RATHINDRA KRISHI VIGYAN KENDRA – A UNIQUE JOURNEY SINCE 1994

COMPILED BY

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Contents

Chapter – I

Introduction

At 179.9 million hectares, India holds the second largest agricultural land in the world. India has the high proportion of agricultural land (54.7 per cent or 179.9 million hectares).With 20 agro-climatic regions, all 15 major climates in the world exist in India. The country also possesses 46 of the 60 soil types in the world. Total food grains production in India reached an all-time high of 259.32 million tonnes in FY12. Rice and wheat production in the country stood at 105.3 and 94.9 million tonnes, respectively. **India is the largest producer of pulses, milk, tea, cashew and jute; and the second largest producer of wheat, rice, fruits and vegetables, sugarcane, cotton and oilseeds. India is the largest producer of mango and banana, and has the highest productivity of grapes in the world.** India is one of the largest manufacturers of various farm equipments like tractors, harvesters and tillers. **India manufactures one-third of tractors in the world;** the number of tractors in the country is estimated to reach 16 million by 2030 from 4 million in 2012.

Here we should remember that a large population is the key driver of demand for agricultural products in India. Rising urban and rural incomes have also aided demand growth for agricultural products. External demand has also been growing especially from key markets like the Middle East.

Government is increasing the Minimum Support Price (MSP) to ensure higher crop production. Institutions like Krishi Vigyan Kendras (KVKs) and schemes like Rashtriya Krishi Vikas Yojana (RKVY) incentivise states to increase private investment in agriculture and allied sectors. Govt. of India also launched National Food Security Mission (NFSM) to increase production of rice, wheat and pulses. In 2011–12 total food grain production of India was 259.3 million tonnes. GDP of agriculture and allied sectors in India reached USD 151.8 billion in FY12. According to the Central Statistical Organisation (CSO), the agriculture and allied sector grew 2.8 per cent in FY12. Agriculture is the primary source of livelihood for about 58 per cent of India's population. At USD30.5 billion, agriculture accounted for 6.8 per cent of total Gross Capital Formation in FY12. Under the FY14 Union Budget, planned outlay for various schemes under the Department of Agriculture and Cooperation (DAC) has been fixed at USD11.8 billion.

Here we should mention that there are two major agricultural seasons in India: Kharif and Rabi. Kharif season lasts from April to September (summer); rice (paddy) is the season's main crop. Rabi season lasts from October to March (winter); wheat is the season's main crop.

Source: - Ministry of Agriculture and Co-operation, Govt. of India.

The State of West Bengal

Lying between 21° 25' 24" and 27°13' 15" north latitudes and 85°48' 20" and 89°53' 04" east longitudes, the State shares its borders with three different nations – Bangladesh, Bhutan and Nepal – and five other Indian States, viz. Orissa, Jharkhand, Bihar, Sikkim and Assam.

The climate of the State is tropical and humid except in the northern hilly region which is close to the Himalayas. The average rainfall in the State is about 1750 mm with considerable variation among the districts ranging between **1234 mm in Birbhum** to 4136 mm in Jalpaiguri. The temperature in the mainland normally varies between 24°C to 40°C during summer and 7°C to 26°C during the winter.

Spread over an area of 88752 sq km, the State accounts for 2.7% of the total geographical area of the country while its population of 801.76 lakh accounts for nearly 8 per cent of the entire population of the country thus making West Bengal the most densely populated State as per 2001 census (903 persons per sq km as against the national average of 325 persons per sq km).

The total scheduled caste population in the State at 184.53 lakh and the total scheduled tribe population at 44.07 lakh constitute 23.01 per cent (all India: 16.20 per cent) and 5.50 per cent (all India: 8.20 per cent) of the entire population of the State respectively.

The average literacy rate in the State is 68.64 per cent (female literacy: 59.60 per cent) which is higher than the national average of 65.38 per cent (female literacy: 53.70 per cent).

Of the total rural workers, 19.53% and 19.30% are cultivators and agricultural labourers, respectively, while 4.72 percent are engaged in household industries. According to the Planning Commission, 31.85 percent of the total population lived below poverty line in 1999-2000.

The estimated Gross State Domestic Product in the State at constant prices (Base Year: 1999-00) was Rs.2,20,197.70 crore, which grew by 7.74 per cent over 2006-07. The per capita income in the State at constant prices (Base Year: 1999-00) stood at Rs.23,228.71 (growth by 6.78% over 2006-07) while the national per capita income stood marginally higher at Rs.24,295 (7.6 % growth). The primary sector contributed 24.16 per cent to the State's GDP at constant prices (Base Year: 1999-00) during 2007-08 while it was 24.82 per cent during 2006-07 and which has declined over the years from 31.45 per cent during 1999-2000.

Map of West Bengal

In the Agricultural sector, the State recorded a growth of 5.14 per cent while the national growth rate was 4.90 per cent.

Scenario of Agriculture and Allied Sectors in West Bengal

With nearly 72 per cent of the population living in the rural areas, agriculture is the predominant occupation in the State. The index number of agricultural area, production and productivity during 2007-08 with 1981-82 as the base year was 116, 252 and 218 respectively.

The total reporting area of the State is 86.84 lakh ha, of which 52.96 lakh ha is the Net Sown Area (61 per cent of the total reporting area). The Gross Cropped Area is 97.52 lakh ha with a cropping intensity of 184 per cent.

Agriculture in the State is small farmer centric with 90 per cent of the cultivators being small and marginal farmers. Small and marginal farming communities hold 84 percent of the State's agricultural lands. Marginal operational holding (less than 1 ha) accounts for 88.8 percent of the total operational holdings as against 69.8 percent at all India level.

Cropping pattern in the State is dominated by food crops which account for about 78 per cent of the area under principal crops. Rice is cultivated in 58.48 lakh hectares (production of 161.48 lakh MT) followed by cereals (all combined) in 63.49 lakh hectares and oilseeds in 7.14 lakh hectares, jute in 6.09 lakh hectares and potato in 3.67 lakh hectares. **The state is second largest producer of potato after Uttar Pradesh** and one of the highest producers of vegetable in the country. **Traditionally, West Bengal has been the highest producer of jute. The State also accounts for 25 per cent of tea production in the country**, next only to Assam.

Against the ultimate irrigation potential of 67.43 lakh hectares, the gross irrigation potential created through major, medium and minor irrigation in the State till the end of March 2009 was 55.01 lakh hectares. The percentage utilisation of potential created is 81.73 percent in major and medium irrigation structures and 81.64 percent in minor irrigation.

The share of livestock sector in total State Domestic Product (SDP) is 4.41 percent and that in Agricultural SDP is 18.6 percent. Despite significant increase in production of various livestock products during the past three decades, the State still faces a number of challenges in augmenting productivity of livestock and poultry birds for bridging the ever increasing demand – supply gap.

The State is one of the leading producers of fresh water fish and the **largest producer of fish seeds in the country**. In the inland fishery sector, West Bengal accounts for 30 percent of the total fish production of the country The export earnings from the fisheries sector grew from Rs. 50 crores in 1987-88 to Rs.725 crores in 2008-09 with shrimps being the major commodity. The State is the fourth largest exporter in the country despite having a small coastline of 150 km.

Source: - Dept. of Agriculture, Govt. of West Bengal

Birbhum - Agricultural Perspective

Birbhum is an important district in the Rarh region of the State of West Bengal having a considerable area under undulating topography in the western part of the district. Most of the rivers namely, Mayurakhshi, Bramhani, Hinglo, Bansloi, Kopai, Brakreswar, Siddheswari, Dwarka etc. enter through the western side of the district and pass through the eastern direction. There are innumerable numbers of rivulets locally known as kandor spreading all over the district. The river, Ajoy divides this district from Burdwan. There are some swamp low lying areas known as *beel* e.g., Langalghata, Pahanpuri, Rajchandrapur etc.

Excepting the monsoon, dry weather prevails throughout the year in this district with variation of temperature from 12.7 ºC to 28.3 ºC in the winter and from 25.5 ºC to 39.4 ºC in the summer. The normal rainfall is 1430.5 mm.

The predominant soil types are old alluvial and red lateritic with low to medium in organic carbon and phosphate content and medium to high in potash. The soil is acidic in nature with pH range of 5.0 to 6.5.

There are two major irrigation sources in this district – Mayurkhshi Reservoir Project is the biggest and Hinglow River Project is another.

Rice is the major crop of this district and occupies about 70 percent of the grossed cropped area. The other important crops are wheat, potato, mustard, vegetables, sugarcane and pulses.

Utilizing the existing prospects of horticultural crops in the district, the Food Processing Industries and Horticulture Department, Government of West Bengal has opened up the avenues among the growers for expansion of horticulture e.g., vegetables, fruits, flowers, spices, medicinal and aromatic plants etc. which in turn would increase the nutritional status as well as standard of living

The district was mainly rain-fed and mono-cropped during the pre-independence period when crop failure and occasional famine was a regular phenomenon. It has made a steady progress in agriculture during the post-independence era through the gradual development of irrigation facilities, introduction of high yielding varieties and adoption of improved technology by the cultivators. **Now the district has attained surplus production in case of paddy, potato and vegetables.** The Rathindra Krishi Vigyan Kendra, Palli Siksha Bhavana, Visva-Bharati established in the year 1994 by the Indian Council of Agricultural Research (ICAR) and the Agricultural Extension wing of the State Government has played the key role in achieving this success.

Successful implementation of the different Government Programme / Schemes like SFPP, OPP, NPDP, Dry Land Farming, RSVY etc. of the recent past and present ongoing schemes like Macro Mode Work Plan [Farm Mechanisation, Soil Health Management, Crop Diversification, IPM, Bio-village Programme, ICDP, Sugarcane Development Scheme, System of Rice Intensification (SRI), Woman Farmers Training Programme], NWDPRA, ISOPOM, Front Line Demonstration, Dry Land Farming, RKVY, ATMA, NFSM (Pulse), Seed Village, NAIS etc. have been contributing a lot to change the outlook and mental makeup of the cultivators for increasing the level of production and thereby raising their standard of living. There is a recent trend in using improved crop varieties and modern technology like SRI, Balanced use of plant nutrients, Judicious application of chemical pesticides etc. after the introduction of IPM, INM Scheme.

The newly introduced Government Programme like cotton cultivation under Mini Mission – II have also been taken up in this district.

The immense impetus from the Rathindra Krishi Vigyan Kendra and the Panchayat functionaries and active participation of the farmers leads the agriculture extension personnel not only in augmenting the production and productivity of the existing crops but introduction of new crop species for the betterment of the agrarian society of this district.

Source: - Dept. of Agriculture, Govt. of West Bengal.

Genesis of Rathindra Krishi Vigyan Kendra

Rathindra Krishi Vigyan Kendra is situated at Sriniketan, Visva-Bharati, the Place of the Nobel Laureate Rabindra Nath Tagore who was also a great reformer of Rural Area. Gurudev started Agriculture and rural development work in Sriniketan from 1912; the agricultural work of Sriniketan was under Surul Krishi Samiti. It was known as Sriniketan Krishi Vibhag (Sriketan Agriculture Department) up to 1921. In 1922, Gurudev purchased Surul Kuthi Bari from the landlord of Raipur. Earlier it was a go down of Eastern Railways. He also gave the idea of rural reconstruction in his famous "Sriniketan Experiments" in the year 1921-22. Gurudev Rabindra Nath Tagore through his well known "Sriniketan Experiment" wanted to create self responsibility among the villagers to solve the various problems of their lives by continuous village action. Tagore did never use the word "Rural Development" as he believed that the villages in ancient India had lots of resources and talents. He firmly believed that the need of the time was to explore all the resources and talents from the villages and in this regard he used the term "Rural Reconstruction" i.e. to restore the spirit of the villages and the villagers. He also emphasized that the approach to rural problems should be integrated and not the piece meal. He rightly wrote "Welfare of the community is a combination of many components. They are intimately linked up with one another. If one of them is kept separate, we miss the result". Only when health, intellect, knowledge, work and a feeling of enjoyment are mixed up together, man's welfare attains fulfilment. In short, integrated programme of reconstruction with its due emphasis on the development of human potential was the major axis of his rural reconstruction work. Tagore through his rural reconstruction programme wanted to create self-respect among the villagers. His maximum emphasis, of course, lay in recognizing that the development of human factor was of the utmost importance in the task of implementation of any village reconstruction plan.

In this back-drop, the Indian Council of Agricultural Research (ICAR) was approached to start a Krishi Vigyan Kendra (Farm Science Centre) in the Visva-Bharati, the first Central University of independent India, just because the fitness of the place performing as an institution or centre for training of the farmers and the peasants for betterment of their occupations, dissemination of technical knowhow and also carrying out adaptive trials on a sustained basis.

Finally Indian Council of Agricultural Research (ICAR) established the Krishi Vigyan Kendra (KVK), Palli Siksha Bhavana, Visva-Bharati on 4th October, 1994. This KVK was sanctioned to Visva-Bharati for the farming community and agricultural practioners of Birbhum district of West Bengal, India. This KVK was named after Rathindra Nath Tagore, the eldest son of Gurudev Rabindra Nath Tagore. Born on 27th. November, 1888, Rathindra Nath Tagore was one of the first batches of five students of the Brahmacharya School of Santiniketan. He was sent to the University of Illinois, USA to study the Agricultural Science. Rathindra Nath was the first Agricultural Graduate in whole Asian Continent. On return from USA, he conducted agricultural experiments with improved seeds and fertilizers at the Zamindari Lands of the Tagore family in Silaidaha and Patisar in East Bengal (now in Bangladesh). With the establishment of Sriniketan in 1922, he came to work in his father's dream project at Sriniketan. Rathindra Nath became the first Vice-Chancellor of Visva-Bharati when it was incorporated as the first Central University of independent India in 1951. He retired from the post of Vice-Chancellor of Visva-Bharati in 1955 on health reasons and died in the year of the Birth Centenary of his father in 1961.

The foundation stone of Rathindra Krishi Vigyan Kendra (RKVK) was laid out by late Dr. Shankar Dayal Sharma, Former Hon'ble President of India. Rathindra Krishi Vigyan Kendra is situated in Bolpur-Sriniketan Community Development (CD) Block in the District of Birbhum. It is located near Bolpur-Sriniketan Block Development Office and Chip Kuthi Staff Quarters of Visva-Bharati. The distance of Bolpur-Sriniketan Railway station from Howrah Railway station or from Kolkata is 151 km and by Road the distance is 156 km. The distance of Rathindra Krishi Vigyan Kendra is 5 km from Bolpur Santiniketan Railway Station.

