.6: Source of Investment borne by the Households for the RKVY Intervention

Average amount of beneficiary investment (Rs.)		113170
% Contribution by Source	Own Funds	0
	Institutional Borrowings	15
	Non-institutional Borrowings	85

Source: Field survey data.

7.8 Views and Opinion of the Beneficiaries about RKVY

Opinion of the beneficiary households were elicited about the usefulness of RKVY programme and its impact in terms of capacity building, improvement in infrastructure facilities, financial assistance to adopt improved technology, diversification of farm activities or facilitating adoption of subsidiary activities to improve household income, etc. The survey results are presented in Table 7.7. It can be seen from the statistics in the table that around 67 per cent of the beneficiaries reported that provision of subsidies facilitated investment in acquiring farm machinery and equipments, livestock, development of infrastructure, adoption of and diversification of agriculture which otherwise would have been difficult. Similarly 67 per cent of the households viewed RKVY programme beneficial and appreciated as it provided financial assistance. More than 22 per cent of the beneficiary households opined that RKVY schemes/ programmes facilitated in building infrastructure facilities. On the question of RKVY helping in capacity building, only 15 per cent beneficiaries opined affirmative and almost 85 per cent were not satisfied with the training and capacity building programme under RKVY by the Rajasthan Government.

Table 7.7: Opinion of Beneficiary Households about RKVY programme (% of beneficiaries)

Financial assistance	67.0
Building infrastructure	22.4
Capacity building	14.8
Subsidy provision	67.3
Others	14.5

Source: Field survey data.

7.9 Suggestions for the Better Implementation of RKVY Programme

We have not received any suggestion from the beneficiary households from Rajasthan for improving the usefulness of RKVY programme in terms of better output and outcome. So, through our observations, we tried to give some suggestions, which grouped into 10 broad categories which are described as below:

1. Capacity building: conducting training programs for capacity building should be focused on one specific topic instead of covering a plethora of subjects in a single training programme.
2. Subsidy related: timely availability, simple procedure of availing subsidy, enhancing the coverage and hike the percentage of subsidy given.
3. Production and input related: timely provision of good quality seeds, availability of appropriate and required fertilizers, pesticides and other inputs.
4. Integration of schemes and wider coverage of schemes: integrating MGNREGA with crop production, crop insurance and credit, post-harvest facilities (cold storage and procurement), animal husbandry and dairy (better breeds, collection centres, chilling plants, etc).
5. Irrigation related: provision of pump sets, construction of tanks and ponds, availability of electricity/diesel for operating pump sets, flood control measures in chronically flood affected areas.
6. Farm mechanization: availability of farm machineries and equipments to deal with labour problems and ensure timely farm operations.
7. Access to credit: simpler documentation and bank procedures to avail loans.
8. Market facilitation: price information, identifying market and provision of transportation.
9. Feed supplements: provision of feed supplements like protein supplements, mineral bricks and good quality cattle feeds, etc., at subsidized rates.
10. General suggestions – weather related information, fencing around farm land to prevent entry of wild animals, information on animal diseases, mobile veterinary clinics under RKVY schemes, provision of medicines, continuation of RKVY, organic manure, better infrastructure facilities, soil testing facility, etc.

7.10 Benefits Availed by RKVY Beneficiaries from Other Govt. Schemes

In addition to RKVY programmes, there is other Central and Centrally sponsored Schemes (CCS) as well as state schemes / programmes being implemented simultaneously by the State department of agriculture and line departments. Most of these schemes also has inbuilt element of subsidy. The major schemes/ programmes implemented under CCS in most of the States include NHM, Agricultural Mechanization, NFSM, ISOPOM, Watershed Development, etc., and a few State sponsored programmes like Livestock and Dairy Development, Fisheries, Minor and Micro Irrigation, Distribution of Certified / HYV Seeds, etc. During our field survey, in addition to collecting information related to RKVY programme, we also collected information on subsidy obtained by our beneficiary households from the other programmes in order to see the volume of subsidy obtained from RKVY vis-à- vis other Central or State sponsored programmes.

Table 7.8: Benefits availed from Other Government Schemes by RKVY Beneficiaries

Sl No	Schemes	%. of beneficiaries benefitted	Average subsidy per HH in Rs..
1	National Horticulture mission (NHM)	12.3	51400
2	Mechanisation in Agriculture (MMA)	0.0	0
3	National Food Security Mission (NFSM)	8.4	4537
4	Integrated scheme of oilseeds, pulses, oil palm and maize (ISOPOM)	3.6	1027
5	MGNREGA	0.8	9866
6	Others	14.0	56617
7	Total	39.1	37868

Source: Field survey data.

The numbers of RKVY beneficiaries availing subsidies from other schemes and programmes are presented in Table 7.8. The amount of subsidy from other programmes per household availing benefits ranged from Rs. 1000 for integrated scheme of oilseeds, pulses, oil palm and maize (ISOPOM) to Rs. 51 thousand from National Horticulture Mission (NHM). The amount of subsidy received for National Food Security Mission (NFSM)

was around Rs. 5 thousand per household. The subsidy received for other programmes like animal husbandry, micro/ minor irrigation, sericulture put together was Rs. 57 thousand per household. At the aggregate, the beneficiaries who obtained subsidy from other programmes averaged at around Rs. 38 thousand per beneficiary household in Rajasthan.

7.11 Effect of various Subsidy Programmes- Regression Analysis

In order to quantify the effect of various subsidy programmes under taken by the state government to create infrastructure and provide better quality seed and other inputs on productivity of various crops grown by the farmers we tried to establish a quantitative relationship between output produced by the farmers and the subsidy received by them under RKVY. As we also had information about the quantum of intervention under taken by the farmer we sought to establish relation between the subsidy received and productivity enhancement. The relation between volume of intervention and productivity increase was not attempted as with respect to investment there could be possibility of inverse causality as high productivity also leads farmers to invest more and so on. In our field survey we enquired the farmers about their opinion on percentage of increase in their productivity as a result of intervention carried out under RKVY programme. The tabular analysis in different section has interpreted the field survey findings on how RKVY programme has helped farmers in achieving higher productivity, enhancement in their income and reduction in their cost and spoilage as a result of interventions carried out under RKVY.

In this section we present regression results showing the quantum effect of subsidy on farmers' productivity at the aggregate. For this reason, the productivity has been calculated as value of output from all the crops grown by a household in value terms. Two determinant variables namely net area operated by the household and the subsidy received by the household under a specific sector have been considered for the regression analysis. To obtain aggregate impact of subsidy, one regression is done by

aggregating subsidy for all sectors together. The results are presented in Table 7.9 for Rajasthan and all India for making a comparison between the state of Rajasthan with the all India picture. It is evident from the results that both the operated area and subsidy from various sectors had a positive impact on the value of output produced. The value of coefficient of net operated area in Rajasthan turned out less than one which indicates that with the increase in area under operation, the value of output increases by the less proportion. The implications of the above result is that there is inverse farm size productivity relationship in Rajasthan.

Looking at the coefficients of subsidy under various sectors, it is evident that in the case of Rajasthan, subsidy coefficient was positive for almost all sectors like mechanisation, horticultural infrastructure, animal husbandry, micro irrigation and watershed development. However, the sign was negative in the case of crop development and horticultural crop development. Nevertheless, the coefficient of subsidy was insignificant in the case of mechanisation, animal husbandry and crop development in general and horticultural crops. In other words, the provision of subsidy under these sectors does not seem to having a significant impact on productivity in Rajasthan. The coefficients were positive and highly significant in the case of horticultural infrastructure, micro irrigation and watershed development with value of coefficient more than two indicating 10 per cent increase in subsidy in these sectors leads to around 3 per cent increase in output at the aggregate in the state. In comparison, looking at the value of the coefficient at the all India level, it clearly shows significant impact of subsidy on the value of productivity. The infrastructure building activities like mechanisation, horticulture infrastructure, micro irrigation and watershed development had clearly significant and higher value of the coefficient of subsidy than that of crop development, animal husbandry, fishery etc., at the all India which either have only short term impact on productivity or otherwise not related to crop sector productivity directly if not indirectly. In the case of Rajasthan, it has been seen in our field survey analysis that there were only three major activities under which significant

numbers of selected farmers participated under RKVY, i.e., crop development, micro irrigation and watershed development. In all other cases only few households participated in the programme. Out of these three activities infrastructure creation happens only in micro irrigation and watershed development and both these activities seem to be having a significant impact on farmers' productivity. In the case of animal husbandry, the impact can be seen only on increase in milk productivity and not on the crop productivity.

Table 7.9*: Impact of various Sector Specific Subsidies on Value of Output at Household Level
(Dependent variable = Value of output of all crops grown by hh)

Equation	Rajasthan					All India			
	Independent variables	Coefficient	t value	R^2	No of obs.	Coefficient	t value	R^2	No of Obs.
1	NOA	0.7	(2.0)	0.49	12	0.87	(47.4)	0.63	1418
	Mech Subsidy	0.0	(0.3)			0.04	(2.8)		
	Constant	9.5	(6.8)			10.17	(78.7)		
2	NOA	0.9	(12.5)	0.52	16	0.92	(48.0)	0.64	1377
	Crop develop Subsidy	-0.10	-(1.3)			0.03	(2.1)		
	Constant	10.8	(22.5)			10.15	(96.4)		
3	NOA	1.1	(8.9)	0.93	30	0.88	(23.6)	0.59	439
	Horti. Infra Subsidy	0.22	(3.8)			0.07	(3.0)		
	Constant	8.0	(17.5)			10.11	(46.3)		
4	NOA	0.7	(5.2)	0.48	29	1.02	(41.8)	0.73	662
	Animal Husband Subsidy	0.03	(0.3)			0.01	(0.3)		
	Constant	10.6	(16.9)			10.18	(51.7)		
5	NOA	1.0	(10.2)	0.87	19	0.92	(29.0)	0.64	588
	Horti. crop Develop Subsidy	-0.08	-(0.5)			0.08	(3.6)		
	Constant	11.1	(13.4)			10.04	(64.1)		
6	NOA	0.8	(10.4)	0.62	117	0.88	(39.2)	0.65	1007
	Irrigation Subsidy	0.2	(4.0)			0.09	(5.2)		
	Constant	8.1	(12.5)			9.71	(58.8)		
7	NOA	0.8	(11.2)	0.63	117	0.88	(19.8)	0.61	348
	Watershed Subsidy	0.26	(4.5)			0.17	(4.8)		
	Constant	7.9	(12.5)			8.75	(24.4)		
8	NOA	0.9	(19.2)	0.62	338	0.93	(99.2)	0.66	5508
	Total Subsidy	0.0	(5.3)			0.03	(6.3)		
	Constant	9.67	(64.7)			10.16	(220.9)		

* **Note:** All variables in log form
Source: Estimated using Field survey data.

To conclude, the RKVY impact in Rajasthan was visible as most of the sectors had positive and significant impact on value of production. The findings from aggregate data clearly reveal that subsidy under RKVY has clearly contributed positively, although impact of subsidy given for infrastructure purpose and where there is a gestation period, like in horticultural crops, the full impact may come with a lag period.

CHAPTER VIII

Institutional/Infrastructure Projects in Rajasthan

8.1 Introduction:

Rashtriya Krishi Vikas Yojana (RKVY) is a novel initiative by the Government of India, which encourages the State Governments to increase public investment in agriculture and allied sectors. RKVY has focused on 21 major areas within agriculture and allied sector with a view to bring about a holistic development of the sector. The programme has been designed so meticulously that interventions in these focus areas benefit not only the landed farmers in rural areas but also agricultural labourers who generally engage in livestock rearing for supplementing their household income. It is interesting to note that all the major focus areas encompass infrastructure development as an important component of the programme. The infrastructure component has been included in most of the sector/area specific projects irrespective of its target group, i.e., farmer beneficiary or institutions. The inclusion of the infrastructure components among the sector specific projects has created tangible assets to be utilised for improving the productivity growth in agricultural sector.

RKVY has inbuilt flexibility in funding the projects particularly innovative and infrastructure oriented projects with a strong emphasis on increasing State budgetary allocation for agriculture and allied sectors for making provision of funding under the programme. During the XI plan period, RKVY funds were available to State Governments under two distinct streams viz., Stream I and Stream II. Under Stream I, at least 75 per cent of the amount allocated to a particular State should be utilised for undertaking specific projects. Under Stream II, the remaining amount ought to be used for strengthening the existing State plan projects and also for filling the resource gaps. Although RKVY is a State plan scheme, Central Government provides 100 per cent grant for executing the projects/schemes proposed under this programme. The District Agricultural

Plan and State Agricultural Plan provide thrust areas for designing of schemes and financial resources required for proper implementation.

The projects focusing on creation of infrastructure and assets have been designed and implemented by various institutions in the States. Generally, infrastructure projects have a relatively longer duration and higher amount allocated as compared to the normal projects. Therefore, these infrastructure oriented projects under RKVY have been largely implemented by the Government Departments, State Agricultural Universities, Government owned autonomous corporations, bodies and cooperative organisations. The present section analyses the RKVY projects implemented by various institutions in the State of Rajasthan.

8.2 Infrastructure Project by type of Institutions:

The information related to infrastructure projects implemented by various institutions was collected through a survey method. For collecting information, a list of all the institutions including State Agricultural Universities, Research Institutes, Government Departments, State autonomous corporations and cooperative organisations were prepared with full contact details. A structured questionnaire was prepared and then pretested before it was sent to these institutions soliciting them to complete the questionnaire and send back to the AERC, VVN. After mailing the questionnaire, the research team at AERC, VVN & ISEC, and Bangalore had followed up with the respondents through telephonic calls and e-mails to get the filled-in questionnaires from them. Among others, questionnaire sought information about the nature and type of project, objectives and their achievement, project partners, funding pattern, budget details and stage of completion. Further, information related to expected output, actual output, expected outcome, actual outcome, implementation constraints and suggestions for effective implementation of the projects by various institutions. A total of 35 filled in questionnaires were received from the implementing agencies/ institutions.

The infrastructure projects have been implemented by various organisations located in different States. These organisations/institutions have been grouped under three categories viz., State Agricultural Universities/Indian Council of Agricultural Research (ICAR) institutes, State Government Departments and State Government autonomous corporations, boards and cooperatives. These institutions are largely involved in designing and implementing the infrastructure projects. The distribution of the infrastructure projects by type of institutions is provided in Table 8.1. It can be observed that overall State Government departments such as Departments of Agriculture, Horticulture, Animal Husbandry, Watershed and Sericulture implemented about 14 per cent of the infrastructure projects and the remaining 86 per cent or 30 projects were implemented by the SAUs and ICAR institutions in the State.

Table 8.1: Number of Infrastructure Projects by Type of Institutions

Type of institution	*Number of Projects*
SAU's/ICAR Institutes	30 (85.7)
State Govt. Departments	5 (14.3)
Total number of projects	35 (100.0)

Note: Values in the parentheses indicate percentage
Source: Institutional responses.

Based on the nature of components of the projects that have been implemented by various institutions, the projects are broadly grouped under normal projects, infrastructure projects and normal cum infrastructure projects. Generally, normal projects do not contain infrastructure and asset components. They are mainly targeted towards individual beneficiaries in the form of training and capacity building and field trials in the farmers' field. However, infrastructure projects are mainly meant for creating assets such as construction of laboratories, e-auction system, market yards, cold storages, training halls, warehouses and rain shelters. There are also projects which are both

beneficiary and infrastructure oriented. The majority of these projects were related to research in plant protection, development of bio-fertilisers, bio-agent to control pest and diseases, research in animal husbandry, etc.

The distribution of infrastructure projects by type is presented in Table 8.2. The projects are grouped as infrastructure oriented, beneficiary oriented and infrastructure cum beneficiary oriented projects. Out of total number of projects, 31 per cent were infrastructure oriented and 43 per cent were beneficiary oriented while 26 per cent were both infrastructure and beneficiary oriented. The distribution of a higher number of infrastructure oriented projects implies that various implementing institutions gave more importance to creation of tangible assets, which could help the farmers directly or indirectly in improving agricultural productivity.

Table 8.2: Number of Infrastructure Projects by Type

Project type	Nos.
Infrastructure oriented	11 (31.4)
Beneficiary oriented	15 (42.9)
Both	9 (25.7)
Total number of projects	35 (100.0)

Note: Values in the parentheses indicate percentage
Source: Institutional responses.

The State and Central Governments give importance to certain agricultural issues to address them on a priority basis. Perhaps, these issues are such that they are likely to hinder the agricultural growth and crop productivity in the long run if they are not addressed adequately. Therefore, these issues merit the attention of the policy makers and require designing of suitable schemes/developmental programmes with a higher allocation of financial resources. Such schemes/programmes are called as Government flagship schemes/programmes. Under the RKVY also, both the State and Central Governments had designed State flagship and National flagship infrastructure projects for implementation (Table 8.3). Among

the 35 infrastructure projects for which we have the information, 34 projects were State flagship projects, 1 project was National flagship project.

Table 8.3: Number of Infrastructure Projects by National Importance

Importance/Flagship	Nos.
State Flagship	34(97.1)
National Flagship	1(2.9)
Both	0(0.0)
Total	35(100.0)

Note: Values in the parentheses indicate percentage
Source: Institutional responses.

8.3 Sector-wise Infrastructure Project

As stated earlier, during the XI plan period, various infrastructure projects under RKVY were undertaken spread across 21 sectors. The distribution of infrastructure projects by sectors is provided in Table 8.4. Out of total infrastructure projects, relatively a large number of them were focused on research (agri/horti/animal husbandry etc) sector. In fact, research (agri/horti/animal husbandry etc) sector accounted for 40 per cent of the total projects.

Table 8.4: Number of Institutional and Infrastructure projects by sector

S. No	Sector	Number
1	Agriculture mechanization	1(2.9)
2	Animal husbandry	11(31.4)
3	Cooperatives and cooperation	1(2.9)
4	Crop development	1(2.9)
5	Extension	1(2.9)
6	Natural resource management	1(2.9)
7	Organic farming / bio fertilizer	1(2.9)
8	Research (agri/horti/animal husbandry etc)	14(40.0)
9	Seed	4(11.4)
	Total	35(100.0)

Note: Figures in the parentheses indicate percentage to total
Source: Institutional responses.

The second highest numbers (31.4 per cent) of infrastructure projects were implemented under animal husbandry followed by seed with 11.5 per cent of the total projects. Other sectors like agricultural mechanization, cooperatives and cooperation, crop development, organic farming/ bio fertilizer, extension, NRM etc., implemented just one project each.

8.4 Status of Infrastructure Projects

Further, 9 projects (26 per cent) of the total 35 projects were completed during the XI Plan and 25 projects (71 per cent) were reported as on-going (Table 8.5). There are various reasons reported by the implementing agencies for delay in execution, non-implementation and abandonment of projects. The development of varieties and hybrids involve considerable amount of time for testing during different seasons and across regions. In fact, testing of varieties at multi-locations for assessing their wide geographical adaptations is an important stage of varietal development. This often results in delay in release of improved varieties with desirable qualities.

Table 8.5: Status of institutional and infrastructure projects (Numbers)

S.No	Status of the project	**Rajasthan**
1	Completed	9 (25.7)
2	Ongoing	25 (71.4)
3	Not Yet implemented	0 (0.0)
4	Abandoned	1 (2.9)
	Total	9 (25.7)

Note: Figures in the parentheses indicate percentage to total
Source: Institutional responses.

Analysis of duration of the infrastructure projects in Rajasthan indicated that the maximum number of projects 57 per cent of the total 35 projects were of more than 5 years duration, whereas nearly 20 per cent projects were for the duration of 3 to 4 years (Table 6.6). Around 17 per

cent projects were for the duration of 4 to 5 years. Only 1 project (2.86 per cent) each among the total projects was of shorter duration i.e., 1 to 2 years and 2 to 3 years.

Table 8.6: Yearwise distribution of institutional & infrastructure projects (Nos.)

S. No	Duration	Number
1	Less than one year	0(0.0)
2	1-1.9	1(2.9)
3	2-2.9	1(2.9)
4	3-3.9	7(20.0)
5	4-4.9	6(17.2)
6	5	20(57.2)
	Total	35(100.0)

Note: Figures in the parentheses indicate percentage to total
Source: Institutional responses.