Rathindra Krishi Vigyan Kendra is attached with the Palli Siksha Bhavana (Institute of Agriculture), Visva-Bharati. The Principal of Palli Siksha Bhavana is the In-charge of RKVK. Palli Siksha Bhavana was established on September 1, 1963 as Palli Siksha Sadana and was renamed as Palli Siksha Bhavana by the Visva-Bharati Act, 1984. Palli Siksha Bhavana imparts education in Agricultural Sciences at under-graduate and post-graduate levels. It offers four years B.Sc. (Ag.) Hons. Course, two years M.Sc. (Ag.) Course and Ph. D. Courses.

Rathindra Krishi Vigyan Kendra (RKVK) is a Farm Science Centre of Visva-Bharati sponsored by Indian Council of Agricultural Research (ICAR) for the farming community of Birbhum district. It has five mandates i.e. vocational Training, In-service Training, Front Line Demonstration, On Farm Testing and Seed production. This is one of good transfer of agriculture and allied technology Kendra in Visva-Bharati for farmers, farm women, rural youths as well as grass-root level extension functionaries of Birbhum district. The benefited adopted farmers of this Kendra also transfer agricultural technologies to other farmers of their areas as well as other farmers of Birbhum district even some farmers of nearby districts like Burdwan, Murshidabad of West Bengal and Dumka of Jharkhand i.e. Farmers to Farmers Extension Technology Dissemination or Farmers led Extension. This Kendra of Visva-Bharati is working on the idea of Sriniketan Experiment of Gurudev. The Kendra is doing agricultural technology transfer to agricultural practitioners through All India Radio, Doordarshan etc. to different parts of West Bengal and Jharkhand. Tagore dream of rural reconstruction inspire the KVK constantly to work more with the rural people.

Location of Rathindra KVK

Rathindra Krishi Vigyan Kendra is situated at Sriniketan in the Bolpur-Sriniketan Community Development (CD) Block in the District of Birbhum. **The Birbhum District is divided into three Agro-Ecological Situtation viz. AES – I, AES – II and AES – III. The Rathindra KVK is situated in the AES – I (details are given in the next Chapter).** The Rathindra KVK is located near Bolpur-Sriniketan Block Development Office and Chip Kuthi Staff Quarters of Visva-Bharati. The distance of Bolpur-Sriniketan Railway station from Howrah Railway Station or from Kolkata is 151 kms and by Road the distance is 156 kms. The distance of Rathindra Krishi Vigyan Kendra is 5 kms from Bolpur- Santiniketan Railway Station.

Sriniketan where the Rathindra KVK is situated is located at 23°40′33″N 87°39′37″E. Bolpur-Sriniketan community development block has an area of 333.92 km^2.

Gram Panchayats

Gram panchayats of Bolpur-Sriniketan block or Panchayat Samiti are: Bahiri-Panchosowa, Kankalitala, Kasba, Raipur Supur, Ruppur, Sarpalehanna-Albandha, Sattore, Sian-Muluk and Singhee.

Demographics

As per 2001 census, Bolpur-Sriniketan block had a total population of 175,490, out of which 89,581 were males and 85,909 were females. Bolpur-Sriniketan block registered a population growth of 15.42 per cent during the 1991-2001 decade. Decadal growth for Birbhum district was 17.88 per cent. Decadal growth in West Bengal was 17.84 per cent.

Scheduled castes at 54,667 formed around one-third the population. Scheduled tribes numbered 34,177.

Literacy

As per 2001 census, Bolpur-Sriniketan block had a total literacy of 59.97 per cent for the 6+ age group. While male literacy was 69.30 per cent female literacy was 50.26 per cent. Birbhum district had a total literacy of 61.48 per cent, male literacy being 70.89 per cent and female literacy being 51.55 per cent.

Chapter – II

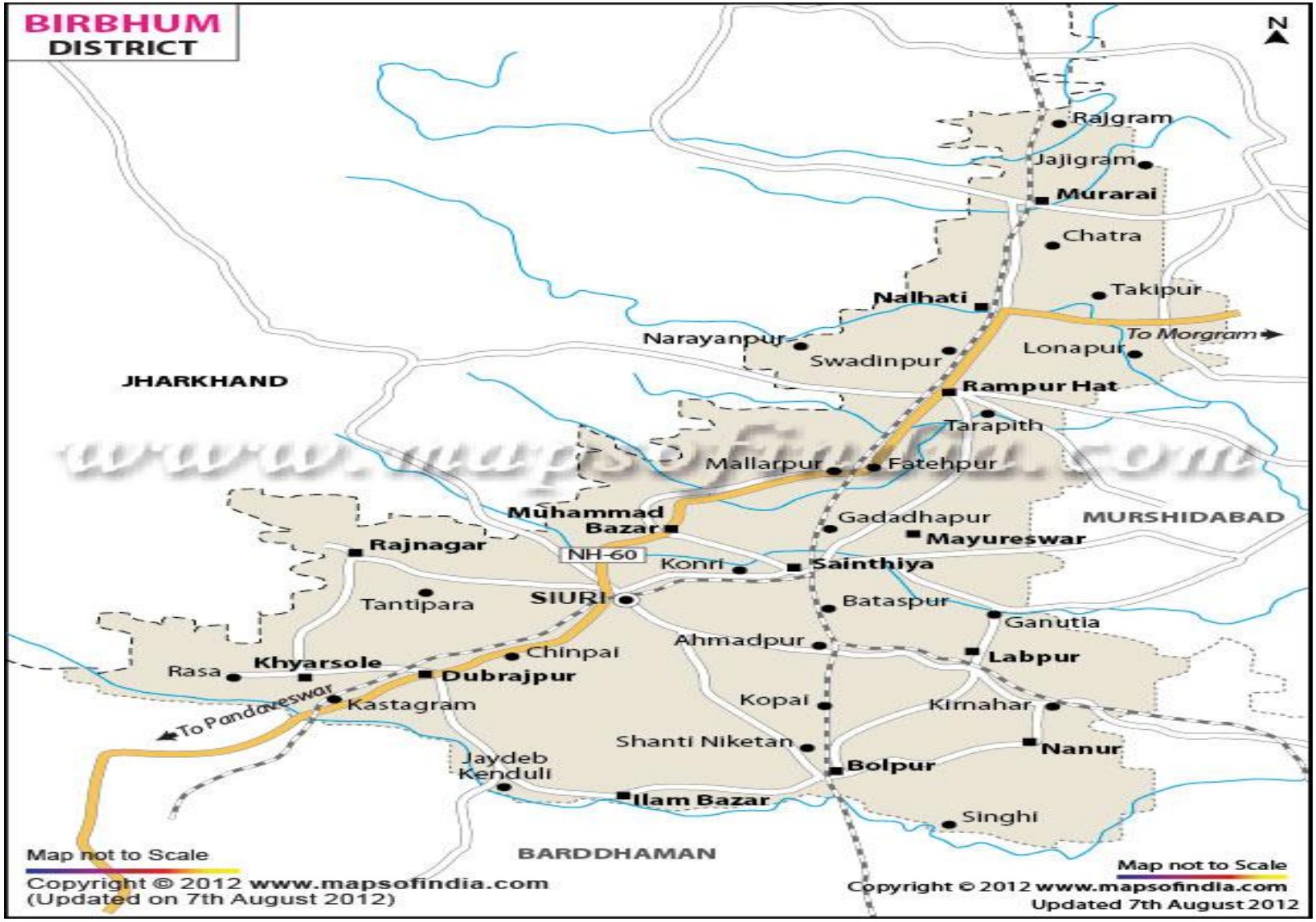
Brief about the District of Birbhum

In West Bengal, India lies the District of Birbhum. It is an administrative district and is the northernmost district of Burdwan division, one of the three administrative divisions of the state.

It is fondly called "the land of red soil" and is famous for the topography and its varied heritage. Prominent factors of the district are the alluvial farmlands, the bushy region, the history of the district and of course the Santiniketan, which is renowned worldwide. Plenty of rivers flow from the district making it very fertile and apt for agriculture.

Location of Birbhum:-

The district is situated between 23 degree 32'30" and 24 degree 35' 0" north latitude and 87 degree 5' 25" and 88 degree 1' 40 " east longitudes and occupies around 1,755 sq kilometers. It is surrounded by districts as well as rivers. On the map the district (Birbhum) looks like an isosceles triangle. The apex is situated at the northern extremely not far south of the point where the Ganges and the hills of Santhal Parganas of Jharkhand beginning to diverge while the river Ajoy forms the base of the triangle. Birbhum is bounded on the north and west by the Santhal Parganas, by the districts Murshidabad and Burdwan on the east, and on the south by Burdwan. The Birbhum is separated from the Burdwan district by the river Ajoy. The district comprises three sub-divisions namely- Bolpur, Rampurhat and Suri Sadar.


BIRBHUM
DISTRICT
N
Rajgram
Jajigram
Murarai
Chatra
Nalhati
Takipur
To Morgram
Narayanpur
Swadinpur
Lonapur
JHARKHAND
Rampur Hat
Tarapith
Mallarpur
Fatehpur
Muhammad Bazar
Gadadhapur
MURSHIDABAD
Mayureswar
Rajnagar
NH-60
Konri
Sainthiya
Tantipara
SIURI
Bataspur
Ganutla
Ahmadpur
Chinpai
Labpur
Rasa
Khyarsole
Dubrajpur
To Pandaveswar
Kastagram
Kopai
Kirnahar
Shanti Niketan
Nanur
Jaydeb Kenduli
Bolpur
Ilam Bazar
Singhi
BARDDHAMAN
Map not to Scale
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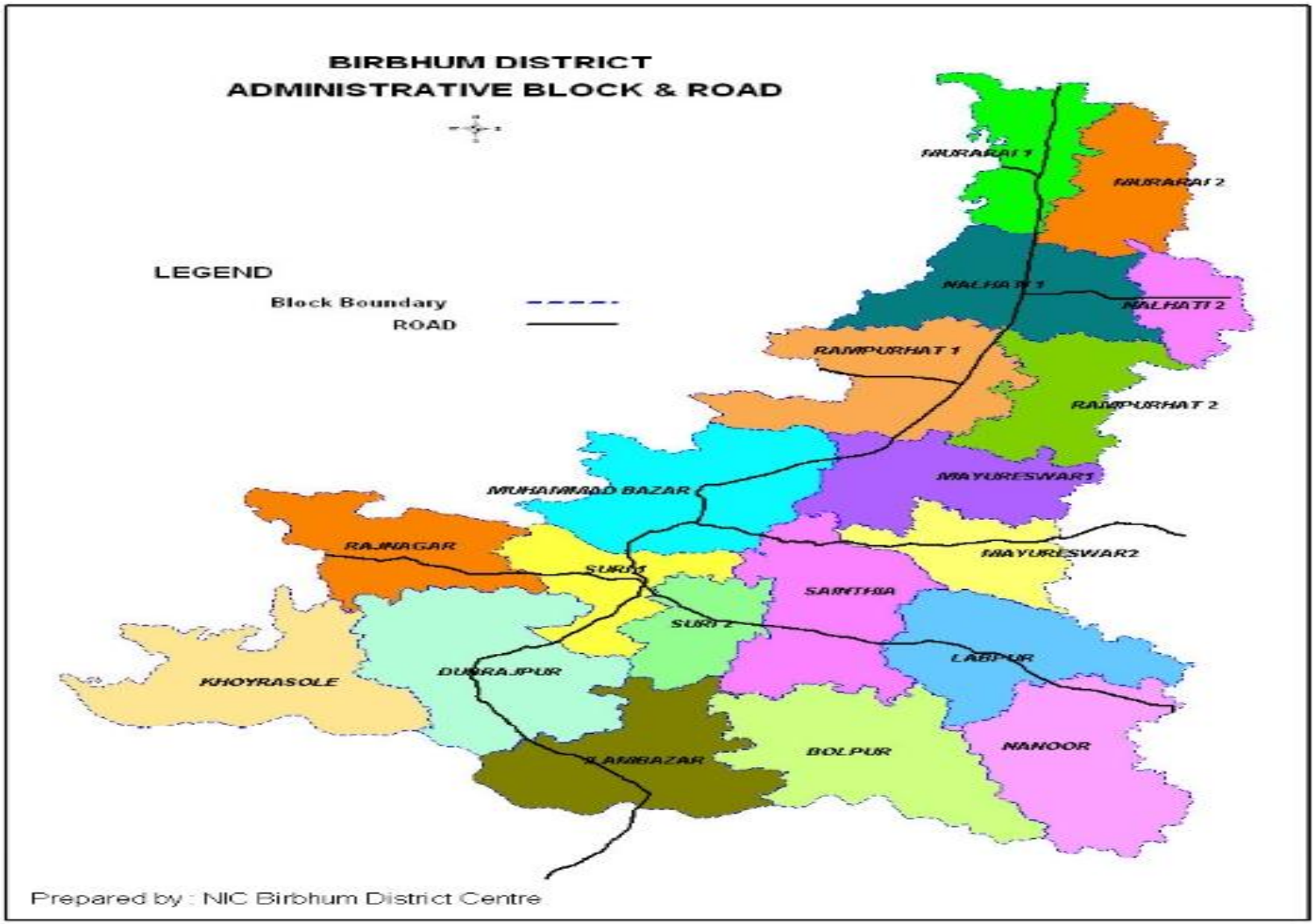

BIRBHUM DISTRICT
ADMINISTRATIVE BLOCK & ROAD
LEGEND
Block Boundary
ROAD
NALHATI 1
NALHATI 2
RAMPURHAT 1
RAMPURHAT 2
MAYURESWAR1
MAYURESWAR2
RAJNAGAR
SURI 1
SURI 2
SAINTHIA
LABPUR
NANOOR
BOLPUR
DUBRAJPUR
KHOYRASOLE
Prepared by : NIC Birbhum District Centre

Demographic Features:-

Birbhum had a population of 3,502,387 in 2011 and the density of the population was 770 per kilometer square. The literacy rate was 70.90 percent in 2011 and the sex ratio was 926 girls for every 1000 boys. The district comprises of three Sub-divisions namely; Suri Sadar, Bolpur and Rampurhat. Hindus can be seen prominently in the district that comprise of 65% population, followed by 33% of Muslims. There are other religious groups as well.