8.5 Sector wise cent per cent Objectives Achieved

The successful completion of the projects can be accessed from the extent of achievement of objectives during the project period. The achievement of the objectives of the projects varied by sectors. The analysis focussed on achievement of all the objectives of projects in relation to the total number of projects implemented under various sectors. Out of 35 reported infrastructure projects, only 15 projects (43 per cent) recorded a hundred per cent achievement of objectives and the remaining projects did not fulfil all the proposed objectives for which projects were initiated (Table 8.7). Among the sectors, about 7 projects implemented under animal husbandry achieved all the objectives.

Availability of adequate financial resources is crucial for carrying out all the proposed project activities on time and avoiding undue delay in completion. The level of utilisation of finances reveals the financial efficiency of the implementing agencies. The details of allocation, release

and expenditure under infrastructure/institutional projects are given in Table 8.8. It can be seen that the total allocation, as revealed by the implementing agencies, stood at Rs 95.35 crore. The release amount was Rs. 69.25 crore of which total amounts spent was Rs. 55.18 crore.

Table 8.7: Sector wise cent per cent objectives achieved (Numbers)

S.No	Sector	Number
1	Animal husbandry	7(46. 7)
2	Cooperatives and cooperation	1(6. 7)
3	Extension	1(6. 7)
4	Organic farming / bio fertilizer	1(6. 7)
5	Research (agri/horti/animal husbandry etc)	5(33.3)
	Total	15(100.0)

Note: Figures in the parentheses indicate percentage to total
Source: Institutional responses.

Table 8.8: Allocation, Release and Expenditure (Rs lakhs)

State	
Allocation	9535
Release	6925
Expenditure	5518
E/R (%)	79.7

Source: Institutional responses.

8.6 Distribution of Expenditure by Sector

The expenditure performance of the implementing agencies seems to be impressive as indicated by the expenditure to release ratio. The overall expenditure to release ratio was 79.7 per cent implying that more than 20 per cent of the released amount was not utilised by the implementing

agencies. The distribution of expenditure by sector is provided in Table 8.9. It was observed that the expenditure was the highest on animal husbandry which alone accounted for around 48 per cent of the expenditure incurred on infrastructure / institutional projects in Rajasthan. This was followed by the expenditure (39 per cent of the total) on infrastructure projects implemented for Research (agri/horti/animal husbandry etc). Infrastructure projects in the seed sector accounted for little more than 8 per cent followed by organic farming / bio fertilizer sharing 1.9 per cent of the total expenditure on infrastructure projects in the State.

Table 8.9: Sector wise total Budget of the institutional and infrastructure projects

Sl No	Sector	**Amount Rs. lakhs**
1	Agriculture mechanization	149 (1.2)
2	Animal husbandry	6096.7 (47.8)
3	Cooperatives and cooperation	15.9 (0.1)
4	Crop development	90 (0.7)
5	Extension	84.14 (0.7)
6	Natural resource management	92.2 (0.7)
7	Organic farming / bio fertilizer	235 (1.9)
8	Research (agri/horti/animal husbandry etc)	4928.27 (38. 7)
9	Seed	1053.8 (8.3)
	Total	12745.01 (100.0)

Note: Figures in the parentheses indicate percentage to total
Source: Institutional responses.

Generally, the proposals submitted for approval are supposed to mention the likely contributions of the proposed projects. The contributions can encompass advancement in knowledge generation,

varietal development, development of machineries, organic inputs, strengthening of lab facilities, training and capacity building, creation of processing or storage facilities and strengthening of infrastructure facilities in the Agricultural Universities/research institutes. After the completion of the projects, the implementing agencies have to provide information about to what extent the expected output and outcomes were translated into actual output and outcomes. The level of fulfilment of expected and actual output and outcomes can be considered for assessing the achievements of the projects.

However, information received from the implementing agencies through survey was specific to different projects and they were found to be patchy. Further, most of the information was qualitative in nature and density of information was so high that it becomes difficult to interpret them meaningfully.

8.7 Achievements and Constraints

It can be observed that the expected output and outcomes seem to have been achieved in some infrastructure projects while in others cases it was difficult to quantify the achievements of the project. Achievement of outputs can be seen in terms of creation of assets such as establishing laboratories for testing and development of pesticide and bio-control measures, construction of community irrigation facilities, soil and water conservation structures, construction of open wells, farm ponds, check dams, drains, soil testing laboratories, increase in area under improved varieties, construction of ware houses, cold storages and milk chilling plants and so on. Under these projects, farmers were also trained and built capacity to apply new technologies, given certified seeds, organic inputs, improved breeds of animals, tarpaulins, and similar useful inputs. Outcomes of the projects, as reported by the implementing agencies, among others included increase in productivity of various crops, improved soil fertility, improved water infiltration, increased seed germination,

reduced cost of cultivation, improved training facilities, increased milk yield, wool production, increase in youth employment and enhanced farmers' knowledge and skill in doing farming activities.

The success of the project depends on the proper planning, execution and implementation. If any of the steps are not followed properly, it will lead to mismanagement and limited success in achieving the objectives. Constraints faced by the implementing agencies vary across the projects and sectors. The implementing agencies reported that an important constraint faced while dealing with the nodal agency was accessing fund on time. Though the project was approved for a given budget, the fund released during implementation of the project wasconsiderably less than the allocated amount. For projects related to Biotechnological aspects, development of tissue culture involved a protocol of continuous process which required funding on regular basis to meet the expenses towards buying chemicals and other recurring items but the fund released during some years was abruptly stopped. This severely hampered the overall progress of the project. Implementing agencies also reported the tedious process involved in tendering as equipments/other components of the project had to be done through lowest tender, which often leads to a compromise with the quality. Also there was a fluctuation in the tendering system due to many calls for various tenders in spite of regular efforts.

At the research institute level, the implementing agencies reported many problems including unavailability of skilled man power, unavailability of full time dedicated scientists and supporting staffs including technical assistants, lab assistants and lab attendees. There was a problem in getting contractual trained persons for the follow up of the project activities. Even though, the infrastructure facilities for training and capacity building were established, there was a need for involvement of extension specialists to extend those infrastructural facilities to the farmers through some of the schemes implemented by ATMA and Agricultural departments. It was suggested to utilize all these facilities on a sustainable manner there was a need for timely release of adequate non-recurring budget at once.

The implementing agencies also reported problems related to non-availability of labour, machineries and materials for civil construction at the project site. Delay in preparation of proposals, approval of loan and construction of field infrastructures were compounded with climatic problems like long dry spell during rainy season, excess rain, fog, scarcity conditions and rise in temperature.

CHAPTER IX

Conclusions and Policy Suggestions

In Rajasthan, RKVY project comprises of 18 major sectors and includes many sub sectors. Out of the 18 sectors, seven sectors absorbed 82 per cent of the expenditure. Among the major sectors, micro/minor irrigation utilized the major funds, followed by horticulture, seed, crop development, dairy development, extension and fertilizers & INM. In order to develop the infrastructure and assets in the agriculture and allied sectors, the State under RKVY allocated 63 per cent of the total expenditure to infrastructure projects. If one looks at the agriculture performance in the State one finds the priority areas chosen by the State are more or less justified. Most of the Rajasthan receives scanty rains due to its location and hence crops suffer due to moisture stress. Development and expansion of irrigation is the priority area for intervention. The major emphasis of micro/minor irrigation projects was on developing storage facilities, conservation of water and efficient use of available water. Development of plastic covered diggies programme was at the forefront. Construction of storage tanks with 2 lakh litre capacity, construction of farm ponds and provision of sprinkler irrigation sets along with solar water pumps was the strategy adopted for augmenting irrigation in the State. Similarly, emphasis on improvement in quality and production of low volume high value crops such as fruit is appreciable. The other priority areas like development of horticulture, seed and crop development also indicate the States' objective of increasing crop productivity. The State is hit by a drought every three years and by a major drought every five years. However, some priority should have been given to drought proofing with emphasis on dry land agriculture which is also most important for increasing farmers' income.

The findings of the primary survey reveal that some of the sample households benefited from more than one programme implemented under RKVY. At the aggregate, the highest numbers of beneficiary surveyed belonged to crop development followed by minor/ micro irrigation. The crop development and Micro/minor irrigation together represented more than 75 per cent of the beneficiaries in sample. Households benefitting from horticulture and animal husbandry programmes/schemes shared together about 21 per cent of the total beneficiaries. Agricultural mechanization, cooperatives and cooperation and fisheries together accounted for roughly 4 per cent of the total sample.

The intervention cost for the major sectors was Rs. 12,767 for mechanisation; Rs. 908 for crop development; Rs. 3.5 lakh for horticulture; Rs. 2.9 lakh for micro/minor irrigation and Rs. 2,524 for animal husbandry and dairy. The respective subsidy was Rs. 5,462 per beneficiary household for mechanisation; Rs. 866 for crop development; Rs. 2 lakh for horticulture and Rs. 1.5 lakh for micro/minor irrigation and Rs. 828 for animal husbandry and dairy. It is pertinent to note that in the case of mechanisation, households created new assets in order to avail the subsidy benefit whereas in crop development subsidy was given for the components like seed, fertiliser, bio-fertiliser and micro nutrients, etc, most of which were used by the households for growing usual crops.

A majority of farmers indicated about 10 to 20 per cent increase in their productivity as a result of investment in mechanical implements and 10 to 20 per cent or less in the case of crop development. The beneficiary farmers also indicated that the investment in mechanical implements helped their agricultural operations by saving labour and enabling timely sowing. In horticulture the intervention was to construction of green house, ripening chamber, provision of storage bins for storing onions and supply vegetable seeds, mini kits of

fertilizers, saplings of fruit trees, and provision of plastic crates for packaging and transportation of vegetable crops. The farmers experienced no change in productivity, cost or over all income due to the intervention. The government of Rajasthan implemented crop development program and provided improved seeds and planting material, fertilizers and plant protection chemicals, bio fertilizers/ bio control agents and other area based incentives. Most of the farmers responding the query reported 10 to 20 per cent increase in productivity. The households who obtained subsidy for farm pond / open wells indicated 30 to 50 per cent increase in irrigated area but experienced 10 to 20 per cent increase in their productivity and less than 10 per cent increase in income.