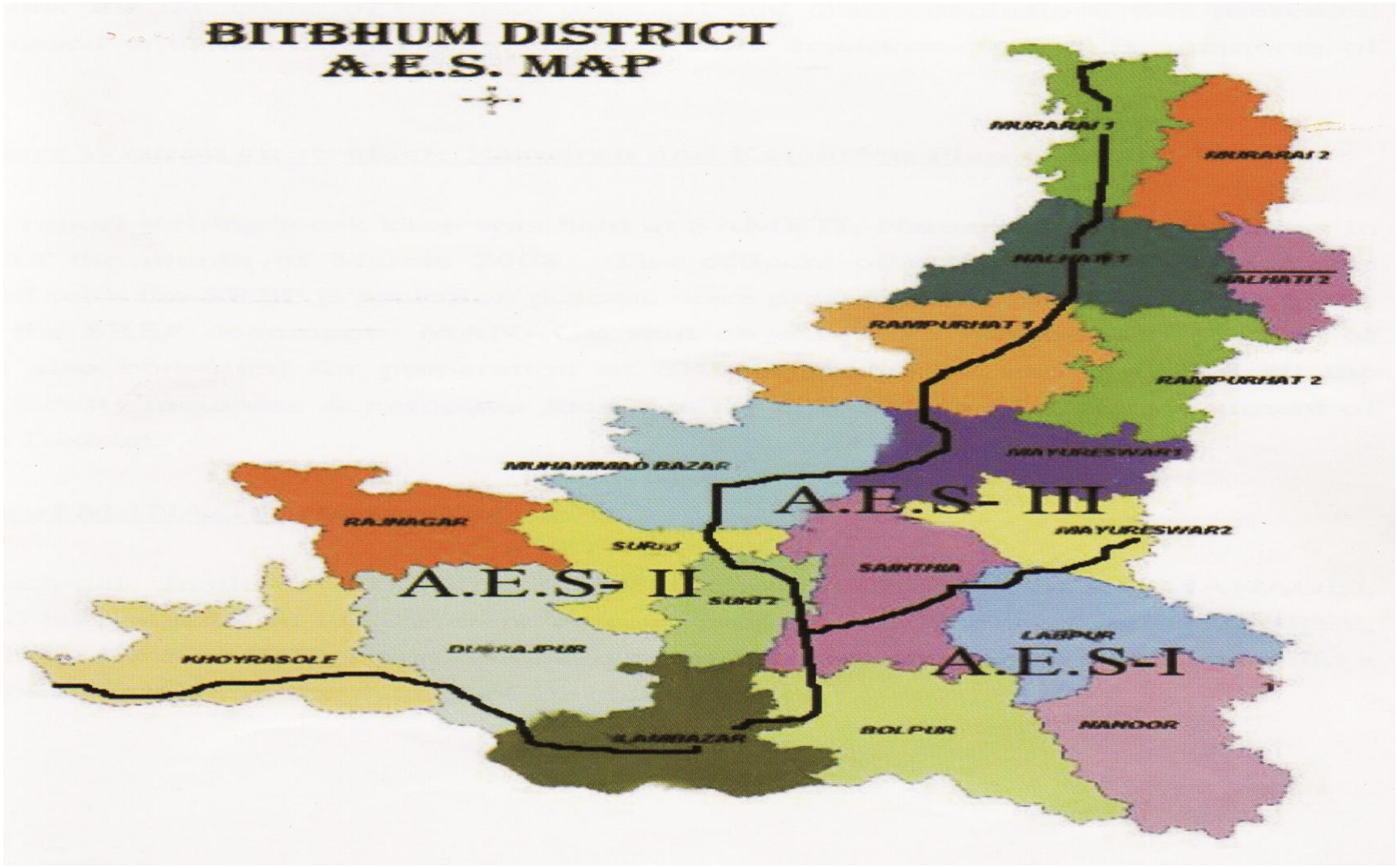
Agricultural Aspects:-

- **Agro-Climatic/Ecological Zone**

Agro Ecological Sub Region (ICAR):- Assam And Bengal Plain, Hot Subhumid To Humid (Inclusion Of Perhumid) Eco-Region. (15.1)
Eastern plateau (chhotanagpur) And Eastern Ghats, Hot Subhumid Eco-Region (12.3)
Agro-Climatic Zone (Planning Commission):- Lower Gangetic Plain Region (III)
Agro Climatic Zone (NARP):- Red and lateritic Zone (WB-5)

- **Agro-Ecological Situations of Birbhum District, West Bengal:-**

The Birbhum District is divided into three Agro-Ecological Situtation viz. AES – I, AES – II and AES – III. The Rathindra KVK is situated in the AES – I. The Map and detailed features of the Ago-ecological Situations of the District of Birbhum are given here under.



Source: - **SREP, Birbhum – 2009.**

Agro-ecological Situations of the District of Birbhum

Characteristics	AES - I	AES - II	AES – III
Blocks covered	Blocks under this AES are Bolpur-Sriniketan, Nanoor, Sainthia, parts of Mayureswar – I and Mayureswar – II. parts of Labhpur, Illambazar	Blocks under this AES are Rajnagar, Dubrajpur, Khyrasole, parts of Nalhati – I, Rampurhat – I, Murarai – I, Mayureswar – I, Illambazar, Labhpur, Suri – I and Md. Bazar.	Blocks under this AES are Rampurhat – II, parts of Murarai – I, Murarai – II, Nalhati I, Nalhati – II, Md. Bazar, Suri – I and Suri – II.
Soil Type	Fertile loamy clay soil, 60 percent of cultivable area under loam – clay loam soil. pH – 4.5 – 6.5	Sandy to sandy clay soil. 80 percent of cultivable area under clay soil and slightly acidity problem soil. pH – 5.2 – 6.5	Clay to clay loam soil. 70 percent clay soil with 30 percent loam to clay loam soil. pH – 4.8 – 6.5
Irrigation	75 percent of the total cultivable area is under irrigation out of which 51 percent of area is under surface irrigation.	30 percent of the total cultivable area is under irrigation out of which 20 percent of the area is irrigated from surface water and the rest area is irrigated from minor irrigation sources. Ground water is not easily available.	70 percent of the total cultivable area is under irrigation out of which 60 percent of the area is irrigated from available groundwater. Surface irrigation area is only 10 percent. Ground water is easily available for irrigation purpose.
Important River	Ajoy, Mayurakshi, Dwaraka, Kopai	Hinglow, Bakreswar, Shaal, Ajoy, Chandrabhaga	Dwaraka, Brahmani, Mayurakshi, Pagla, Bansloi

Flood / Draught Proneness	Moderate flood prone area	Moderate draught prone area	Flood prone area
Available Water Area for Fish Cultivation	30 percent of ponds of the district of Birbhum are situated. Sweet water is available for fisheries.	20 percent of ponds of the District of Birbhum are under this AES. A vast sweet water resource is available for fish cultivation.	50 percent of the ponds of the District of Birbhum are under this AES. Sweet water area is available for fish cultivation.
Animal Resources	20 percent of the total Milch Cows of the District of Birbhum is available under this AES out of which upgraded Breed percentage is only 5 percent. Only 15 percent of the total Goat population of the District of Birbhum and 30 percent of the Poultry Population of the District of Birbhum are available in this AES.	50 percent of the total Milch Cows of the District of Birbhum is available under this AES out of which upgraded Breed percentage is only 5 percent. 60 percent of the total Goat population of the District of Birbhum and 40 percent of the Poultry Population of the District of Birbhum are available in this AES.	30 percent of the total Milch Cows of the District of Birbhum is available under this AES out of which upgraded Breed percentage is only 5 percent. Only 25 percent of the total Goat population of the District of Birbhum and 30 percent of the Poultry Population of the District of Birbhum are available in this AES.
Major Crops: **Paddy -** **Oil Seeds –**	Pre-Kharif, Kharif and Boro Paddy Mustard, Groundnut and Sesame	Pre-Kharif, Kharif and Boro Paddy Mustard and Groundnut and Sesame in limited areas.	Pre-Kharif, Kharif and Boro Paddy Mustard, Groundnut and Sesame

Pulses –	Black and Green Gram, Lentil, Bengal Gram, Kulthi	Khesari, Black and Green Gram, Lentil, Bengal Gram, Kulthi	Black and Green Gram
Vegetables –	Seasonal vegetable round the year	Seasonal vegetables round the year	Seasonal vegetables round the year
Fruits -	Mango, Guava, Citrus, Banana, Coconut	Mango, Guava, Citrus, Banana, Coconut	Mango, Guava, Citrus, Banana, Coconut

Source: - SREP, Birbhum – 2009.

- **Soil Types**

The predominant soil types are old alluvial and red lateritic with low to medium in organic carbon & phosphate content and medium to high in potash. The soil is acidic in nature with pH range of 5.0 to 6.5.

This district (Birbhum) is enriched by various types of soil namely, Metal (Clay soil retentive of moisture which is best suited for growing winter paddy, sugarcane, wheat,gram and kalai); Ental (a sticky brownish clay, it is poor soil and is capable of producing paddy only if manured); Bagha Ental (ental having colour or tiger, it is poor soil capable of producing paddy only if manured); Beley (is a whitish loose and poor soil , capable of growing paddy and vegetable); Kankure ((it is a redish, loose laterite soil capable of growing bajra, maize, kurthi, bean and marual); Bastu (it is a blackish friable rich soil and is largely used for rabi crops); Bindi (it is a poor sandy soil which improves with continued cultivation, capable of producing paddy but can also grow rabi crops if irrigated); Reti Rfi (is lighter variant of Pali, it does not grow paddy it is best suited for vegetables, wheat, barley etc.) Pali (deposit of soil is bed of river or in areas subject to riverine inundation; it is very rich soil and is well suited for sugarcane, wheat, gram, potato and other vegetables. It is generally reserved for more valuable crops rather than paddy).

- **Important Agriculture and related Statistics of Birbhum District**

Classification Of Land Utilisation Statistics In The District Of Birbhum

(Area in thousand hectares)

Year	Reporting Area	Forest Area	Area under Non-agricultural use	Barren & unculturable land	Permanent pastures & other grazing land	Land under mise, tree groves not included in Net area sown	Culturable waste land	Fallow land other than current fallow	Current fallow	Net area sown
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
2003-04	451.12	15.85	90.81	*DAD*	0.30	0.75	2.92	2.61	26.03	*311045*
2004-05	451.12	15.85	91.77	0.38	*DAD*	1.57	3.53	3.36	13.65	320.61
2005-06	451.12	15.85	96.38	0.36	0.27	0.86	2.04	2.17	13.23	319.96
2006-07	451.12	15.85	94.57	0.30	0.25	1.03	3.09	4.11	14.25	317.67
2007-08	451.12	15.85	96.81	0.28	0.18	0.86	3.88	2.37	12.35	318.54

Source: Directorate of Agriculture (Evaluation), Govt. of W.B.

Distribution Of Operational Holdings Over Size-Classes In The District Of Birbhum

(Area in hectare)

Year	S I Z E - C L ASS												Average size of holdings (hect.)
	Marginal		Small		Semi-medium		Medium		Large		Total		
	No.of holdings	Area of holdings	No.of Holdings	Area of holdings	No.of holdings	Area of Holdings	No.of hOldings	Area of holdings	No.of holdings	Area of holdings	No.of holdings	Area of holdings	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2000-01	200265	118018	63374	107246	23114	65672	2969	14788	54	707	289776	306431	1.06
2005-06	213304	121202	59972	100338	26494	74614	1891	8887	1	173	301662	305214	1.01

Note: Marginal : Below 1.0 hectare

Small : 1.0 hectare and above but less than 2.0 hectares

Semi-medium : 2.0 hectares and above but less than 4.0 hectares

Area Irrigated By Different Sources In The District Of Birbhum

(thousand hectares)

Year	Area irrigated by									
	Govt. Canal	Tank	HDTW	MDTW	LDTW	STW	RLI	ODW	Others	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
2003-04	192.64	25.40	*	3.89	*	45.68	2.15	0.60	54.95	325.31
2004-05	184.02	25.40	*	3.74	*	45.68	2.15	0.60	54.95	316.54
2005-06	159.89	25.28	*	3.72	*	45.68	2.08	0.64	54.53	291.82
2006-07	184.66	25.28	*	3.71	*	45.68	2.07	0.62	54.53	316.55
2007-08	196.65	24.47	*	8.23	*	44.25	2.07	0.51	52.36	328.54

*** Included with MDTW.**

Sources: 1. Irrigation & Waterways Directorate; 2. Deputy Director of Agriculture (Adm.), Birbhum, Govt. of WB

Note: **HDTW** **High Capacity Deep Tubewell**
MDTW **Middle Capacity Deep Tubewell**
LDTW **Low Capacity Deep Tubewell**
STW **Shallow Tubewell**
RLI **River Lift Irrigation**
ODW **Open Dug Well**
DTW **Deep Tubewell = DTW+MDTW+LDTW**

Major Irrigational Status in Birbhum District (Major Irrigated Area in Hectare)

Year	Kharif	Rabi	Total
2010-2011	150394	111403	261797
2011-2012	150890	110506	261396
2012-2013	151120	110762	261882

Source: - Govt. of West Bengal.

Minor Irrigational Status in Birbhum District (Minor Irrigated Area in Hectare)

Year	Kharif	Rabi	Total
2010-2011	89215	71194	160409
2011-2012	90525	75044	165569
2012-2013	91060	72627	163687

Source: - Govt. of West Bengal.

FERTILIZER CONSUMPTION IN TERMS OF NUTRIENTS					
YEAR	**TOTAL CONSUMPTION OF FERTILISER ('000MT)**				**CONSUMPTION (kg/ha.)**
	NITROGEN	**PHOSPHATE**	**POTASH**	**TOTAL**	
1975-1976	5.3	1.4	1.2	7.9	26
1985-1986	16.4	8.4	5.9	30.7	68
1995-1996	33.6	13.3	8.2	55.1	112
2004-2005	34.2	18.5	15.1	67.8	131
2006-2007	42.9	23.0	15.3	81.2	157
2011-2012	50.0	25.7	17.5	93.3	221.5
2012-2013	47.6	22.9	12.7	83.2	146.4

Source: - Dept. of Agriculture, Govt. of West Bengal.

Soil Health Status of the District of Birbhum

Soil Deficiency in Birbhum District in terms of Nutrients in Tonnes

Nitrogen	Phosphorus	Potassium
1759	325	746

Source: - Govt. of West Bengal.