Per household investment in animal husbandry stood at Rs. 2,524 and subsidy amount was Rs. 828. Majority of the fodder chopper beneficiaries reported an increase in the productivity less than 10 per cent as a result of intervention. Among the selected beneficiary 42 per cent undertook training and capacity building activities. Almost 81 per cent of the households those attended training, propounded that the field visits were helpful in learning new technology or practices. They felt that there is a need to further expand the capacity building activities with focussed areas. The additional plus of RKVY programme was creation of employment. On average 3 days of additional employment per household constituting 1 day of own and 2 days of hired labour was created annually by the activities of RKVY in the State. The constraints faced by the households approaching RKVY were many and to mention a few: the eligibility criterion for availing RKVY subsidy was not known; lack of institutional credit facility; Information about RKVY programme details were not available; capacity building/technical advice was not provided; details of the department which pay subsidy were not available; procedure for subsidy was very tedious; and numbers of documents required for availing subsidy were too many. When asked

about the strong points about RKVY Programme, almost all the beneficiaries reported that provision of subsidies and financial help facilitated investment in acquiring farm machinery and equipments, livestock, development of infrastructure, adoption of and diversification of agriculture which otherwise would have been difficult.

About the infrastructure projects in the State, the main focus was on research, animal husbandry and dairy development, seed, cooperatives and cooperation, crop development, extension, organic farming/ bio fertilizer and NRM. Achievements of infrastructure project included establishing Cytogenetic investigation laboratories for animals, improving AI delivery system, integrated dairy farm parks, establishment of breed villages for sheep and goat, mobile laboratories, pesticide and bio-control laboratories, soil and water conservation, soil testing laboratories, increase in area under improved varieties and so on. Outcomes of the projects, as reported by the implementing agencies, among others included increase in productivity of various crops, improved soil fertility, improved water infiltration, increased seed germination, reduced cost of cultivation, improved training facilities, increased milk yield and enhanced farmers' knowledge and skill in doing farming activities.

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CONTENTS

1. Introduction

1.1 To spur growth in the Agriculture and allied sectors, National Development Council (NDC), in its meeting held on 29th May, 2007 observed that a special Additional Central Assistance (ACA) Scheme be introduced to incentivize States to draw up comprehensive agriculture development plans taking into account agro-climatic conditions, natural resources and technology for ensuring more inclusive and integrated development of agriculture and allied sector.

1.2 In pursuance to aforesaid observation and in consultation with the Planning Commission, Department of Agriculture & Cooperation (DAC), Ministry of Agriculture, Govt. of India launched Rashtriya Krishi Vikas Yojana (RKVY) from 2007-2008, which has been operational since then.

1.3 During XI Plan, Rs. 22,408.76 crore was released to States out of which Rs. 21,586.6 crore was utilized in implementing 5768 projects in certain broad categories namely; crop development, horticulture, agricultural mechanization, natural resource management, marketing & post-harvest management, animal husbandry, dairy development, fisheries, extension etc.

1.4 By virtue of these enhanced investments, agriculture and allied sectors could achieve an annual growth rate of 3.64% during the XI plan against a growth rate of 2.46% per annum in the X plan period.

1.5 Based on feedback received from States, experiences garnered during implementation in XI Plan and inputs provided by Stakeholders; Operational Guidelines of RKVY have been revised to not only enhance efficiency and efficacy of the programme but also its inclusiveness during XII Plan period.

2. Objectives of RKVY

2.1 RKVY aims at achieving and sustaining desired annual growth during the XII Plan period, by ensuring holistic development of Agriculture and allied sectors.

2.2 To recapitulate, the main objectives of the scheme are:

(i) To incentivize the States so as to increase public investment in Agriculture and allied sectors.

(ii) To provide flexibility and autonomy to States in the process of planning and executing Agriculture and allied sector schemes.

(iii) To ensure the preparation of agriculture plans for the districts and the States based on agro-climatic conditions, availability of technology and natural resources.

(iv) To ensure that the local needs/crops/ priorities are better reflected in the agricultural plans of the States.

(v) To achieve the goal of reducing the yield gaps in important crops, through focused interventions.

(vi) To maximize returns to the farmers in Agriculture and allied sectors.

(vii) To bring about quantifiable changes in the production and productivity of various components of Agriculture and allied sectors by addressing them in a holistic manner.

3.0 Eligibility Criteria and Inter State Allocation of Funds:

3.1 RKVY will continue to be implemented as a State Plan Scheme. The list of allied sectors as indicated by the Planning Commission will be the basis for determining the sectoral expenditure, i.e., Crop Husbandry (including Horticulture), Animal Husbandry and Fisheries, Dairy Development, Agricultural

Research and Education, Forestry and Wildlife, Plantation and Agricultural Marketing, Food Storage and Warehousing, Soil and Water Conservation, Agricultural Financial Institutions, other Agricultural Programmes and Cooperation. In addition, expenditures which are directly related to the development of agriculture viz., expenditure on shallow tube well, deep tube well, drip irrigation, sprinkler irrigation, dug wells or other similar irrigation activities which are budgeted under Agriculture Department of the State, authenticated figures of expenditure by Panchayati Raj Institutions (PRI) /Administrative Units on agriculture & allied activities will also be considered for calculating base line expenditure. (Also refer to Appendix-B)

3.2 Eligibility Criteria: A State will become eligible to receive RKVY allocation, if and only if:

a) The base line share of Agriculture and allied sectors in its total State Plan (excluding RKVY funds) expenditure is at least maintained; and

b) District Agriculture Plans (DAP) and State Agriculture Plans (SAP) have been formulated.

The base line level of expenditure will be the "minimum of the percentage expenditure incurred on agriculture and other identified related sectors during three years preceding to previous year". For States to become eligible, "average percentage share of expenditure in agriculture and other identified related sectors during last three years" should be at least equal to base line level (Illustration is at Appendix- A).

3.3 Inter-State Allocation: Once a State becomes eligible for accessing funds under RKVY, the quantum of assistance (or fund allocation) and the process of subsequent allocation to the State will be in accordance with the parameters and respective weights, as explained in Appendix-B.

3.4 There may arise a situation when a particular State becomes ineligible to avail of the funds under RKVY in a subsequent year due to its lowered expenditure on Agriculture and allied sectors. If this were to happen, such States shall be required to commit their own resources for completing the sanctioned/ ongoing projects/schemes under the RKVY.

3.5 RKVY Funds will be made available to the States in two installments of 50% each. Eligibility & Inter-State allocation criteria will not be applied for providing funds under the sub-schemes of RKVY or RKVY Special schemes.

3.6 Release of funds will be made to the State Government only and States may supplement RKVY projects from within their own resources.

4.0 Programme Components (Streams)

4.1 RKVY funds would be provided to the States as 100% grant by the Central Government in following streams.

(a) RKVY (Production Growth) with 35% of annual outlay,

(b) RKVY (Infrastructure and Assets) with 35% of annual outlay;

(c) RKVY (Special Schemes) with 20% of annual outlay; and

(d) RKVY (Flexi Fund) with 10% of annual outlay (States can undertake either Production Growth or Infrastructure & Assets projects with this allocation depending upon State specific needs/priorities).

4.2 RKVY (Production Growth): States can take up any project under this stream to raise production and productivity in agriculture and allied sectors. This will normally include all

food crop activities, including distribution of agricultural inputs, extension, soil health, plant health & Integrated Pest Management(IPM), production & distribution of seeds, animal husbandry, dairying & fisheries, training and skill development of stakeholders, production specific research projects, information dissemination etc. Projects proposed under RKVY (Production Growth) shall normally emanate from the District and State Agriculture Plans. Broad areas of focus for this Stream are at Appendix-C1.

4.3 RKVY (Infrastructure and Assets): Projects under this stream will emanate from State Agriculture Infrastructure Development Programme (SAIDP) (please refer to para 5.7 also). This will normally include projects selected on the basis of normative requirement of infrastructure, actual availability thereof and the gap in agriculture infrastructure in the State viz. setting up of laboratories and testing facilities, storage including cold-storages, mobile vans, agricultural marketing etc. An illustrative list of possible infrastructure and assets which can be funded under this stream is given at Appendix-C2. State Governments will also determine sectoral classification for investment requirements for infrastructure in public, public-private and private sectors and accordingly work out financial support for funding gaps in infrastructure taking into account viability gap which would be based on financial analysis. However, in any case, subsidy will be capped to 25% of total project cost. While a number of infrastructure items are covered under Rural Infrastructure Development Fund (RIDF) and Viability Gap Funding (VGF) of the Ministry of Finance, RKVY funds should supplement those sources and not replace them. In any case, quantum of assistance under RKVY should not exceed assistance under VGF.

4.4 RKVY (Special Schemes): This will comprise of schemes based on national priorities as notified by Govt. of India from time to time. In the event of Government of India not declaring any special subscheme in a year (or not continuing sub-schemes of previous year) or the aggregate amount earmarked for such special sub-schemes falling short of 20% of the RKVY budgetary allocation for the year, the remaining amount will be allocated additionally to RKVY (Production Growth Stream) funds.

4.5 Under RKVY (Production Growth) & RKVY (Infrastructure & Assets) streams, States are free to choose appropriate components/ activities, but it has to be ensured that these are reflected adequately in SAP and DAPs. Scheme(s) administered by the Departments of Agriculture and Cooperation, Animal Husbandry, Dairying and Fisheries, Dept. of Land Resources, Ministry of Water Resources, Ministry of Food Processing Industries etc., already have elaborate guidelines, which ought to be followed by the implementing Agencies for similar activities/project components. However, State must refrain from undertaking activities/components as illustrated in Appendix-D.

4.6 Cost Norm & Pattern of Assistance: Activities/components proposed under RKVY especially under production growth stream are generally covered under various ongoing schemes/programmes of Central Government viz. Dept. of Agriculture & Cooperation, Dept. of Animal Husbandry, Dairying & Fisheries, Dept. of Land Resources, Ministry of Water Resources, Ministry of Food Processing Industries, Ministry of New & Renewable Energy, Ministry of Rural Development etc. Technical requirements / standards and financial norms (cost norms and pattern of assistance) etc. for these activities/ components that have been specified in various schemes/prgrammes will also be applicable for RKVY. In the absence of such criterion in respect of any component in Central Plan Scheme, norms and conditions prescribed by respective State Governments for their schemes may be applied. In cases where no Central / State Govt. norms are available, a certificate of reasonableness of the

proposed project cost along with reasons thereof will invariably be given by State Level Project Screening Committee (SLPSC) in each such case. Even in such cases, financial assistance should not be more than 25% of the project cost (Also refer to para-6.1-6.3).