Estimates Of Area, Yield Rate And Production Of Major Crops Of Birbhum District During 2011-2012

Sl. No.	Name of the Crop	Coverage (ha.)		Yield Rate (kg. / ha.)		Production (Tonnes)	
		Year 2003 - 04	Year 2011 – 12	Year 2003 -04	Year 2011 - 12	Year 2003 - 04	Year 2011 - 12
1	Pre-Kharif Paddy	5100	2554	2399	3466	12200	8853
2	Kharif Paddy	300600	326412	2921	4324	878100	1411262
3	Boro Paddy	70600	57912	3118	4664	220100	270079
	Total Paddy	376300	386878	2981	4369	1110400	1690194

4	Wheat	30200	32998	2630	2612	79300	86191
5	Barley	200	15	1310	1217	300	18
6	Bhadio Maize		154		1574		242
7	Rabi Maize		-		-		-
8	Summer Maize		75		1600		120
	Total Maize	200	229	1563	1581	300	362
9	Kulthi		179		403		72
10	Mator		122		1178		144
11	Khesari		1460		1280		1869
12	Kharif Moong		-		-		-
13	Rabi Moong		-		-		-
14	Summer Moong		1100		692		761
	Total Moong		110		692		761
15	Kharif Maskalai		57		282		16
16	Rabi Maskalai		-		-		-
	Total Maskalai		57		282		16
17	Gram		7147		1076		7687
18	Tur	-	11	-	329		04
19	Musur		5803		628		3644
	Total Kharif Pulses		507		418		212
	Total Rabi Pulses		15912		893		14207
	Total Pulses	16500	16419	1092	878	18000	14419

20	Bhadui Til		-		-		-
21	Winter Til		-		-		-
22	Summer Til		5422		543		2945
	Total Til		5422		543		2945
23	Rape and Mustard	37400	32282	1108	923	41400	29807
24	Linseed	200	136	58	149		20
25	Sunflower		44		950		42
26	Bhadui Groundnut		-		-		-
27	Rabi Groundnut		7		1400		10
28	Summer Groundnut		-		-		-
	Total Groundnut		7		1400		10
29	Niger		-		-		-
	Kharif Oilseed		-		-		-
	Rabi Oilseed		37908		866		32831
	Total Oilseed	39500	37908	1091	866	43100	32831
30	Jute	100	293	18.0	18.7	1600	5488
31	Mesta	-	-	-	-	-	-
32	Sunhemp		114		3.4		388
33	Sugarcane	1000	843	58553	85987	55500	72487
34	Potato	9800	17918	21067	30013	206600	537775

Source:- 1. Evaluation Wing, Directorate of Agriculture, Govt. of West Bengal.

2. BAE&S, Govt. of West Bengal.

Yield Rates Of Some Selected Crops In The District Of Birbhum And West Bengal

(Kilogram per hectare)

Crops	2003-04		2004-05		2005-06		2006-07		2007-08	
	District	West Bengal	District	West Bengal	District	West Bengal	District	West Bengal	District	W.B.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Rice	2981	2504	2805	2574	3029	2509	3128	2593	3098	2573
Wheat	2630	2315	2568	2103	2511	2109	2643	2281	2952	2602
Gram	1262	1026	792	1024	826	911	792	768	1166	984
Jute	3240	2428	3204	2484	3258	2572	3204	2545	3006	2425
Rapeseed & Mustard	1108	928	786	749	934	909	1019	803	1161	888
Potato	21067	24711	19139	22170	20511	21053	8538	12384	22111	24704
Tea	-	1769	-	1891	-	1899	-	2091	-	1983

Sources: 1) Directorate of Agriculture, Govt. of W.B.
2) B.A.E.& S., Govt. of W.B. ; 3)Tea Board

Index numbers of Agricultural Area, Production & Productivity in the district of Birbhum

Base: Triennium ending crop year 1981-82 = 100

Year	Area		Production		Productivity	
	Cereals	All Crops combined	Cereals	All Crops combined	Cereals	All Crops combined
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
2003-04	**108.31**	**109.66**	**200.34**	**203.56**	**184.97**	**185.63**
2004-05	111.09	112.99	195.79	196.51	176.24	173.92
2005-06	106.20	108.74	203.49	207.82	191.61	191.12
2006-07	110.60	114.08	216.70	213.82	195.93	187.43
2007-08	**113.58**	**115.99**	**220.84**	**232.14**	**194.44**	**200.14**

Source: B.A.E.& S., Govt. of W.B.

Horticultural Development in Major Crops in Birbhum District in Terms Of Area and Yield

Major fruits and vegetables						
Crops	**2004 -2005**		**2006 - 2007**		**2012 - 2013**	
	Area (ha)	**Productivity (q/ha)**	**Area (ha)**	**Productivity (q/ha)**	**Area (ha)**	**Productivity (q/ha)**
Tomato	1680.00	55.00	1860.00	140.80		
Tomato (Winter)					900.00	164.45
Tomato (Spring)					1050.00	163.81
Cabbage	2370.00	86.00	2550.00	363.60		
Cabbage (Winter)					1200.00	267.00
Cauliflower	2130.00	52.00	2170.00	157.50		
Cauliflower (Winter)					1300.00	184.23
Cauliflower (Spring)					900.00	183.89
Peas					800.00	41.00
Brinjal	6410.00	87.00	6850.00	120.40		
Brinjal (Rainy)					2400.00	116.67
Brinjal (Winter)					5300.00	215.00
Brinjal (Summer)					2600.00	112.39
Cucurbits	8340.00	121.00	8280.00	144.20		
Cucurbits (Rainy)					300.00	100.00
Cucurbits (Winter)					900.00	177.78
Cucurbits (Summer)					8200.00	147.56
Onion	1090.00	70.00	1380.00	72.90	1455.00	112.37
Lady's Finger (Rainy)					1520.00	90.13
Lady's Finger (Winter)					420.00	100.00
Sweet Potato					850.00	220.59
Beans					760.00	31.19
Radish (Winter)					600.00	133.33
Radish (Spring)					1230.00	121.95
Watermelon					1000.00	160.00
Elephant's Foot Yam					830.00	234.94

Arum					750.00	142.67
Leafy Vegetables (Rainy)					50.00	240.00
Leafy Vegetables (Winter)					40.00	200.00
Leafy Vegetables (Spring)					1000.00	70.00
Leafy Vegetables (Summer)					20.00	15.00
Others (Rainy)					4500.00	07.11
Others (Winter)					3900.00	15.77
Others (Spring)					1150.00	15.04
Others (Summer)					3000.00	09.83
Misc. Vegetables	10350.00	14.90	22000.00	51.90		
Total Vegetables	**32370.00**	**56.00**	**45100.00**	**100.60**		
Total Vegetables (Rainy)					**10350.00**	**76.62**
Total Vegetables (Winter)					**15360.00**	**149.98**
Total Vegetables (Spring)					**8230.00**	**136.68**
Total Vegetables (Summer)					**18737.50**	**111.93**
Mango	820.00	120.00	917.00	142.50	1640.00	58.54
Banana	520.00	80.00	650.00	159.50	950.00	137.38
Guava	770.00	110.00	943.00	150.60	1205	146.47
Pine Apple					05.00	180.00
Papaya					615.00	285.90
Jack Fruit					80.00	107.50
Litchi					50.00	48.00
Mandarin Orange						
Other Citrus					620.00	61.29
Sapota					190.00	105.00
Temperate Fruits						
Misc. Fruits	1100.00	140.00	1487.00	148.60	280.00	82.14
Total Fruits	**3210.00**	**45.00**	**3997.00**	**149.50**	**5635.00**	**119.20**
Chilli	240.00	30.00	460.00	89.80		
Ginger	550.00	50.00	710.00	96.80		

Turmeric	320.00	10.00	480.00	35.20		
Total Flower	**6500.00**	**46.20 lakh spikes**	**95430.00**	**69.6 lakh spikes**	**Not Available**	**Not Available**

Source: - Dept. of Horticulture and Food Processing Industries, Govt. of West Bengal.

Livestock Development in the District of Birbhum in Year of 2007-08

Live-Stock And Poultry In The District Of Birbhum

(Number)

Category		1989	1994	1997	2003	2007
(1)		(2)	(3)	(4)	(5)	(6)
1	Cattle:					
	Cows	255381	266217	274094	282145	372662
	Bulls and Bullocks	307844	347593	357919	294845	308308
	Young Stock	328898	381066	392321	421336	452384
	Total Cattle	892123	994876	1024334	998326	1133354
2	Buffaloes:					
	Cows	7627	7043	7132	8688	23492
	Bulls and Bullocks	37258	45182	45753	47100	44088
	Young Stock	6685	8076	8178	11075	..
	Total Buffaloes	51570	60301	61063	66863	67580
3	Sheep	163854	189122	189214	186280	216888
4	Goats	598010	736251	816123	728113	941989
5	Horses and ponies	366	96	96	59	39
6	Pigs	77437	77572	83653	57680	49177

7	Other Live-stock	..	..	. .	87735	93849
	Total Live-stock	1783360	2058218	2174483	2125056	2502876
8	Poultry :					
	Fowls	1489187	1506982	1659044	2303418	3071493
	Ducks	828231	1076333	1218849	1274104	1150029
	Others	11275	20416	10514	3135	1609
	Total Poultry	2328693	2603731	2888407	3580657	4223131

Source: Live-Stock Census Report, Govt. of W.B.

Estimated Production Of Milk (Cow, Buffalo & Goat) And Egg (Hen & Duck) In Birbhum District

Year	Milk (thousand tonnes)		Egg (number in thousand)	
	District	West Bengal	District	West Bengal
(1)	(2)	(3)	(4)	(5)
2003-04	97	3686	169883	2820317
2004-05	99	3790	175916	2887649
2005-06	100	3892	182064	2963720
2006-07	119	3984	233971	3038645
2007-08	119	4077	238117	3057342

Source:- Live-Stock Census Report, Govt. of W.B.

Profile of Fisheries in the District of Birbhum

A. Capture

i) Marine

Inland Boat: 5

No. of fishermen: Nil

Boats – Mechanized – Nil **Non-mechanized** - Nil

Nets – Mechanized (Trawl nets, Gill nets) - Nil

Non-mechanized (Shore Seines, Stake and Trap Nets) - Nil

Storage Facilities (Ice plants etc.) - Nil

ii) Inland (**Fish Farmers** - 30112, **Fishermen** - 200747, **FC** - 20, **SHG** - 391)

No. Farmer owned Ponds - 85504 (Tank and Pond)

No. of Reservoirs – 6

No. of Village Tanks - Nil

B. Culture

i) Brackish Water –

Water Spread Area (ha) – Nil

Yield (t/ha) – Nil

Production ('000 tons) - 18 ton Prawn

ii) Fresh Water –

Culturable Area: 15720.62 ha.

Semi-Derelict Area: 1596.57ha.

Derelict Area: 413.54 ha.

Yield (t/ha) – From Ponds under FFDA Scheme = 4.4 t/ha.

Production ('000 tons) - 115174 ton Fish (2008-09)

Source: - NICRA CONTINGENCY PLAN WestBengal 3-Birbhum-31.12.2011.pdf

Climatic Aspects: -

The climate of the district is generally dry, mild and healthy. The hot weather usually last from the middle of March to the middle of the June, the rainy season from the middle of June to the middle of October, and the cold weather from middle of October to the middle of March. They do not always correspond to this limit. As a rule, the wind is from south-east in summer and from the north-west in winter.

Rain Fall (RF) (Ten Years Average 1998-2007):-

SW Monsoon (June - September): 1196.1 Normal RF (mm)

NE Monsoon (October - December): 152.3 Normal RF (mm)

Winter (January - March): 67.1 Normal RF (mm)

Summer (April - May): 157.4 Normal RF (mm)

Annual: 1572.9 Normal RF (mm)

Normal Onset of Monsoon: 1st. week of June

Normal Cessation of Monsoon: 4th. week of September

Summer Temperature: Max: 40^0 C

Winter Temperature: Min: 10^0 C

Summers

The district of Birbhum experiences dry and hot summers with temperatures often rising above normal. During summers, the mercury rises well above 40^0 C (104^0F). As for the direction of the wind, it is always blows from the south-east. The climatic conditions in the western and eastern side of the district are different. While the western side is dry and extreme, it is relatively milder on the eastern side. The summers in Birbhum usually start from middle of March and lasts till the middle of June.

Monsoon

The arrival of the month of June marks the onset of monsoon in Birbhum. The district boasts of a high average rainfall. However, it is observed that the western region of the Birbhum district receives higher rainfall as compared to the eastern region. The difference between the annual average rainfall in Rajnagar (1,405 millimeters) and Nanoor (1,212 millimeters) is an example of this. Monsoon in Birbhum lasts till the middle of the month of October.

Winters

Winters in Birbhum are pleasant and enjoyable, with mercury dropping to about 10^0 C (50^0 F). While the day time is pleasingly cool, with the fall of evening temperature lowers further, making the nights chilly and cold. During winters, wind usually blows from the north-west direction. The winter starts from December and last till the month of February.

Chapter – III

A. Rathindra KVK Infrastructure

Total land with KVK (in ha): 15.64 ha

Sl. No.	Item	Area (ha)
1	Under Buildings	00.550
2.	Under Demonstration Units	00.002
3.	Under Crops	02.000
4.	Orchard / Agro-forestry	00.543
5.	Others	12.550
6.	Total	15.645

i. Building Infrastructure

Sl. No.	Name of Building	Source of Fund	Stage					
			Complete			Incomplete		
			Completion Date	Plinth area (Sq.m)	Expen-diture (Rs.)	Starting Date	Plinth area (Sq.m)	Status of construction
1.	Administrative Building	ICAR	2003-04	550.0	29.85 lakh	-	-	-

2.	Trainees Hostel	ICAR	2006-07	305.0	26.17 lakh	-	-	-
3.	Staff Quarters (6)		Plan will be submitted.					
4.	Demonstration Units (2)	ICAR	2006-07	80X2 =160	10.81 lakh	-	-	-
5.	Go down	ICAR	2008-09	9.25 X 5.0	3,87,290.00			
6.	Threshing floor	ICAR	2008-09	18 X 10	1,83,200.00			

ii. Equipment and Implements

A. Vehicles

Type of vehicle	Year of purchase	Cost (Rs. In lakh)	Kms. run during the Period	Total Kms. Run	Present status
BOLERO Plus	2010	6.0	17,182 km.	42,217 km.	Running
Rajdoot Motorcycle	1997	0.320	-	39013 km	Not in Running Condition
Toro Jaz Moped	1997	0.125	-	-	Not Running

B. Equipments and Audio-Visual Aids

Sl. No.	Name of the equipment	Quantity	Year of purchase	Cost (Rs.)	Present status
1.	Overhead Projector	1 no.	1994-95	24,477.55	Working condition
2.	Desiccators	1 no.	1995-96	1540.00	Working condition
3.	Sewing Machine	2 nos	1995-96	3605.60	Working condition

4.	Aspee Sprayer (10 lit.)	2 no.s	1995-96	2050.00	Working condition
5.	Aspee Hand Sprayer	1 no.	1995-96	1090.00	Working condition
6.	Mixer cum Grinder	1 no.	1995-96	3430.50	Working condition
7.	Weighing Balance	1 no.	1995-96	1700.00	Working condition
8.	Paddy Thresher	1 no.	1995-96	4000.00	Working condition
9.	Hand Rotary Duster	1 no.	1995-96	650.00	Working condition
10.	Word Processor	1 no.	1995-96	2,100.00	Working condition
11.	Sony TV	1 no.	1998-99	20999.00	Working condition
12.	Sony Audio System	1 no.	1998-99	5,990.00	Working condition
13.	Sharp VCR	1 no.	1998-99	13,750.00	Working condition
14.	Slide Projector	1 no.	2001-02	14,672.00	Working condition
15.	PA System				Working condition
	Amplifier	1 no.	2001-02	6400.00	Working condition
	Microphone ASM580	2 no.s	2001-02	2700.00	Working condition
	Microphone ACM66	2 no.s	2001-02	1300.00	Working condition
	Speaker	2 no.s	2001-02	2500.00	Working condition
	DGT stand	1 no.	2001-02	290.00	Working condition
	DGN stand	1 no.	2001-02	490.00	Working condition
16.	Canon Photo Copier	1 no.	2003-04	69,988.00	Working condition

17.	Stabiliser 2KVA	1 no.	2003-04	4,000.00	Working condition
18.	Mixer Grinder Kenstar	2 no.s	2004-05	5,000.00	Working condition
19.	Refrigerator Whirlpool	2 no.s	2004-05	16,750.00	Working condition
20.	Stabilizer Fizi	2 no.s	2004-05	2450.00	Working condition
21.	Shaker	1 no.	2004-05	24500.00	Working condition
22.	Oven	1 no.	2004-05	9000.00	Working condition
23.	Kelplus Digestation System Model KES 08L	1 no.	2004-05	85,719.00	Working condition
24.	Kelplus Distillation System Elite Ex	1 no.	2004-05	1,38,943.00	Working condition
25.	Systronics Micro controller based visible Spectro-photometer	2 no.s	2004-05	53,064.00	Working condition
26.	Systronics P-H system	2 no.s	2004-05	21,582.00	Working condition
27.	Systronics Digital Conductivity Meter	2 no.s	2004-05	15,444.00	Working condition
28.	Systronics Flame Photometer Type 128	2 no.s	2004-05	73405.00	Working condition
29.	Hotplate with Energy Regulator	1 no.	2004-05	2,340.00	Working condition
30.	Glass Distillation Apparatus Flux	3 nos.	2004-05	15,617.00	Working condition
31.	Physical Balance Cap.250g with Weight Box	4 nos.	2004-05	6,310.00	Working condition
32.	Shimadzu Electronic Balance	2 nos.	2004-05	66,254.00	Working condition

33.	Kjeldal Digestion Unit	2 nos.	2004-05	6,205.00	Working condition
34.	Kjeldal Distillation Unit	2 nos.	2004-05	10,411.00	Working condition
35.	LCD Projector	1 no.	2008-09	99,990.00	Working condition
36.	Camera	1 no.	2008-09	23,900.00	Working condition
37.	Generator	1 no.	2008-09	49,500.00	Working condition
38.	Microscope- Trinocular	1 no.	2010-11	47,069.00	Working condition
39.	Microscope – Stereo	1 no.	2010-11	21,055.00	Working condition
40.	BOD incubator	1 no.	2010-11	39,132.00	Working condition
41.	Autoclave- Vertical	1 no.	2010-11	21,814.00	Working condition
42.	Centrifuge	1 no.	2010-11	14,200.00	Working condition
43.	Microscope Image Projection System (MIPS)	1 no.	2010-11	31,885.00	Working condition
44.	Laminar Flow	1 no.	2010-11	53,465.00	Working condition
45.	Desiccators	4 nos.	2010-11	6,072.00	Working condition
46.	Rotary Shaker	1 no.	2010-11	21,700	Working condition
47.	Digital Weighing machine	2 nos.	2010-11		Working condition
48.	Power ripper	1 no.	2010-11		Working condition
49.	Zero Tillage Machine	2 no.	2010-11		Working condition
50.	Mounted Offset Disc harrow	1 no.	2010-11		Working condition
51.	Mould-board Plough	1 no.	2010-11		Working condition

52.	Cono Weeder	4 nos.	2010-11		Working condition

B. Objectives of Rathindra Krishi Vigyan Kendra (Rathindra KVK)

1. Planning and conducting survey of the operational area in order to prepare the resource inventory with special reference to identifying the training needs of the farming community.
2. Planning and conducting production- oriented, need-based short and long duration training courses both on campus as well as in the villages for various target groups with priority on the weaker and the poor.
3. Developing and organizing non-formal educational programmes by way of field days, farm visits, farmers fair, radio talk, Farm Science clubs etc. as the follow up information support to training courses.
4. Organizing farm science clubs, both in rural schools and in villages in order to induce in younger generation a liking for and an interest for agricultural and allied sciences and scientific farming through supervised projects.
5. Developing and maintaining the campus farms and demonstration units on scientific lines as the facilities for providing work experience to the trainees as also disseminating the latest technical knowhow.
6. Providing practical facilities of the Kendra to the teachers and the students of the vocational agriculture of the higher secondary schools.
7. Imparting some general education to rural illiterates and school drop-outs in order to make them not only good farmers but also better citizens.
8. Providing added training facilities in the areas for home making and nutrition education for rural community.
9. Gradually enlarging the training facilities to encompass other important areas such as home crafts, cottage industries etc. consistent to the requirements of the integrated rural Development in collaboration with concerned organization.
10. Implementing all such schemes of the ICAR and other related organizations which intend to strengthen the training programmes of the Kendra.

C. The mandates of Rathindra KVK are as follows –

- Assessment, refinement and demonstration of technologies / products.

In order to achieve the above mandates, the following **activities of the Rathindra KVK are being performed:**

- On-farm testing to identify the location specificity of agricultural technologies under various farming systems
- Organize Frontline Demonstrations to establish production potential of technologies on the farmers' fields
- Training of farmers to updatetheir knowledge and skills in modern agricultural technologies
- Training of extension personnel to orient them in the frontier areas of technology development
- To work as resource and knowledge centre of agricultural technology for supporting initiatives of public, private and voluntary sector for improving the agricultural economy of the district

D. Staff Position of Rathindra KVK (as on 31st. March, 2013)

Sl. No.	Sanctioned post	Name of the incumbent	Designation	Discipline	Revised Pay Scale & present basic	Date of joining	Permanent /Temporary	Category (SC/ST/ Others)
1	Programme Coordinator	Dr.Dulal Chandra Manna	Programme Coordinator	Horticulture	PB- 4, Rs.37400-6700+RGP Rs.9000, (Rs.50910/-)	01.08.1996	Permanent	GC
2	Subject Matter Specialist	Mrs. Ruma Addy	Subject Matter Specialist	Home Science	PB- 3 , Rs. 15600-39100/- +GP-Rs.5400/-,(Rs. 25870/-)	06.06.1995	Permanent	GC
3	Subject Matter Specialist	Dr.Subrata Mandal	Subject Matter Specialist	Agronomy	PB- 3 , Rs. 15600-39100/- +GP-Rs.5400/-,(Rs.20440//-)	01.08.2004	Permanent	GC
4	Subject Matter Specialist	Sri Sourav Mondal	Subject Matter Specialist	Plant Protection	PB- 3 , Rs. 15600-39100/- +GP-Rs.5400/-,(Rs20440/-/-)	01.08.2004	Permanent	SC
5	Subject Matter Specialist	Dr. Krishna Mitra	Subject Matter Specialist	Fishery	PB- 3 , Rs. 15600-39100/- + GP-Rs.5400/-,(Rs.17500/-)	26.05.2012	Permanent	GC
6	Subject Matter	Dr. Prabuddha Ray	Subject Matter Specialist	Agricultural	PB- 3 , Rs. 15600-39100/- +GP-	19.06.2012	Permanent	GC

	Specialist			Extension	Rs.5400/-,(Rs.15600/-)			
7	Subject Matter Specialist	Vacant	Subject Matter Specialist	Animal Science	-	-	Permanent	-
8	Programme Assistant (Farm Manager)	Vacant	Programme Assistant	-	PB-2 , Rs. 9300-34800/- + GP-Rs.4200/-	-	Permanent	-
9	Programme Assistant (Computer Programmer)	Vacant	Programme Assistant	-	PB-2 , Rs. 9300-34800/- + GP-Rs.4200/-	-	Permanent	-
10	Programme Assistant (Horticulture)	Vacant	Programme Assistant	-	PB-2 , Rs. 9300-34800/- + GP-Rs.4200/-	-	Permanent	-
11	Sr. Assistant	Sri Madhu Sudan Chatterjee	Senior Assistant	-	PB-2, Rs. 9300-34800/- + GP- Rs.4600/- ,(Rs.18300/-.)	13.04.1995	Permanent	GC
12	Stenographer	Sri Makbul Ahmed	Jr. Stenographer cum Computer Operator	-	PB-1, Rs. 5200-20200/- + GP-Rs.2400/- ,(Rs 9560/-)	13.04.1995	Permanent	GC
13	Driver	Sri Krishna Bansi Chatterjee	Driver-Cum-Mechanic	-	PB-1, Rs. 5200-20200/ - + GP- Rs.2400/- ,(Rs 9220/-)	06.05.1997.	Permanent	GC
14	Driver	Sri Bikash Chandra Ghosh	Driver-Cum-Mechanic	-	PB-1, Rs. 5200-20200/ - + GP- Rs.2400/- , (Rs 9220/-)	06.05.1997.	Permanent	GC
15	Supporting Staff	Md. Anwar Chowdhury	Supporting Staff	-	PB-1, Rs. 5200-20200/ - + GP- Rs.1900/- , (Rs 8200/-)	13.04.1995	Permanent	GC
16	Supporting Staff	Vacant	Supporting Staff	-	PB-1, Rs. 5200-20200/ - + GP- Rs.1900/- , (Rs 8200/-)	-	Permanent	

Chapter – IV

A. Planning of Development Programmes

1. Agro-Ecosystem Analysis

Sl. No	Thrust area	Crop/ Enterprise	Identified Problem	Micro farming situation	Proposed programmes
1	Quality Seed /seedling production	Rice, pulses, vegetables, Fruits	***Biophysical:-*** • Low yielding seeds and plants ***Socio –economic:*** • Lack of sufficient extension support • Lack of credit facilities	• Irrigated medium/low land	• Training for PF, RY and EF • Front Line Demonstrations
2	Improved agronomic practices	Pulses Oilseeds, Cotton, Maize, Upland Kharif paddy	***Biophysical:-*** • Inappropriate agronomic practices • Limited water resource for irrigation ***Socio –economic:*** • Lack of knowledge on good agronomic practices	• Irrigated medium-low land • Irrigated medium land • Rainfed upland	• Training for PF • Front Line Demonstrations (FLD)s
3	Improved horticultural practices	Vegetables & fruits	***Biophysical:-*** • Inappropriate horticultural practices ***Socio –economic:*** • Lack of sufficient extension support • Lack of knowledge on good horticultural practices	• Irrigated medium land • Rainfed upland	• Training for PF • On Farm Testing (OFT)

4	Appropriate Pest, Disease and Weed Management	Rice, vegetables, oilseeds, pulses	***Biophysical:-*** • Indiscriminate use of chemical pesticide ***Socio –economic:*** • Lack of knowledge on care handling of plant protection equipments • Lack of sufficient extension support	• Irrigated medium land • Rainfed medium/low land	• Training for PF, EF • Front Line Demonstrations • OFT
5	Improvement of livestock productivity	Dairy, goatery, Poultry ,duckery,	***Biophysical:-*** • Inadequate, descriptive and prolific breed • Poor health and management practices & Low quality feed ***Socio –economic:*** • Lack of knowledge on good dairy, goatery, poultry management practices	• Backyard System • Extensive system (free grazing)	• Training for PF, RY,EF • Front Line Demonstrations • OFT
6	Enhancement of fish productivity	Fish	***Biophysical:-*** • Poor pond management • Poor quality fingerlings ***Socio –economic:-*** • Multi ownership of ponds • Tendency to lease out ponds • Lack of credit facilities	• Medium/ low land	• Training for PF, RY • Front Line Demonstrations • OFT
7	Improvement of women led vocation	Kantha stitch, Gujrathi stitch, Different craft, Rural craft , post harvest techno-logy of fruits and vegetables	***Biophysical:-*** • Lack of skill on income generating rural crafts • Lack of skill on fruits and vegetable preservation • ***Socio –economic:-*** • Lack of knowledge on different income generating programme for women	• Upland (House hold)	• Training for PF, RY

2. Scheduling of Institutional Training Programmes

a. Planning:

i) Scheduling of Training Programmes:-

The Action Plan is prepared on basis of training need assessment through PRA, group discussion, field visit, post training follow up, Ex-Trainees Conference. The Action Plan is prepared by KVK and approved by the Scientific Advisory Committee and also by the Zonal Project Directorate, Zone – II, ICAR, at the Zonal Workshop of KVKs of Zone – II, ICAR. Before conducting training programme, the training Schedule and other things are prepared.

ii) Job Analysis of Participants:-

The participants are asked how they are doing the job in details and what their expectation from the training programme through the formation of small groups by ELC Model. The trainees share their experience within the group. After brain storming work, they present their experience and also their expectation through the flip chart.

iii) Trainees' Analysis:-

After job analysis, the Scientists of KVK assessed the perception of the Trainees about the forthcoming Training Programme mainly through PRA tools.

iv) Training Need Assessment:-

The training needs are identified through PRA tools like Resource map, Transact map, Seasonality Analysis, Choice Matrix, Problem Cause Diagram etc and also administering Battery of Structured Question Schedule on the Training Need Assessment developed by the Rathindra KVK in consultation with experts.