5.0 District and State Agriculture Plans:

5.1 Districts and State Agriculture Plans will remain as cornerstone of planning and implementation of this scheme.

5.2 District Agriculture Plans (DAPs) are integral to the District Development Plan. Each District will have a DAP after taking into consideration resources that would be available during XII Plan from other ongoing schemes (both State and Central), like Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), Swarnajayanti Gram Swarojgar Yojana (SGSY) and Backward Regions Grant Fund (BRGF), Integrated Watershed Management Programme (IWMP), Accelerated Irrigation Benefit Programme (AIBP), Bharat Nirman etc. DAP shall not be the usual aggregation of the existing schemes but would aim at moving towards projecting the requirements for development of Agriculture and allied sectors of the district. These plans will present the vision for Agriculture and allied sectors within the overall development perspective of the district. DAP's would also present their financial requirements in addition to sources of financing the agriculture development plans in a comprehensive way. Since achievement of RKVY's objectives is sequel to proper District Planning, these requirements should be adhered to by the State as far as possible. The States will have to specify the institutional mechanisms evolved by them for District Planning and submit a status report at the stage of the Annual Plan exercise. DAP will include animal husbandry and fishery development, minor irrigation projects, rural development works, agricultural marketing schemes and schemes for water harvesting and conservation, etc. keeping in view the natural resources and technological possibilities in each district.

5.3 District level potential linked credit plans (PLP) already prepared by the National Bank for Agriculture and Rural Development (NABARD) and Strategic Research and Extension Plans (SREP) developed under the Agricultural Technology Management Agency (ATMA) etc. may be referred for revision of DAPs. It should also be ensured that the strategies for convergences with other programmes as well as the role assigned to the Panchyati Raj Institutions (PRIs) are appropriately incorporated in DAPs. States may also engage consultants/consulting agencies to revise / update DAPs and SAP.

5.4 Each State will also have a comprehensive State Agricultural Plan (SAP) for XII Plan by integrating the District Plans. SAPs will invariably have to indicate resources that can flow from the State to the districts.

5.5 Several States/UTs have already prepared comprehensive district and State agriculture plans for XI Plan, which should be revised and updated appropriately for implementing RKVY during XII Plan keeping in view modification proposed for the plan period and emerging needs of the State.

5.6 Revision and updation of SAPs could be a two-way process. Firstly, State nodal department (or Agriculture Department) could get DAPs revised in the first instance to ensure that priorities of the State are properly covered in the district plans. States

should, at this stage of scrutiny, ensure that requirements of districts and priorities of the State are appropriately captured and aligned in DAPs. Alternately, State Nodal Agency could communicate to the districts in the first instance, the State's priorities that ought to reflect in the respective district plans and the districts may incorporate these in their updated district plans.

5.7 Preparation/revision of the DAPs is an elaborate, exhaustive and iterative process and care need be taken by the State nodal department and district agriculture department in ensuring that these plans cover the entire gamut of agriculture & allied sectors.

5.8 State Agriculture Infrastructure Development Programme (SAIDP): Each State will be required to prepare SAIDP in similar manner to that of DAPs and SAPs for identifying shelf of projects for RKVY (Infrastructure & Assets) stream.

SAIDP should ideally be consolidation of requirement of infrastructure identified in DAPs and SAP.

5.9 State Planning Department will provide revised/updated SAP and SAIDP to Department of Agriculture (DAC) and Planning Commission as a part of State's annual State Plan exercise.

6.0 State Level Project Screening Committee (SLPSC):

6.1 A State Level Project Screening Committee (SLPSC) will be constituted by each State for screening RKVY project proposals, which will be headed by Agriculture Production Commissioner or any other officer nominated by Chief Secretary. Other members of SLPSC would be decided by the State Chief Secretary.

6.2 SLPSC will screen all project proposals for ensuring conformity with RKVY guidelines and that they flow from SAP/DAPs besides being consistent with technical requirements / standards and financial norms (cost norms and pattern of assistance) etc. in respect of components that have been specified in relevant Central Government/State Government schemes (As also outlined in para-4.6).

6.3 SLPSC will also screen all Detailed Project Reports (DPRs) prepared by various departments for its suitability, its linkage to DAP, SAIDP and SAP and its adherence to the RKVY guidelines.

6.4 Before recommending projects to SLSC, SLPSC will further examine and ensure that:

a) Funds available under other schemes of the State Government and / or Government of India for the proposed projects have been accessed and utilized before they are brought under the RKVY umbrella;

b) RKVY projects/activities should not create any duplication or overlapping of assistance /area coverage vis-à-vis other schemes/programmes of State/Central Government;

c) RKVY funds are not being proposed as additional or 'top-up' subsidy to other ongoing schemes/programmes of State/Central Government;

d) State Agriculture Infrastructure Development Programme (SAIDP) has been prepared;

e) At least 25% of total value of projects including 'Production growth' and 'Assets & Infrastructure' Streams have emanated from comprehensive

district agricultural plan (CDAP) and have been approved by the District level Panchayati Raj Institutions (PRIs) so that field level gaps are correctly addressed;

f) DPRs have included provision for monitoring and evaluation;

g) For Research Projects proposed under RKVY, clearance of Indian Council of Agriculture Research (ICAR) has been obtained;

h) Convergence with other State/Central Schemes has been attempted; and

i) Recommended projects ensure adequate allocation to allied sectors including Farmer Producer Organizations (FPO).

A checklist containing items at 6.4(a) to 6.4 (i) shall be prepared and enclosed with SLSC agenda note.

7.0 State Level Sanctioning Committee (SLSC):

7.1 A State Level Sanctioning Committee (SLSC) headed by the Chief Secretary of the State is vested with the authority to sanction specific projects recommended by the SLPSC under each stream of RKVY in a meeting attended by representatives of Government of India. The quorum for SLSC meetings would not be complete without the presence of at least one representative from the Government of India. Composition of SLSC is at Appendix-E.

7.2 SLSC may co-opt two more members from Agricultural Research Organizations, reputed NGOs working in the field of Agriculture, District Collectors/Deputy Commissioners of important districts, and leading farmers. The State Governments will notify the constitution of SLSC and consequent changes in its composition/incumbent.

7.3 SLSC will, inter alia, be responsible for

a) Sanctioning the projects under RKVY;

b) Monitoring progress of each project sanctioned by it under each stream of RKVY;

c) Reviewing implementation of the schemes' objectives and ensure that the projects / schemes are implemented in accordance with the guidelines laid down;

d) Ensuring that no duplication of efforts or resources takes place;

e) Commissioning/undertaking field studies to monitor the implementation of projects;

f) Initiating evaluation studies from time to time, as may be required;

g) Undertaking any other project of importance to the State's Agriculture and allied sectors;

h) Ensuring that there are no inter-district disparities with respect to the financial patterns / subsidy assistance in the projects; and

i) Ensuring that all extant procedures and instructions of Govt. of India in addition to RKVY guidelines are followed so that the expenditure incurred on implementation of the projects is barest minimum with due concern for economy in expenditure and also in conformity with the cannons of financial propriety, transparency and probity.

7.4 SLSC shall meet as often as required but

shall meet at least once in a quarter.

8.0 Preparation & Sanctioning of Projects:

8.1 Detailed Project Reports (DPRs): RKVY is a project-based scheme. Thus, Detailed Project Reports (DPRs) shall have to be prepared for each of the RKVY projects incorporating all essential ingredients i.e. feasibility studies, competencies of the implementing agencies, anticipated benefits (outputs/outcomes) that will flow to the farmers/ State, definite time-lines for implementation etc. In case of large projects costing more than Rs. 25 crore, DPRs should be subjected to third party 'techno-financial evaluation' and circulated well in advance to concerned Central Ministries for obtaining comments/observations.

8.2 DPRs for all projects relating to agriculture, animal husbandry, dairying and fisheries etc., should certify that there would be no duplication of funding and/or undertaking similar activities in the same areas under other Plan schemes of Central/State Government. DPRs should clearly indicate the year-wise physical & financial targets proposed under each project.

8.3 It will be permissible for the States to initiate specific projects with definite time-lines, and clear objectives for Agriculture and allied sectors excluding forestry and wild life, and plantations (i.e., Coffee, Tea and Rubber).

8.4 The Nodal Department (refer to para-9.1) will place RKVY project proposals before the State Level Project Screening Committee (SLPSC) which shall, after due consideration, place eligible & scrutinized project proposals before SLSC for approval.

8.5 SLSC's will normally approve projects equal to the amount of State's allocation under RKVY. Under no circumstances, SLSC's may approve projects for more than 150% of the State's allocation under RKVY for funding in a year (after taking into account cost to be funded in the year concerned for multi-year infrastructure projects). In case projects with outlay higher than the allocation for the State is approved by SLSC, priority will be indicated in the Minutes of SLSC meeting inter-alia specifying costs and physical & financial targets that will be taken up for implementation during the year limited to the ceiling of total allocation of funds to the States for the year. In case of projects having implementation period spanning over more than one financial year, financial year-wise phasing of expenditure and the targets/milestones to be achieved will be specifically mentioned in the minutes of SLSC meetings.

8.6 While sanctioning projects under RKVY, SLSC shall also ensure that adequate coverage of small and marginal farmers, Scheduled Castes (SC), Scheduled Tribes (ST), physically challenged, women and other weaker segments of society is ensured so that the benefits of implementation are inclusive and accrue to the intended beneficiaries in accordance with Govt. guidelines and policies. In addition, SLSC shall also ensure that Farmer Producer Organization (FPO) are given desirable support in RKVY projects.

9.0 Planning & Implementation of RKVY

9.1 State Agriculture Department shall be the nodal department for the implementation of the scheme. For administrative convenience and ease of implementation, State governments may identify, or create an exclusive agency for implementing the scheme on

a fast-track. Even where such an Agency is created/designated, the entire responsibility of ensuring proper implementation of RKVY rests with the State Agriculture Department.