Some training programmes are organised on the basis of the applications of the trainees, Ex-trainees Conference, Group Discussions, Training Evaluation Sheet and also Field Visit.

The Kendra also organizes some training programmes as per request from Government Departments and Non-Government Agencies.

b. Preparation for Training:

i) Organisation of Contents (Course Content and Syllabus):-

The course content and syllabus are prepared in advance in consultation with the facilitators in advance.

ii) Lesson Plan: - The lesson plan is also prepared before conducting training programmes.

c. Implementation of Training:

i) Conduct of Training:-

Lectures on the Topic of the Training supplemented by Audio-visual aids along with age old chalk and duster method are used at the time of training programme.

ii) Mid-review of Training Programme:-

In case of skill-oriented training programmes like plant propagation practices, vaccination of poultry birds and other animals, fish breeding etc. the mid-term reviews are done for more practice of skills.

d. Training Evaluation:

i) Job Improvement Plan:-

After evaluation of training programmes, the job improvement plans are changed as per need of the trainees as well as training modules.

ii) Review and Revision of Training:-

The training programmes are revised after post training feedback. The revised training programmes are included in the Action Plan. The training programmes are also reviewed in the meeting of Scientific Advisory Committee and in the State and Zonal Level Workshops. As per suggestion of the House, the training programmes are revised.

iii) Monitoring and Evaluation of the Syllabus:-

The post training evaluations are done through the structured- formats, field visits, group discussions, Ex-trainees Conference etc. The lacunas of the training programmes and also further needs of trainees are noted. According to the need of the trainees, the training schedule and lesson plans are prepared and placed in the meeting of Scientific Advisory Committee for approval of the expert Committee.

C. FLD and OFT Project Planning

The goal of most FLD and OFT projects was to increase the responsiveness of agricultural planning and policy making to the priorities of men and women farmers, including and focusing on those with few resources. In most cases the goal reflected national policy directives to increase the participation of farmers and other local stakeholders in planning, and to make sure that women's interests were reflected in plans and policies. Thus the projects were attempting to facilitate the realisation of a goal shared by national policy-makers.

The approach chosen was to demonstrate the relevance and usefulness to agricultural planning of participatory, gender-sensitive, and socio-economic difference-sensitive participatory methods. Some projects also tried to strengthen the constituency for gender-responsive planning by working to strengthen women's groups. Mostly trained KVK staff in the methods and tools is used.

Methods varied by project, but mostly included Clientele Need Analysis and participatory rural appraisal (PRA) or MARP (methode acceleree de recherche participative). Some projects formed socio-economically similar and gender-specific focus groups so that PRA tools could be used separately not only by men and women, but by poor men, young women, and so forth.

Tools associated with these methods were either: i) chosen from those already in the practice, ii) combined (gender analysis tools, for example, were incorporated into PRA tools), or iii) adapted to reflect local situations and focus group differences. In some cases, new tools were invented, reflecting the fact that PRA and Clientele Need Analysis tools are rapidly evolving.

D. Monitoring and Evaluation of the FLDs and OFTs: Concept and Approach

In India, performance of agricultural development programs/projects has mixed response in attaining the desired objectives. It has been observed that even well conceived agricultural projects have suffered from implementation problems. Partial or complete failure of these projects/programs is attributed to a number of reasons such as absence of meticulous planning and non-adherence to the plan in terms of the agreed processes, lack of sufficient preparatory time before initiation of field work, insufficient fund and delays in disbursement and procurement; institutional weaknesses, delayed staff recruitment and frequent transfers, absence of an effective and efficient coordination mechanism (applicable especially in case of multi-disciplinary and multi-implementation-agency projects), lack of ownership among line departments, traditional mind set of bureaucracy, poor research-extension linkage, inadequate attention to social issues and poor beneficiary/government interaction, lack of involvement of the ultimate stakeholders in planning and implementation leading to absence of ownership among them, and low priority given to monitoring and evaluation of project activities.

Of late, it has been realized that an effective monitoring and evaluation mechanism is an essential component for the success of any project both at the top and field level and the target group consists of diverse categories of disadvantaged people. It is also necessary because a number of institutional and operational mechanisms, which require effective vertical and horizontal integration as well as systemization aiming towards, decentralized well-coordinated decision making and functioning.

Monitoring in the present KVK context was mainly to keep an eye, which, with the help of mind, can see, observe, interpret, analyze and provide feedback on the implementation of activities. Since various functionaries are involved in the implementation process, monitoring takes the form of Performance Monitoring (performance in terms of physical achievements) and adoption of desired processes. Monitoring and evaluation (M&E) mainly focuses on both (1) the progress monitoring (input-output monitoring or target-achievement monitoring) and (2) process monitoring.

The progress monitoring emphasizes on physical achievements vis-à-vis targets i.e. performance of associated institutions/agencies with respect to activities they are supposed to carry out and the output they are expected to generate. While the process monitoring focuses on the steps being followed by them in carrying out these tasks while progress monitoring focuses on the achievement with respect to established milestones of physical and financial targets, quality of services and process adherence. All these helped the project in providing feedback to the top management for timely corrective measures to keep the project on right track.

Evaluation may also be concurrent or terminal. The concurrent evaluation system allows mid-way interventions (in terms of introducing required strategic changes) in project implementation along with providing an assessment of degree of attainment of project objectives. While terminal evaluation system provides an assessment of achievements of the project interventions in terms of project targets/goals and objectives, but after completion of the implementation leaving no room for initiating corrective measures.

Effective Monitoring and Evaluation system helps in indicating the path of progress of the project through the project implementation process and puts the project on right track by facilitating timely corrective measures, while the evaluation system provides information on whether the project has reached the right destination (in terms of fulfilment of objectives) and in timely fashion, cost effective way, and through right route. This also provides better alternative routes to reach the same destination in a more cost effective manner.

Tools and Methods

In case of both the FLD and OFT projects of Rathindra KVK, M & E is based on simple and easily measurable indicators that can describe or measure change (both process and progress) in various activities/components across locations and over time. Finally, they provide useful relevant information about the performance of the project in achieving the intended objective as end result. These indicators provide valuable insights to the project implementing agency like a traveller that how far the project has travelled and how far still it has to travel and by which route to achieve the desired result in specified time. Indicators used in these projects are both qualitative and quantitative, reflecting achievements of physical and financial targets and improvement in the quality of services delivered by the project interventions.

The relevant information for estimating the values of indicators are collected through specifically designed format and code sheets by qualified and well-trained field functionaries (Project Assistants, volunteers from adopted villages of Rathindra KVK and trained by the Rathindra KVK on nitty-gritty of M&E) fully acquainted with the area and has interest to spent adequate time in the field. Besides, active cooperation of the field project staff and regular interaction with Project Co-ordination Unit (PCU) as well as Project In-charge are also maintained. The information collected from the field are regularly computerised to develop data base through MIS so that required information can be obtained easily and well in time to make necessary changes in the direction of the project

implementation process. Monitoring and evaluation is being carried out by a combination of various methods including review of progress reports, on-site crosscheck, interactive discussion with implementers and the recipient group, sample household survey, and PRA with especial focus on participatory monitoring and evaluation approach.

In brief, for carrying out concurrent project implementation monitoring following steps/processes is being adopted:

• Designing of activity schedules for each and every project activity with details of responsible person/agency, time requirement, and resource allocation.

• Development of performance indicators (qualitative and quantitative) and format for data collection in the field on the basis of activity schedule Periodic review with special focus on time and quality adherence in the execution of project activities and identification of gaps and constraints faced by the field staff in carrying out their task.

• Regular and timely reporting of short and detailed observation to the Project In-charge concerned functionaries and top management i.e. Project Co-ordination Unit (PCU).

• Such report is primarily action-oriented report and contains specific action point/area of corrective measures required by concerned person. The issues requiring immediate attention of the project management are indicated through a brief note, exclusively prepared for urgent action and given to the Project In-charge with a copy to PCU for follow up action.

• In the next visit these actions are again reminded to the Project In-charge and PCU s as well as discussed in the monthly meeting of all the Scientists being organised at the KVK level.

• The compliances of line departments are reviewed and further action is taken on pending observations requiring attention.

• Performance/functioning of new mechanisms/interventions as well as success stories are also properly documented.

• Regular dialogue between Programme Co-ordinator of the KVK, Project In-charge and Project Coordination Unit are maintained and findings are personally discussed in regular meetings with field functionaries and PCU staff.

However, it was noticed that rigid M&E system do not work for such types of FLD and OFT projects as it involves innovative processes with considerable flexibility leading to day-to-day changes in implementation methodology depending upon location-specific problems.

B. Need Assessment of Rathindra KVK Clientele

i. Practising Farmers and Farm Women: - Rathindra KVK family coordinates the work of all scientists for smooth functioning of the KVK as well as for the benefit of the rural people of that particular area. Programme Co-ordinator is liaisoning with other line departments for coordination and effective implementation of different programs of the KVK in the adopted village. Rathindra KVK tried to adopt a Cluster of 4 to 6 economically, culturally and technologically backward villages situated within 10-20 Kms radius of the KVK. These villages are not too small or too large. Before adoption a detailed survey of the village was conducted to study the socio-economic and cultural status of that village. Now-a-days Participatory Rural Appraisal (PRA) tool was used to conduct the survey in which the village people are actively participated in the process.

The village map was drawn by the help of different colour by the villagers themselves and different prominent structures of the village such as school, temple, river, club etc. were depicted in that map. These structures will help the scientists to conduct the survey easily and smoothly. Basing upon the survey the field crop maps, animal resource map and other ancillary maps were prepared for future use. After the survey work detailed plan of work was chalked out and depending upon the requirement different activities was undertaken in different areas by the Rathindra KVK scientists.

ii. Rural Youth: - Rathindra KVK assesses the needs of the Rural Youth mainly through Participatory Tools like Resource map, Transact map, Employment Opportunity Analysis, Job Availability Matrix, Job Choice Matrix, Un-Employment Problem Cause Diagram etc. and also administering them a Structured Question Schedule regarding the needs of the Rural Youth prepared by the Rathindra KVK in consultation with other experts of ICAR and Visva-Bharati.

iii. Extension Functionaries: - Rathindra KVK assesses the need of the Extension Functionaries mainly through questioning the respective clientele about their needs and their job needs and the needs of their sponsoring agencies. Here mainly PRA tools like problem – cause diagram, Resource map, Organizational Diagram, Job Analysis, Job Satisfaction Matrix etc. are used.

C. Clientele Needs and Actions of the Rathindra KVK

1. Farm Advisory Services: Rathindra Krishi Vigyan Kendra otherwise known as Farm Science Centre provides solution to any problems related to agriculture and allied subjects as and when faced by farmers of the district of Birbhum subject to availability of Technology and Resource (both Soft Resources and Hard Resource) at that particular point of time. Interested farmers /persons can get proper advices regarding the establishment of new entrepreneurship on non traditional sector. The main function of advisory service of the Rathindra KVK is to provide continuous and constructive advice along with sound theory and practical knowledge to the contact villagers regarding agriculture and its allied subjects for their cultural and economical improvement. The objectives of the Farm Advisory Services are as follows:

(a) To study the socio economic status of the villagers.

(b) To keep close relationship between Rathindra KVK and villagers.

(c) To prepare individual farm model for uplift of rural people.

(d) To provide training and advice to the rural people so as to enable them to take part in the agricultural planning of the village, blocks as well as district.

(e) Formation of farm club farm centre or village committee for easy transfer of new information related to agriculture to the villagers in short time.

This Advisory Service is being run mainly on two different modes viz. A. Famers' Visits to Rathinra KVK and B. Scientists' Visits to the Farmers' Fields. Through these two types of modes the farmers can get relevant information as well as advise on various issues related to Horticulture, Agronomy, Fishery, Animal Science, Plant Protection, Home Science, Group Dynamics, Market led Extension etc. Now for last two years, the Advisory Services for the farmers are being sent as Short Message Service (SMS) to the Mobile Phones of respective registered farmers through Kisan Mobile Advisory Services (KMAS).

2. Training programme for different categories of people:

Training is one of the most important activities of Rathindra Krishi Vigyan Kendra. Training is a planned and systematic effort to increase the knowledge, improve the skill and change the attitude of a person towards a particular subject. Training need assessment is the first and foremost factor that is being

considered by the Rathindra KVK before conducting any training programme. Depending upon the need and categories of trainees, Rathindra KVK imparts mainly following three types of training:

(a) Training to the practising farmers and farm women:

Training on different subjects was conducted by the scientists of the Rathindra KVK as per the need of the local farmers of a particular area as well as the types of trainees and different audio visual aids are used to increase the efficiency of the training. As the trainees are practising farmers and farmwomen, more emphasis was given on the practical than theory to improve their skill, to change their attitude and increase their knowledge for that particular topic.

(b) Training to the Rural Youth:

This type of training was imparted to the rural youth (both male and female) mostly those are left their education in midway i.e. school dropouts. The main objective of this training is to provide sufficient knowledge and skill regarding a new entrepreneurship so that they can start their own business singly or collectively and generate some income for their livelihood. The main thrust areas of this type of training are integrated fish farming, soil testing, mushroom cultivation, preservation of fruits and vegetables, broiler farming, goat rearing, craft works, kantha stitch, fabric work, appliqué, tailoring, wool knitting and exotic vegetable cultivation etc. for more profit. In this type of training more emphasis was given on the practical aspects and trainees do the practical work by themselves to get more confidence. The scientists of the Rathindra KVK provide knowledge regarding the availability of the raw materials as well as the marketing of different products in that particular locality for the interested participants.

(C) Training Programme for the Extension Functionaries:

In this group mostly government employees of agriculture along with extension functionaries of line department and members of different NGOs operated in that locality are trained in different aspects. The main objective of this type of training is to refresh the memory and upgrade the knowledge and skill of the extension functionaries by providing recent and new information regarding new cutting edge techniques as well as new approach of solving different problems faced by farmers of that locality. As the extension functionaries of different department act like a bridge between the scientists and villagers, the refinement of the knowledge is highly essential and quite helpful for effective and efficient transfer of the technology.

3. Front Line Demonstration:

Front Line Demonstration (FLD) is the field demonstration conducted under the close supervision of the scientists of the Rathindra KVK because the technologies are demonstrated for the first time by the scientist themselves before being fed into the main extension system of the state department of Agriculture in that particular area. In this method newly released crop production and protection technologies and its management practices are adopted in a block of two to four hectares in the farmers' fields.

Only critical inputs and training for this demonstration are provided by the Rathindra Krishi Vigyan Kendra. In FLD both farmers and extension functionaries are target audience. From the FLD, it is possible to generate some data related to factors contributing to higher yield and also constraints of production under various farming situations. Front Line Demonstration is conducted in a particular area after thorough discussion and consultation with the farmers of that locality. Depending upon the requirement of that area highly efficient new proven technology with higher potentialities is selected for this programme. Generally a field day is observed in the demonstration field when the crop is at maturity stage and interaction between the scientists, farmers and extension functionaries takes place in the field. The crop is harvested in the presence of the interested group of farmers so that they can visualize-the importance of new technology easily and effectively.

4. On Farm Testing (OFT):

Testing of any improved technology along with the farmers practice in the farmers' fields with active participation of both the scientists of the Rathindra KVK and farmers of the adopted villages is known as OFT. In this method two to three improved varieties or two to three improved technologies are tested in the same field so as to compare the results of these treatments with the present farmer's practice. As per the suggestions of the farmers as well as local soil and climatic conditions the improved technology may slightly be modified by the scientists of the Rathindra KVK to get maximum return.

D. Thrust Areas of Rathindra KVK

1. Crop diversification through introduction of Pulses, Oilseeds, Major Millets, Horticultural Crops like Elephant's Foot Yam, Drum Sticks and High Valued low volume Horticultural products like Capsicum, Broccoli.

2. Popularization of High Yielding Varieties (HYVs) of major crops like Paddy, Wheat, Mustard, Potato etc as well as popularization of Traditional Varieties of those crops also.

3. Cultivation of Field Crops which require least water in the Arid and Semi-Arid Regions of the District and cultivation of suitable Horticultural Crops in those regions.

E. Villages Adopted by the Rathindra KVK

Sl. No.	Year	Numbers of Adopted Villages	Names of Adopted Villages	Community Development (CD) Blocks	Span of Work
01.	1994-1995	06	Gopal Nagar, Kendra Dangal, Bahadurpur, Binuria, Lohagarh, Chella	Bolpur - Sriniketan	05 Years
02.	1995-1996	06	Gopal Nagar, Kendra Dangal, Bahadurpur, Binuria, Lohagarh, Chella	Bolpur - Sriniketan	

03.	1996-1997	06	Gopal Nagar, Kendra Dangal, Bahadurpur, Binuria, Lohagarh, Chella	Bolpur - Sriniketan	
04.	1997-1998	06	Gopal Nagar, Kendra Dangal, Bahadurpur, Binuria, Lohagarh, Chella	Bolpur – Sriniketan	
05.	1998-1999	06	Gopal Nagar, Kendra Dangal, Bahadurpur, Binuria, Lohagarh, Chella	Bolpur – Sriniketan	
06.	1999-2000	05	Chella, Lohagarh, Binuria, Daspur, Srichandrapur	Bolpur - Sriniketan	01 Year
07.	2000-2001	04	Raipur, Srichandrapur, Benuria, Lohagarh	Bolpur - Sriniketan	02 Years
08.	2001-2002	04	Raipur, Srichandrapur, Benuria, Lohagarh	Bolpur - Sriniketan	
09.	2002-2003	07	Kankutia, Senkapur, Deuli, Kartickdanga, Srichandrapur, Khiruli, Rahamatpur	Bolpur - Sriniketan	01 Year
10.	2003-2004	05	Beledangal, Kankutia, Kartickdanga, Deuli, Senkapur	Illambazar, Bolpur - Sriniketan	02Years
11.	2004-2005	05	Beledangal,	Illambazar,	

			Kankutia, Kartickdanga, Deuli, Senkapur	Bolpur - Sriniketan	
12.	2005-2006	06	Meherpur, Konarpur, Digha, Sashidharpur, Nimgaria, Palasdanga	Sainthia	01 Year
13.	2006-2007	07	Digha, Nimgaria Thupsara, Kartikdanga, Kankutia, Raipur, Senkapur	Sainthia, Nanoor, Bolpur - Sriniketan	03 Years
14.	2007-2008	07	Digha, Nimgaria Thupsara, Kartikdanga, Kankutia, Raipur, Senkapur	Sainthia, Nanoor, Bolpur - Sriniketan	
15.	2008-2009	07	Digha, Nimgaria, Thupsara,	Sainthia, Nanoor,	

			Kartickdanga, Kankutia, Raipur, Senkapur	Bolpur-Sriniketan	
16.	2009-2010	05	Ghosal Danga, Srichandrapur, Bishnubati, Asadullapur, Bautizole	Bolpur - Sriniketan	04 Years
17.	2010-2011	05	Ghosal Danga, Srichandrapur, Bishnubati, Asadullapur, Bautizole	Bolpur - Sriniketan	
18.	2011-2012	05	Ghosal Danga, Srichandrapur, Bishnubati, Asadullapur, Bautizole	Bolpur - Sriniketan	
19.	2012-2013	06	Ghosal Danga, Srichandrapur, Bishnubati, Asadullapur, Bautizole, Jadavpur	Bolpur - Sriniketan	
20.	2013-2014	10	Ghoshal Danga, Srichandrapur, Bishnubati, Asadulpur, Bautizole, Jadavpur, Dhanyasara, Durgapur, Geetgram, Mohuli	Bolpur - Sriniketan	02 Years and still continuing
21.	2014-2015	10	Ghoshal Danga, Srichandrapur, Bishnubati, Asadulpur, Bautizole, Jadavpur, Dhanyasara, Durgapur, Geetgram, Mohuli	Bolpur - Sriniketan	
Total		34		04	21 Years

Chapter – V

Technical Achievements

A. Trainings conducted by the Rathindra KVK

The Rathindra KVK has been conducting Training Programmes for practising farmers, farm women, rural youths and extension functionaries since June, 1995. **Till date it has trained 26,906 numbers of male Trainees and 4,464 numbers of female trainees totalling a number of 31,370 trainees which is a huge achievement itself.** The details of the training programmes are given below.

Training Programmes undertaken by the Rathindra KVK (June, 1995 to May, 2014)

Year	Themes of Training Programmes																	
	Crop Production Practices	Crop Protection Practices	Vegetables based Horticultural Development	Orchard Development	Awareness Generation	Group Dynamics	Market led Extension	Leadership Development	Soil Health and Nutrient Management Practices	Organic Farming Practices	Improved Crop Cultivation Practices	Improved Fish Cultivation Practices	Improved Livestock Rearing Practices	Women Empowerment through Group Formation	Drudgery Reduction	Handicrafts and Post Harvest Technology of Horticultural Crops based Livelihood Development	Advanced Horticultural Practices	Awareness Generation on Health and Nutrition
1995	211	60	65	-	-	-	-	-	-	114	98	165	82	-	-	-	-	00 W - 462
1996	194	217	178	51	-	47	-	-	10	34	143	159	96	-	-	00 W - 133	-	00 W - 102
1997	311	119	-	44	20	90	-	-	-	20 22	153	170	104	-	-	00 W - 90	-	-
1998	477	61	37 W - 12	52	12	-	-	-	-	-	20	131	46 W - 25	-	-	-	-	00 W - 90
1999	94	26	88 W - 06	12 W - 10	-	28 W - 02	-	-	-	00 25	104	184	-	-	-	00 W - 168	10 W - 07	00 W - 56
2000	392		131 W - 01	12	-	-	-	-	-	-	90	104	-	-	-	00 W - 117	25 W - 10	-
2001	329		164	66	-	-	-	-	290	85	195	162	00	-	-	00	32	00

										23		W - 34	W - 15			W - 228		W - 16
2002	234	73	361 W - 56	183 W - 08	54	-	-	-	134	00 08	240	218 W – 01	75	00 W - 57	-	00 W - 124	20	00 W - 20
2003	80	94	531 W - 77	123	130	75	-	-	426	50	159	254	93	00 W - 148	-	00 W - 40	90 W - 10	00 W - 20
2004	176	90	286 W - 01	94 W – 07	41	40	-	-	10	-	167	249	295 W - 43	223 W - 44	-	00 W - 110	34 W - 19	00 W - 55
2005	145	325	110	15	-	-	-	-	177	53	119	121	531 W - 59	00 W - 92	-	00 W - 52	17	-
2006	59	220	77	-	-	-	-	-	24	30	65	86	329 W - 07	-	-	00 W - 134	33	-
2007	98 W - 14	135	37 W - 41	78 W - 117	-	-	-	-	171	41	73	114 W - 04	211	-	-	-	148 W - 04	00 W - 33
2008	228	391	106 W - 14	98 W - 03	-	-	-	-	52	95 51	60	133 W - 01	420	00 W - 22	28	00 W - 45	55	00 W - 88
2009	30	375	42 W - 28	87 W - 16	-	-	-	-	142	62	56 W - 11	98 W - 08	450	00 W - 68	-	00 W - 106	48	-
2010	339	320	123	50	-	-	-	-	83	94	71	139	294 W - 31	-	-	00 W - 51	50	00 W - 36
2011	245 W - 10	274	23	15	-	-	-	-	175	59	63	256	354	00 W - 22	--	00 W - 49	15	00 W - 20
2012	120	491	36 W - 18	30	30	63	28	86	220	125	91	329	-	00 W - 16	--	00 W - 38	-	00 W - 219
2013	121	551	108	28	125	114	160	-	194	133 21	88	212	230	-	-	00 W - 112	160 W - 05	-
2014	159	300	73	142	-	160	90	30	160	30	60	188	85	00 W - 33	-	00 W - 115	-	00 W - 150
Male	4042	4122	2576	1180	412	617	278	116	2268	1025	2115	3472	3695	223	28	000	737	00
Female	24	00	254	161	00	02	00	00	00	150	11	48	180	502	00	1712	55	1367
Total	4066	4122	2830	1341	412	619	278	116	2268	1175	2126	3520	3875	725	28	1712	792	1367

Grand Total:- Male = 26,906 Female = 4464 Male + Female = 31,370

N. B.:- Here W = Women

Training Programme on Soil Analysis

Training programme on Vermicompost

Training programme on Azolla Production

Training programme on cultivation of Elephant's Foot Yam




Training Programme on Fruit Cultivation




Training programme on Rearing of Giant Prawn

B. Front Line Demonstrations (FLDs) conducted by the Rathindra KVK

Since its incwption in 1994, the Rathindra KVK have conducted numbers of Front Line Demonstrations out of which **1365 numbers of Demonstrations are in various Pulses**, **1331 nunbers of Demonstrations are in Oil Seeds**, **610 numbers of Demonstrations are in various Cereal Crops**, **381 numbers of Demonstrations are in various Horticultural Crops, 735 nunbers of Demonstrations are in Fishery and Live stocks**, **124 numbers of Demonstrations are in various Plant Protection aspects** and **480 numbers of Demonstrations are in Other Enterprises; totalling 5026 numbers of Demonstrations on diverseifief fields of farm and related activities, which is itself a great achievment.** The deatails of the Demopnstration taken up by the Rathondra KVK are given below.

Crop/Enterprise	Year	No. Of Demonstrations	Area Covered in hectares	Percentage of Yield Increase Over Local Check	B:C Ratio	Farmers To Farmers Extension culiminating in the Adoption of the Technology (No. Of Farmers)
Pulses						
	1994					
	1995					
Green gram		75	5.0	47	4.14	45
Black gram		65	2.0	53	3.92	36
Lentil		80	7.0	42	5.1	48
	1996					
Green gram		70	5.0	53	4.33	42
Lentil		60	7.0	39	4.95	36
	1997					
Blackgram		150	7.0	56	3.75	90
	1998					
Blackgram		50	3.0	54	3.50	30
	1999					
Redgram		15	5.0	56	6.32	9
	2000					
Redgram		15	2.0	69	5.20	10
Lentil		75	5.0	53	4.71	46
	2001					
Redgram		35	5.0	62	4.91	20
Lentil		29	3.0	69	4.22	18
	2002					
Redgram		30	3.0	65	4.85	17
	2003					
Greengram		40	5.0	34	3.54	25
Redgram		40	7.0	78	4.58	21
	2004					
Redgram		20	3.0	87	4.60	11
	2005					
Greengram		35	5.0	64	3.82	24
Redgram		20	3.0	80	4.13	12
	2006		66			

Greengram		25	3.0	58	3.90	15
Redgram		14	3.0	62	4.06	8
	2007					
Redgram		17	5.0	57	3.96	10
Greengram		50	10.0	59	3.83	33
Blackgram		39	10.0	62	3.00	24
	2008					
Redgram		07	2.0	57	3.96	4
Blackgram		35	10.0	60	3.02	22
Greengram		50	10.0	59	3.82	35
Blackgram		39	10.0	58	3.42	24
	2009					
Redgram		15	5.0	61	3.91	11
Blackgram		25	5.0	59	3.38	16
	2010					
Blackgram		25	5.0	20	2.97	18
Redgram		10	2.0	24	3.83	7
	2013					
Blackgram		73	9.0	20	2.71	57
Green Gram		37	5.0			
	2014					
Total		**1365**	**176 ha**			

Crop/Enterprise	Year	No. Of Demonstrations	Area Covered in hectares	Percentage of Yield Increase Over Local Check	B:C Ratio	Farmers To Farmers Extension culiminating in the Adoption of the Technology (No. Of Farmers)
Oil Seeds						
	1994					
	1995					
Groundnut		30	2.0	43	3.45	17
Mustard		80	10.0	53	1.94	45
	1996					

Sesame		150	10.0	55	2.41	84
Mustard		220	15.0	54	2.22	123
	1997					
Sesame		105	7.0	42	1.45	57
Mustard		30	2.0	34	1.99	18
	1998					
Mustard		150	10.0	43	1.92	92
	1999					
Sesame		86	7.0	47	1.98	48
Mustard		45	6.0	32	1.32	29
	2000					
Mustard		75	5.0	54	1.91	48
	2001					
Mustard		47	5.0	45	2.33	33
	2002					
Mustard		45	5.0	62	2.25	31
	2003					
Sesame		37	5.0	55	2.84	20
Mustard		66	10.0	65	2.50	46
	2004					
Mustard		30	10.0	62	2.22	21
	2005					
Mustard		36	10.0	58	2.10	25
	2006					
Mustard		37	10.0	57	1.96	26
	2007	-				
	2010					
Sesame		25	5.0	22	2.46	15