9.2 In a situation where the States notify a Nodal agency, the costs of running the agency, will have to be met from within the 1% limit of RKVY allocation (excluding special schemes) and subject to conditionality(s) indicated in para 11 of the guidelines.

States may supplement any administrative expenditure in excess of the 1% limit, from their own resources.

9.3 The Agriculture department/nodal agency will be responsible for the following:-

(i) Preparing State Agriculture Plan (SAP) & State Agriculture Infrastructure Development Programme (SAIDP) and ensuring the preparation of the District Agriculture Plans (DAPs).

(ii) Effectively coordinating preparation and appraisal of projects, implementing, monitoring, and evaluation with various Departments and implementing Agencies.

(iii) Management of funds received from the Central, and State Governments and disbursement of the funds to the implementing agencies.

(iv) Furnishing of utilization certificates and quarterly physical & financial progress reports to the Department of Agriculture and Cooperation. Indicative proforma for submission utilization certificate is at Appendix-F.

(v) Effectively utilizing and regularly updating web enabled IT based RKVY Management Information System (RKVY-MIS).

9.4 The State Level Nodal Agency will forward SLSC meeting notice along with sufficient number of copies (not less than 20) of agenda and project details to Department of Agriculture & Cooperation (DAC) so as to reach at least 15 days before the meeting of SLSC to enable Government of India's representatives to come prepared and to participate meaningfully in the SLSC meeting.

9.5 Once SLSC sanctions the projects, DAC will release funds to State Government only.

9.6 As envisaged in National Policy for Farmers (2007) (para 11-viii), Panchayati Raj Institutions (PRI) should be actively involved in implementation of RKVY especially in selection of beneficiaries, conducting social audit etc. Recommended activity mapping for effective devolution of funds, functions and functionaries to PRIs is at Appendix-G.

10.0 Release of Funds:

10.1 50% of the RKVY annual allocation will be released as first installment to the State, upon the receipt of the minutes of SLSC approving implementation of new projects and/or continuation of ongoing projects during current financial year alongwith lists of projects approved and their entry in RKVY Database (RDMIS).

10.2 In case, total cost of approved project is less than annual outlay, funds to the tune of 50% of approved project cost will be released.

10.3 Release of the second and final

installment would be considered on the fulfillment of the following conditions:

a) 100% Utilization Certificates (UCs) for the funds released upto previous financial year;

b) Expenditure of at least 60% of funds released in first installment during current year; and

c) Submission of performance report in terms of physical and financial achievements as well as outcomes, on a quarterly basis, within the stipulated time frame in specified format.

10.4 If a State fails to submit these documents within reasonable period of time, balance funds may be reallocated to better performing States.

10.5 Nodal Agency shall ensure that Project-wise accounts are maintained by the Implementing Agencies and are subjected to the normal process of Statutory Audit. Likewise, an inventory of the assets created under RKVY Projects should be carefully preserved and assets that are no longer required should be transferred to the Nodal Department, for its use and redeployment where possible.

10.6 Central assistance will be released as per the approved mechanism of the Ministry of Finance.

10.7 Nodal Agency/Department should ensure that the Central Assistance released under the Scheme is utilized in accordance with the approved State and District Plans. Since the amounts of the second and final installment of the allocation will depend upon the progress of utilization of funds, States should ensure that the funds released are utilized promptly, properly and progress reports are sent to DAC at the earliest. Non-utilization of central assistance will hinder further release of funds.

11.0 Administrative Expenses & Contingencies:

11.1 State is permitted to use upto 1% of its total RKVY funds (excluding funds allocated under RKVY sub-schemes) for incurring administrative expenditure that includes payments to consultants, recurring expenses of various kinds, staff costs, etc. However, no permanent employment can be created, nor can vehicles be purchased.

11.2 DAC may retain a proportion of 1% of the RKVY funds (including RKVY sub schemes) at Central level for monitoring, evaluation or for such administrative contingencies that may arise at various times.

11.3 Nodal Agency is authorized to hire consultants/consulting agencies to prepare the DPRs and up to 5% of the funds in the stream can be utilized for the preparation of DPRs.

12.0 Monitoring & Evaluation:

12.1 RKVY-Management Information System (RKVY-MIS): DAC has put in place a web-based Management Information System (MIS) for RKVY to collect essential information related to each project. States will be responsible for timely submission/updating project data online in the system (preferably on a fortnightly basis), which has been designed to provide current and authenticated data on outputs, outcome and contribution of RKVY projects in the public domain (http://www.rkvy.nic.in). As RKVY-MIS report shall be the basis of 'on line monitoring' and judging 'Inter-State performance', States may establish a

dedicated RKVY-MIS cell for this purpose.

12.2 To the extent possible, assets created by this scheme should be captured digitally and be mapped on a GIS platform for future integration onto National-GIS system.

12.3 Twenty five percent (25%) of the projects sanctioned by the State each year under the three streams e.g. RKVY (production growth), RKVY (Infrastructure & Assets) & RKVY (Sub-schemes) shall have to be compulsorily taken up for third party monitoring and evaluation by the implementing States.

12.4 Action plan for monitoring and evaluation will be chosen by SLSC every year in its first meeting based on project cost, importance of the project etc. preferably covering all sectors. The State Government will be free to choose any reputed agencies for conducting the monitoring and evaluation work in their States.

Requisite fees/cost towards monitoring & evaluation will be met by the State Government from the 1% allocation retained by them for administrative expenses.

12.5 DAC will evolve suitable mechanism for concurrent evaluation of implementation of RKVY. DAC may engage suitable agency for conducting State specific/Pan India periodic implementation monitoring and/or mid-term/end-term evaluation of the scheme.

12.6 The performance of the States will be reflected in the Outcome Budget document of this Ministry.

13.0 Convergence:

13.1 RKVY is additional central assistance to the State Plan for Agriculture and allied sectors and thus it is essential to encourage convergence with schemes like Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), Swarnajayanti Gram Swarojgar Yojana (SGSY) and Backward Regions Grant Fund (BRGF). States shall also ensure convergence with other Central Schemes of Ministry of Agriculture (e.g. Department of Agriculture & Cooperation & Department of Animal Husbandry, Dairying & Fisheries & Department of Agriculture Research & Education) and other relevant Ministries/Departments viz., Ministry of Food Processing Industries, Ministry of New and Renewable Energy, Department of Land Resources, Ministry of Rural Development, Ministry of Water Resources etc. Ministry of Panchayati Raj shall also be appropriately consulted for ensuring that local/Panchayat level requirements are adequately addressed in District Development Plans. Planning Commission and the Ministry of Agriculture will together examine the States' overall Plan proposals for Agriculture and allied sectors as part of the Annual Plan approval exercise.

14.0 Department of Agriculture and Cooperation, Ministry of Agriculture, Govt. of India may effect changes in the RKVY operational guidelines, other than those affecting the financing pattern as the scheme evolves, whenever such changes are considered necessary.

15.0 These guidelines are applicable to all the States and Union Territories.

Appendix-A

ILLUSTRATION

Computing Eligibility for Allocation of Funds under Rashtriya Krishi Vikas Yojana (RKVY)

1. Each state will become eligible to receive RKVY allocation, **if and only if:**

   a) The base line share of Agriculture and allied sectors in its total State Plan (excluding RKVY funds) expenditure is at least maintained.

   b) District Agriculture Plans and State Agriculture Plans have been formulated.

2. The base line level of expenditure will be the "minimum of the percentage expenditure incurred on agriculture and other identified related sectors during three years preceding to previous year".

3. For States to become eligible, "average percentage share of expenditure in agriculture and other identified related sectors during last three years" should be at least equal to base line level.

4. Let us consider the following example for State 'A': (Rs. in Crore)

Year	Expenditure in Agriculture & Allied sector (excluding RKVY funds)	Total Plan expenditure	% of total Plan Expenditure Incurred in Agriculture & Allied Sector
2009-10	492	10750	4.6
2010-11	709	11456	6.1
2011-12	605	13500	4.5
2012-13	1135	20000	5.7

5. Baseline percentage expenditure = Minimum percentage expenditure during preceding three (3) years (excluding RKVY funds) (2009-10, 10-11 & 11-12) = 4.5% (2011-12)

6. Average of last three years' share of expenditure in agriculture & allied sector (2012-13, 2011-12 & 2010-11): 16.3/3=5.43%

7. Since, average percentage share of last three years' expenditure (5.43%) is more than baseline percentage expenditure (4.5%); State is eligible for grant under the RKVY for 2013-14 provided it has also formulated District Agriculture Plans (DAPs) and State Agriculture Plan (SAP). Inter-State Allocation under RKVY for 2013-14 will be worked out by the Planning Commission using the parameters and weights indicated in Appendix-B of the Guidelines.

Appendix-B

Inter State Allocation of the funds under Rashtriya Krishi Vikas Yojana (RKVY)

1.0 Annual outlay under RKVY will depend upon the amount provided in State Budgets for Agriculture and allied sectors over and above the base line percentage expenditure incurred by the State Government on these sectors. Inter State allocation of RKVY funds will be based on the following parameters and weights:

Sl No	Criteria/Parameters	Weightage
1	Percentage share of net un irrigated area in a state to the net un irrigated area of all eligible States.	15%
2	Last three (3) years average area under oil seeds and pulses	5%
3	State's highest GSDP for agriculture and allied sectors for the past five years.	30%
4	Increase in expenditure in Agriculture and allied sectors in the previous year over the year prior to that year. (For example, previous year for allocating State's share for 2014-15 would be the year 2012-13 and the year prior to that would be 2011-12.	30%
5	Increase in Plan and non-plan expenditure made by the States from the State Budgets on Animal Husbandry, Fisheries, Agricultural Research & Education in the previous years over the year prior to that year.	10%
6	Inverse of Yield gap between state average yield and potential yields as indicated in the frontline demonstration data	10%

2.0 Ministry of Agriculture, in consultation with the Planning Commission, could modify above criteria/weights depending upon new parameters becoming relevant in future.

3.0 Some of the expenditure which should be excluded for the purpose of parameter concerning expenditure on agriculture and allied sector are:

(a) Expenditure on output subsidies such as that relating to food subsidy, subsidy for procurement of milk, bonus on procurement of food grains and other crops etc.;

(b) Expenditure on Civil Supplies and Public distribution system. However, expenditure on creation of storage and warehouse for agriculture purposes will be considered for the purpose of Parameter 4;

(c) Expenditure on interest subvention, electricity or diesel subsidy etc.;

(d) Direct income support to farmers, debt relief or other one time relief to farmers;

(e) Irrigation except as included in para-4 below.

4.0 Some expenditure which is directly related to the development of agriculture sector may be allowed in the expenditure on agriculture and allied sector for the purpose of parameter 4;

a) Expenditure on watershed development including State's share on Integrated Watershed Management Programme (IWMP);

b) Plan and non-plan expenditure on agriculture and allied sectors;

c) Plan expenditure on Minor Irrigation & Command Area Development; and

d) Expenditure incurred on agriculture and allied sectors out of the funds devolved for the decentralized district planning units or to the autonomous regional/sub-regional development councils set by the States such as Bodoland Territorial Council etc.

Appendix-C1

Areas of Focus under RKVY (Production Growth)

The components / activities which would be eligible for project based assistance under RKVY (Production Growth) are elaborated below. This is an illustrative list and the States may choose other components/activities, but ensure that they are reflected adequately in the SAP and the DAP.

a) **Integrated development of major food crops such as wheat, paddy, coarse cereals, minor millets, pulses, oilseeds:** Assistance can be provided for making available certified/HYV seeds to farmers; production of breeder seed; purchase of breeder seed from institutions such as ICAR, public sector seed corporations, production of foundation seed; production of certified seed; seed treatment; Farmers Field Schools at demonstration sites; training of farmers etc. Similar support would be provided for development of other crops such as sugarcane, cotton or any other crop/variety that may be of importance to the state.

b) **Agriculture mechanization:** Assistance can be provided to individual beneficiaries for farm mechanization efforts especially for improved and gender friendly tools, implements and machinery. However, assistance for large equipment e.g. tractor, combine harvester, sugarcane harvester, cotton picker etc. for which individual ownership may not be economically viable, assistance should only be limited for establishing custom hiring centres under RKVY (Infrastructure & Assets) stream.

c) **Activities related to enhancement of soil health:** Assistance can be provided to the farmers for distributing soil health cards; micro nutrient demonstration; training of farmers for promotion of organic farming including printing of publicity/utility literature; amelioration of soils affected with conditions such as alkalinity and acidity.

d) **Development of rainfed farming systems in and outside watershed areas:** Assistance for promoting integrated farming system (agriculture, horticulture, livestock, fisheries etc.) generating livelihoods for farmers Below the Poverty Line (BPL).

e) **Integrated Pest Management schemes:** This would include training of farmers through Farm Field Schools etc. on pest management practices; printing of literature/ other awareness programmes.

f) **Promoting Extension Services:** This would include new initiatives for skill development and training in the farming community and to revamp the existing State agricultural extension systems.

g) **Activities relating to enhancement of horticultural production:** Assistance will be available for nursery development and other horticulture activities.

h) **Animal husbandry and fisheries development activities:** Assistance will be available for improvement in fodder production, genetic up-gradation of cattle and buffaloes, enhancement of milk production, enlarging raw material base for leather industry, improvement in livestock health, poultry development, development of small ruminants and enhanced fish production.

i) **Study tours of farmers:** Study tours of farmers within the country especially to research institutions, Model farms etc.

j) **Organic and bio-fertilizers:** Support for decentralized production at the village level and their

marketing, etc. This will include vermicomposting and introduction of superior technologies for better production.

k) **Sericulture:** Sericulture upto the stage of cocoon production alongwith extension system for cocoon and silk yarn production and marketing.

The above list is not exhaustive. Therefore, schemes that are important for agriculture, horticulture and allied sector development, but cannot be categorized under (a) to (k) can also be proposed under this stream.

However, projects for creation/strengthening of infrastructure & assets should be funded under RKVY (Infrastructure & assets) stream.

Appendix-C2

Illustrative List of Projects that can be funded under RKVY(Infrastructure & Assets) Stream

Sl. No	SECTOR	DESCRIPTION OF INFRASTRUCTURE
1.	Horticulture	Nurseries Tissue Culture Labs Community tanks/Farm ponds/on farm water resources with plastic/RCC lining Green House/ Poly house/Shade net House structures Sanitary and phytosanitary infrastructure INM/IPM infrastructure such as Disease Forecasting Units, Plant Health Clinics, Leaf/Tissue Analysis labs, Bio-control labarotaries Vermi compost units Controlled atmosphere storage Cold storage/pre cooling/refrigerated van, cold chain infrastructure Ripening/Curing chamber Primary/minimal processing units Terminal/wholesale/Rural market Functional infrastructure for collection, sorting, grading etc. Infrastructure related to Horticulture produce processing as per Ministry of Food Processing Industries (MoFPI) guidelines.
2.	Natural Resources Management	Soil & Water conservation activities (Terracing, Gully Control Measures, Spill Ways, Check Dams, Spurs, Diversion Drains, Protection Walls etc.) Reclamation of problem Soils (Acid/Alkali/Saline/Ravine/Water logged).
3.	Pest Management & Pesticide quality control	Labs for production of bio-control agents State Pesticide Residue Testing Labs State Pesticide Testing Labs Bio-Pesticide Testing Labs Seed Treatment drums & chemicals
4.	Soil Nutrient Management Fertilizers Bio Fertilizers /Organic Farming	Setting up of new soil testing laboratories. Strengthening of existing soil test laboratories with micro-nutrient testing facilities. Setting up of new Fertilizer Quality Control Laboratories (FQCLs). Strengthening of existing FQCLs. Bio fertilizer Production Units. Fruit/Vegetables waste, compost production units.
5.	Animal Husbandry	Semen collection and Artificial Insemination(AI) Units/Production Center Breeding farms Dispensaries/Hospitals for treatment of Animals Vaccine Production Unit Diagnosis Labs, including Mobile Units

Sl. No	SECTOR	DESCRIPTION OF INFRASTRUCTURE
	Dairy	Animal Ambulance Cold Chain for storing and transportation of frozen Semen Tractor fitted with Fodder Block Machine Carcass rendering Plant to collect the fallen animals for processing/utilization in scientific manner Modernization of animal slaughter houses* and markets for livestock /livestock products Milk Collection Centers and Infrastructure : Purchase of milking machines (single/double bucket) Setting up of milk chilling/bulk milk cooling centres (BMC) alongwith automatic milk collection units (AMC) Setting up/modernization/strengthening of milk processing units Strengthening /expansion of cold storage facility for milk and milk product Purchase of insulated/refrigerated transport vehicles Setting up of milk parlor/milk booth Strengthening of lab facility in milk chilling/milk processing unit Establishment of cattle feed storage godown Establishment/strengthening of cattle feed plant Establishment of cattle shed for milch animals Setting /strengthening of ETP at milk chilling/milk processing unit
	Fisheries	Fish Ponds/Reservoirs Fish seed Hatcheries Marketing infrastructure Mobile Transport/Refrigerated vans Cold Storage & Ice Plants
6.	Marketing and Post-Harvest	Fruits & Vegetable Markets/Distribution Centres Market Infrastructural Facilities, including Agricultural Produce Market Committees (APMC) Construction of Specialized Storage Facilities like Onion Storage Godowns Electronic Trading including Spot and Futures Markets and E-auctioning Farmers Service Centres Food Grain Procurement Centres E-Kisan Bhawans / Internet Kiosks Grading including grading line Quality Control Packing
7.	Seeds	Seed Testing Labs Seed Processing Facilities Seed Storage Godowns including Dehumidified Refrigerated Seed Storage Godowns Seed Certification Agencies and Certification Infrastructure Seed Multiplication Farms

Sl. No	SECTOR	DESCRIPTION OF INFRASTRUCTURE
8.	Agriculture Mechanization	Custom Hiring Centers for Agricultural Equipment Agriculture Machines Testing Centers
9.	Agricultural Extension	Kisan Call Centres ATMA Infrastructure Knowledge / Technology Resource Centres
10.	Agriculture Research	Research Infrastructure Strengthening of Krishi Vigyan Kendras (KVKs)
11.	Minor / Micro Irrigation	Shallow Wells & Dug Wells Tube Wells (except in dark/grey /critical zone identified by Central Ground Water Board) Percolation & Minor Irrigation Tanks Farm Ponds Drip & Sprinkler Irrigation System Field Channels Piped Water Conveyance System

* Extant norms of Ministry of Food Processing Industries, Govt. of India / Dept. of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture, Govt. of India will apply.

Note:

1. Food processing units, especially those industries which get assistance under various schemes of the MoFPI, should not be eligible for assistance under RKVY.

2. State specific research projects through SAUs/ICARs in any area of agriculture and allied sectors may be undertaken under Production Growth stream only.

3. Infrastructure and Assets stream emphasizes promoting group approach for subsidies. Accordingly, level of subsidies in the case of unspecified projects should be kept to the minimum for higher coverage of beneficiaries/ areas.

4. State should form of stakeholders' groups/Farmer Producer Organizations (FPO) and involve them in planning, execution and future maintenance of the created assets.

Appendix-D

Illustrative List of Projects that should not be funded under RKVY

1. Creation/topping up of any kind of revolving fund / corpus fund ;

2. Expenditure towards maintenance of assets or any such recurring expenses;

3. Expenses towards Salary, Transport, Travelling Allowances (TA), Daily Allowances (DA) of permanent / semi-permanent employees. However, expenses towards hiring of manpower on outsourcing/contractual basis can be met within 1% allocation earmarked for administrative expenses with approval of SLSC.

4. Expenses towards POL (Petrol, Oil, Lubricants);

5. Financing State's share and/or topping up subsidy level in respect with other Central/State Schemes;

6. Foreign Visits/Tours including study tours of farmers abroad;

7. Purchase of vehicles;

8. Financing any kind of debt waiver, interest subvention, payment of insurance premium, compensation to farmers and calamity relief expenditure; additional bonus over & above Minimum Support Price (MSP);

9. Creating/Strengthening assets in Private Sector/NGO's beyond what is permissible under any schemes/programmes of Govt. of India.

Appendix-E

Composition of State Level Sanctioning Committee (SLSC)

Chief Secretary	-	Chairman
Agri. Prod. Commissioner /Principal Secretary (Agriculture)	-	Vice-Chairman
Secretary, Finance	-	Member
Secretary, Planning	-	Member
Secretary, Fisheries	-	Member
Secretary, Animal Husbandry	-	Member
Secretary, Environment and Forests	-	Member
Secretary, Panchayati Raj	-	Member
Secretary, Rural Development	-	Member
Secretary, Water Resources/Irrigation/Minor Irrigation	-	Member
Director, Agriculture	-	Member
Director, Horticulture	-	Member
Director, Animal Husbandry	-	Member
Director, Fisheries	-	Member
Representative of Department of Agriculture & Cooperation, Govt. of India (Officer not below the rank of Joint Secretary)	-	Member
Representatives of Departments of Animal Husbandry, Dairying & Fisheries, Govt. of India (Officer not below the rank of Joint Secretary)	-	Member
Representative of State Agriculture University	-	Member
Representative of Planning Commission	-	Member
Secretary, Agriculture	-	Member-Secretary

Note:

1. SLSC may co-opt two more members from Agricultural Research Organizations, reputed NGOs working in the field of Agriculture, Deputy Commissioners of important districts, and leading farmers.

2. The quorum for the SLSC meeting would not be complete without the presence of at least one representative from the Government of India.

Appendix-F

Form of Utilization Certificate

Sl. No.	Letter No. and date	Amount
	Total	

Certified that out of Rs. _____ of grants-in-aid sanctioned during the year_____ in favour of _____under this Ministry/Department Letter No. given in the margin and Rs._____on account of unspent balance of the previous year, a sum of Rs._____ has been utilized for the purpose of _____ for which it was sanctioned and that the balance of Rs._____remaining unutilized at the end of the year has been surrendered to Government (vide no. _____. dated _____) / will be adjusted towards the grants-in-aid payable during the next year _____.

2. The Utilization Certificate should also disclose whether the specified, quantified and qualitative targets that should have been reached against the amount utilized, were in fact reached, and it not; the reasons thereof. They should contain an ouput-based performance assessment instead of input-based performance assessment.

3. Certified that I have satisfied myself that the conditions on which the grants-in-aid was sanctioned have been duly fulfilled/are being fulfilled and that I have exercised the following checks to see that the money was actually utilized for the purpose for which it was sanctioned.

Kinds of checks exercised

1.
2.
3.
4.
5.

Signature _____

Designation _____

Date _____

Appendix-G

Recommended activity mapping for effective devolution of funds, functions and functionaries to Panchayati Raj Institutions (PRIs)

RKVY FUNCTIONS MAP

Sl. No.	ACTIVITY DESCRIPTION		State Government	District Planning Committee (DPC)	LOCAL GOVERNMENTS AND PLANNING BODIES			User groups. SHGs. Etc.
	Activity Category	Union Government			Panchayati Raj System/Institutions			
					District Panchayat	Intermediate Panchayat	Village Panchayat	
1.	Setting Standards	**DAC**- Issue of guidelines for implementation of RKVY in the States	Issue/translation of guidelines in local language.					
2.	Planning	**DAC & Planning Commission:** To provide framework for preparation of SAP.	Preparation of SAP by integrating the District Agriculture Plans (DAPs)	Will be associated in the formulation of DAP taking into account location specific agro-climatic conditions, natural resources etc.	Districts Agriculture Planning Unit (DAPU) may be actively associated in formulation of Comprehensive District Agriculture Plans	Block/Taluka Agriculture Planning Unit (BAPU/TAPU) may be associated in providing inputs for DAP.	Village Agriculture Planning Unit (VAPU) may be associated in identifying clusters/selection of beneficiaries.	
3.	Implementation of Projects (Crop, Development Horticulture, Micro Mini irrigation, Animal Husbandry, Sericulture etc. as per sectors taken up by each State)	**DAC-** Release of funds to State	Release of funds to implementing Departments/ Agencies.	Prioritise projects based on availability of funds	Will be associated in selection of site/ location of projects in consultation with implementing agencies.	Will be associated in selection of locations/villages for implementation of projects.	Will be associated in selection of beneficiaries based on cluster approach (however, there should not be any repeat beneficiary year after year in RKVY).	Priority should be given to SC/ST, Women and weaker section of the society.

4.	Monitoring & Evaluation of Projects	Impact Evaluation	Concurrent Evaluation	Supervise Implementation	Quarterly review meetings for monitoring progress of RKVY projects in district, providing feedback for policy formulation and planning.	Monitoring progress of RKVY interventions and providing feedback for DAPs.	Social audit shall be done at Gram Sabha level	

DAC- Dept. of Agriculture & Cooperation, Min. of Agriculture, Govt. of India, DAP-District Agriculture Plan, SHG-Self Help Groups, SAP-State Agriculture Plan

RKVY FINANCE MAP

Sl. No.	**Scheme sub-component/funding stream**	**Allocation (Rs. Cr.)**	**Percentage**	**Level to which mapped, based on activity mapping of function (% of allocation)**					**Remarks**
				Centre	State	Local government			User group/civil society	
						District Panchayat	Intermediate Panchayat	Village Panchayat		
Sectoral and district-wise allocation of projects/funds under RKVY shall be done by the States. State may devolve funds to Panchayat bodies as per projects allotted for implementation.										

RKVY DIVISION
Department of Agriculture & Cooperation
Ministry of Agriculture
Government of India

Krishi Bhawan, New Delhi
www.rkvy.nic.in

F. No 9-1/2013-RKVY
Government of India
Ministry of Agriculture
Department of Agriculture & Cooperation
(RKVY Cell)

Krishi Bhawan, New Delhi
Dated the 11th December, 2014

To

Principal Secretary (Agriculture)/ Agriculture Production Commissioner/Secretary (Agriculture)
(All States/ UTs/ As per list)

Subject: Revised guidelines for implementation of Rashtriya Krishi Vikas Yojana (RKVY) during XII Five Year Plan- reg.

Sir,

I am directed to refer to para 4.1 of revised RKVY operational Guidelines (2014) which stipulate that RKVY funds would be provided to the States as 100% grant by the Central Government in following streams.

(a) RKVY (Production Growth) with **35%** of annual outlay,
(b) RKVY (Infrastructure and Assets) with **35%** of annual outlay;
(c) RKVY (Special Schemes) with **20%** of annual outlay; and
(d) RKVY (Flexi Fund) with **10%** of annual outlay (States can undertake either Production Growth or Infrastructure & Assets projects with this allocation depending upon State specific needs/priorities).

Aforesaid distribution is applicable at Central level, out of which outlays for Special schemes are held back by this Department for allocating among Programmes of National priorities e.g. BGREI, VIUC, NMPS etc.

States are provided with allocations under **RKVY (Normal) category** comprising of **Production Growth, Infrastructure & Assets and Flexi Fund streams**.

Out of total allocations available to States under **RKVY (Normal) category** *(excluding allocation under Special Schemes)*, percentage shares of Production Growth, Infrastructure & Assets and Flexi Funds are **43.75%, 43.75% and 12.5%** respectively. Out of these, as per RKVY guidelines, States can allocate a maximum of **56.25%** (43.75%+12.5%-flexi fund) to either Production Growth or Infrastructure & Assets streams. On the other hand, a **minimum allocation 43.75% is stipulated** for both these streams.

On the basis of requests received from State Governments and to bring more flexibility in implementation of RKVY and to further boost creation of agriculture infrastructure & assets, it has now been decided that to **waive off the requirement of minimum allocation of RKVY fund** (*35% at Central Level or 43.75% at State Level*) **to "Production Growth Stream".**

Accordingly, States will be able to allocate beyond 56.25% of their RKVY Normal allocation to Infrastructure & Assets stream. However, minimum stipulated allocation of RKVY fund to 'Infrastructure & Asset stream' (*35% at Central Level or 43.75% at State Level*) shall continue, which means that States have to allocate at least 43.75% of their RKVY (Normal) to this stream. As an illustration, following table may be referred to:

Scenario	Infrastructure & Assets (% allocation)	Production Growth (% allocation)	Total RKVY Normal (excluding Special Scheme) allocation at State Level
1	43.75%	56.25%	100%
2	50%	50%	100%
3	60%	40%	100%
4	80%	20%	100%
5	100%	0%	100%
6	25%	75%	Not allowed. Min. stipulation in Infrastructure is not met.

Yours faithfully,

Vinaya Kumar

(V.K Srivastava)
Under Secretary to the Government of India
Ph. No.011- 23383990

Copy to:

Director (Agriculture) of All States/UTs

Joint Secretary (Coordination), Dept. of Animal Husbandry, Dairying & Fisheries, Krishi Bhawan, New Delhi/ All Joint Secretaries of DAC.

Annexure III

Conversion factors:

Rajasthan

Sr No	State	District	Block	1 Ha = ____ Bigha	Conv. Factor	1 Acre= ____bigha
				(Figures in Bigha)		(Figures in Acres)
1	Rajasthan	Ganganagar	Padam	4	2.5	1.60
			Sadhulsar	4	2.5	1.60
2	Rajasthan	Bharatpur	Kama	4	2.5	1.60
			Nadbai	4	2.5	1.60
3	Rajasthan	Jaipur	Phulera	4	2.5	1.60
			Kotputali	4	2.5	1.60
4	Rajasthan	Jaisalmer	Jaisalmer	6.25	3.91	2.50
			Pokharan	6.25	3.91	2.50
5	Rajasthan	Jhalawar	Jhalapatan	4	2.5	1.60
			Khanpur	4	2.5	1.60
6	Rajasthan	Udaipur	Gogunda	5	2	2.00
			Salumbar	5	2	2.00
7	Rajasthan	Pali	Rohat	6.25	3.91	2.50
			Bali	6.25	3.91	2.50

Annexure IV

INDEX FOR RKVY SUCCESS STORIES

Sl. No.	Name of the State	Title
1.	Success Stories	1. Cooling the Milk at Collection Centres and Farms with Bulk Milk Coolers
2.	Latest Success Stories	1. Cooling the Milk at Collection Centres and Farms with Bulk Milk Coolers

Visit: http://rkvy.nic.in/static/New-Success-Stories.htm