	2013					
Sesame		37	5.0	21	2.48	22
	2014					
Total		**1331**	**139 ha**			

Crop/Enterprise	Year	No. Of Demonstrations	Area Covered in Hectares	Percentage of Yield Increase Over Local Check	B:C Ratio	Farmers To Farmers Extension culiminating in the Adoption of the Technology (No. Of Farmers)
Cereals						
	1994					
	1995					
	1996					
	1997					
	1998					
	1999					
	2000					
	2001					
	2002					
Paddy		30	5.0	27	1.42	26
	2003					
	2004					
Paddy		25	5.0	28	1.72	20

	2005					
Wheat		75	10.0	22	1.98	49
	2006					
Paddy		32	6.0	26	1.31	27
	2007					
Paddy		75	10.0	17	1.24	67
	2008					
Paddy		20	4.0	19	1.34	17
Maize		16	5.0	47	3.34	9
Wheat		92	10.0	24	2.61	58
	2009					
Maize		15	5.0	48	3.22	8
Wheat		50	5.0	25	2.75	32
	2010					
Paddy		07	1.0	13	1.82	6
Wheat		55	5.0	15	2.45	36
	2011					
Wheat		35	5.0	21	2.78	22
	2012					
Wheat		43	5.0	37	3.60	27
	2013					
Wheat		40	4.0			
	2014					
Total		**610**	**85 ha**			

Crop/Enterprise	Year	No. Of Demonstrations	Area Covered in Hectares	Percentage of Yield Increase Over Local Check	B:C Ratio	Farmers To Farmers Extension culiminating in the Adoption of the Technology (No. Of Farmers)
Horticultural Crops						
	1994					
	1995					
	1996					

	1997					
	1998					
	1999					
	2000					
Banana		21	0.3	98	3.75	8
	2001					
Banana		31	0.37	103	4.23	12
	2002					
Elephant’s Foot Yam		15	0.58	240	3.52	9
Tomato		15	0.2	58	1.85	9
Brinjal		15	0.3	141	1.98	10
	2003					
Elephant’s Foot Yam		15	0.7	235	3.2	9
Tomato		16	0.2	60	1.7	12
Brinjal		16	0.3	135	1.9	10
	2004					
Elephant’s Foot Yam		15	0.58	240	3.72	10
Tomato		15	0.2	55	1.80	10
	2005					
Tomato		15	5.0	44	1.98	11
Elephant’s Foot Yam		15	0.58	280	3.5	10
Potato		15	2.00	38	1.9	12
	2006					
Elephant’s Foot Yam		15	0.21	316	3.5	12
	2007					
Hybrid Mango		09	0.38	180	4.8	3
	2008					
Capsicum		10	0.58	164	2.45	3
	2009					
Capsicum		10	0.58	160	2.46	3
	2010					
Capsicum		10	0.58	157	2.4	3

	2011					
Capsicum		10	0.58	142	2.3	3
	2012					
Capsicum		11	0.58	113	2.05	4
	2013					
Elephant's Foot Yam		30	1.4	285		
Drumstick		57	2.0			
	2014					
Total		**381**	**18.2**			

Crop/Enterprise	Year	No. Of Demonstrations	Area Covered	Percentage of Yield Increase Over Local Check	B:C Ratio	Farmers To Farmers Extension culiminating in the Adoption of the Technology (No. Of Farmers)
Fishery and Live Stocks						
	1994					
	1995					
	1996					
	1997					
Composite Fish Culture		15	0.53 ha	65	2.75	4
Rhode Island Red Chick		14	28 nos	75	2.87	6
Khaki Campbell Duck		10	20 nos	71	2.31	3
White Yorkshire Pig		05	05 nos	158	5.25	2
	1998					
Composite Fish Culture		15	0.53 ha	62	3.21	4
	1999					
Composite Fish Culture		15	0.53 ha	59	2.98	5
Rhode Island Red Chick		40	40 nos	80	2.95	15
	2000					
Composite Fish Culture		15	0.53 ha	61	2.47	07
Rhode Island Red Chick		40	40 nos	73	2.12	16
	2001					

Scientific Fish Feed		15	1.2 ha	62	1.75	3
Rhode Island Red Chick		20	40 nos	77	2.89	10
2002	2002					
	2003					
	2004					
Air breathing Fish		25	5 nos	116	4.21	16
Rhode Island Red Chick		40	40 nos	81	2.14	12
	2005					
Air breathing Fish		25	5 nos	108	4.01	12
Rhode Island Red Chick		40	40 nos	79	2.12	22
Khaki Campbell Duck		40	200 nos	81	3.00	10
	2006					
Rhode Island Red Chick		40	300 nos	92	2.54	21
Khaki Campbell Duck		25	100 nos	95	3.25	10
Cattle feed		40	40 nos	70	1.79	12
	2007					
Rhode Island Red Chick		40	300 nos	91	2.13	19
Khaki Campbell Duck		25	100 nos	96	3.46	13
Cattle Feed		40	40 nos	73	1.82	14
	2008					
Cattle Feed		20	20 nos	40	1.23	05
Vaccination in naked neck Poultry		20	20 nos	26	1.2	06
	2009					
Prawn		09	1.17 ha	121	3.27	03
Rhode Island Red Chick		20	150 nos	103	2.66	09
	2010					
Vaccination in naked neck Poultry		20	20 nos	25	2.5	06
	2011					
Giant Prawn		09	1.17 ha	72.3	2.24	02
Rhode Island Red Chick		15	150 nos	96	2.67	10
Deworming of Goats		20	20 nos	23	1.53	07
	2012					
Giant Prawn		09	1.17 ha	71.9	2.67	02

	2013					
Giant Prawn		09	1.17 ha	54	4.12	03
	2014					
Total		**735**				

Crop/Enterprise	**Year**	**No. Of Demonstrations**	**Area Covered in Hectares**	**Percentage of Yield Increase Over Local Check**	**B:C Ratio**	**Farmers To Farmers Extension culiminating in the Adoption of the Technology (No. Of Farmers)**
Plant Protection						
	2004					
Use of Propiconazole for control of Sheath blight in rainy paddy		25	5.0	58.5	1.85	14
	2005					
IPM in Brinjal		19	2.53	52	2.14	4
IPM in Tomato		15	2.00	25	1.71	4
	2008					
Use of pre emergence herbicide in Yellow sarsoon		20	4.0	23	2.22	8
	2009					
Use of pre emergence herbicide in Yellow sarsoon		20	4.0	20	2.01	8
	2011					
Seed treatment in paddy with *Trichoderma viride*		25	10.0	21	1.9	18
	2013					
	2014					
Total		**124**	**27.53 ha**			

Crop/Enterprise	Year	No. Of Demonstrations	Area Covered	Percentage of Yield Increase Over Local Check	B:C Ratio	Farmers To Farmers Extension culiminating in the Adoption of the Technology (No. Of Farmers)
Other Enterprises						
	1994					
	1995					
	1996					
	1997					
	1998					
	1999					
Backyard Vermi-compost		04	04 nos	-	2.7	01
	2000					
Backyard Vermi-compost		04	04 nos	-	2.91	01
	2001					
Backyard Vermi-compost		04	04 nos	-	2.53	01
	2002					
	2003					
	2004					
	2005					
	2006					
Drum Seeder		40	2 ha	19	1.25	25
	2007					
Drum Seeder		07	5 ha	21	1.32	05
Cotton		87	15.5 ha	35	1.54	22
Green Fodder		45	4.5 ha	269	2.0	10
Green manuring with		62	14.5 ha	18	1.6	42

Dhaincha						
	2008					
Green manuring with Dhaincha		55	15 ha	19	1.8	45
Drudgery reduction using Naveen Sickle in Paddy harvesting		30	30 nos	20	1.58	03
	2009					
Organic Fodder		25	2.5 ha	43	1.9	10
Drudgery reduction using Naveen Sickle in Paddy harvesting		30	30 nos	25	1.76	03
	2010					
Organic Fodder		23	2.5 ha	51.7	1.4	10
	2011					
Organic Fodder		28	2.8 ha	52.8	1.2	09
	2012					
Organic Fodder		19	0.4 ha	39.6	1.7	05
	2013					
Use of Rotavator in Paddy		29	4 ha	9.72	1.2	05
	2014					
Total		**480**				

Varietal Demonstration of Wheat under Front Line Demonstration Programme

Front Line Demonstration on Black Gram var. WBU-108 (SARADA)

Front Line Demonstration on Capsicum


FLD ON
BROCCOLI
VAR.-F-1 HYBRID
RATHINDRA KVK,
VISVA-BHARATI,
BIRBHUM
Front Line Demonstration on Broccoli
Elephant's foot yam Seed (corm) harvested
under Front Line Demonstration Programme


FLD
ON
ELEPHANT'S FOOT
YAM VAR.
BIDHAN KUSUM
Front Line Demonstration at KVK adopted villages
Seedlings raising of Barmasia Drumstick var. PKM-1
Plantation of Barmasia Drumstick var. PKM-1

Front Line Demonstration on Drumstic(PKM-1)

(9months old)

FLD on Giant prawn

Chapter – VI

Technology Assessment and Refinement

27. **On Farm Trials (OFTs):-** Since its inception in 1994, till date the Rathindra KVK has conducted 61 numbers of On Farm Trials on different Technogies which are given below in Tabular Form.

On Farm Trials (OFTs) conducted by the Rathindra KVK

Sl. No.	Year	Thematic Area	Major Technologies Identified	Technology Assessed Through OFT
01.	1996	Plant Nutrient Management	Tech. Opt. 1: Single Super Phosphate Tech. Opt. 2: Farmers practice (No SSP)	Tech. Opt. 1 i.e. use of Single Super Phosphate increased the rapeseed yield by 40 %
02.	1996	Plant Nutrient Management	Tech. Opt. 1: NPK (100:100:100) Farmers Practice Tech. Opt. 2: NPK 150:150:150 Tech. Opt. 3: NPK 200:150:150	Tech. Opt. 3: NPK 200:150:150 increased the potato yield by 88%
03.	1997	Fish feed management	Tech. Opt. 1: No fish feed Tech. Opt. 2: Rice Bran Tech. Opt. 3: Mustard Oil Cake	Tech. Opt. 3 i.e. use of Mustard Oil Cake increased the fish yield by 47 %
04.	1998	Fish feed management	Tech. Opt. 1: No fish feed Tech. Opt. 2: Rice Bran Tech. Opt. 3: Mustard Oil Cake	Tech. Opt. 3 i.e. use of Mustard Oil Cake increased the fish yield by 53 %
05.	1999	Plant Nutrient Management	Tech. Opt. 1:Single Super Phosphate Tech. Opt. 2: Calcium sulphate Tech. Opt. 3: Elemental sulfur	Tech. Opt. 2: Calcium sulphate increased the yield of rapeseed mustard by 34 %

			Tech. Opt. 4: Farmers Practice (S @ 10 kg/ ha along with recommended NPK 80:40:40)	
06.	1999	Fish feed management	Tech. Opt. 1: Rice bran + Lime Tech. Opt. 2: Rice Bran + $Kmno_4$ Tech. Opt. 3: Mustard Oil Cake + lime Tech. Opt. 4: MOC + $KMNO_4$ Farmers Practice	Tech. Opt. 3 i.e. use of Mustard Oil Cake lime increased the fish yield by 61%
07.	2000	Fish feed management	Tech. Opt. 1: Rice bran + Mahua Oil Cake Tech. Opt. 2: Lime Tech. Opt. 3: farmers practice	Tech. Opt. 1 i.e. use of Mahua Oil Cake and rice bran increased the fish yield by 57%
08.	2001	Varietal Replacement of Paddy	Tech. Opt.- 1: Paddy variety MTU-7029 Tech. Opt.-2: Paddy variety Bipasa	Tech. Opt.-2 i.e Paddy variety Bipasa produced 15% higher yield and thereby can replace MTU-7029.
09.	2002	Varietal Replacement of Paddy	Tech. Opt.- 1: Paddy variety MTU-7029 Tech. Opt.-2: Paddy variety Bipasa	Tech. Opt.-2 i.e Paddy variety Bipasa produced significantly higher yield (5.46 t/ha) and thereby can replace MTU-7029.
10.	2003	Cattle Health Management	Tech. Opt.-1: No management Tech. Opt.-2: Mineral Mixture (VITACORTIN DS @40g/cattle/day for six months) 11.Tech. Opt.-3: Antihelmentic (PANACUR @ 12.1.5 g/ cattle (single dose) repeated after	Tech. Opt.-4 i.e. use of Mineral Mixture (VITACORTIN DS @40g/cattle/day for six months) + Antihelmentic (PANACUR @ 1.5 g/ cattle (single dose) repeated after six months) increased the milk production upto 129.78 % and provided the cattle sound health

			six months) Tech. Opt.- 4: Mineral Mixture + Antihelmentic	
11.	2004	Cattle Health Management	Tech. Opt.-1: No Management Tech. Opt.-2: Antihelmentic (KALBEND @ 3 g/animal (double dose) repeated after six months and KLOZANIDE-L BOLUS @ 1.5 g/animal-2 dose) Tech. Opt.-3: Vitamine & Mineral Mixture (RANMIX @ 50 g/animal/ day- feed supplement for six months) Tech. Opt.- 4: Green Fodder (MP CHARI, Stylo, Dinonath and Cowpea) Tech. Opt.- 5: Antihelmentic + Vitamin & Mineral Mixture + Green fodder	Tech. Opt.-5 i.e. use of Antihelmentic + Vitamin & Mineral Mixture + Green fodder removed the infertility of cattle upto 77%
12.	2004	Plant Nutrient Management in Wheat	Farmers Practice: 80:20:20 Tech. Opt.1: Soil Testing Based NPK in Wheat Tech Opt 2: State recommended dose of NPK (100:50:50)	Tech. Opt. 1 i.e application of soil testing based NPK significantly increased the yield (20.97 q /ha) of wheat var. Sonalika.
13.	2005	Plant Nutrient Management in Wheat	Farmers Practice: 80:20:20 Tech. Opt.1: Soil Testing Based NPK in Wheat	Tech. Opt. 1 i.e application of soil testing based NPK significantly increased the yield (29.35 q /ha) of wheat var. PBW-343.

			Tech Opt 2: State recommended dose of NPK (100:50:50)	
14.	2006	Plant nutrient management in Black Gram	Farmers practice: (Water soluble source of P_2O_5 i.e. SSP)- 40 kg P_2O_5 /ha Tech. Opt. 1: Insoluble Source of P_2O_5 i.e.PRP-40 kg P_2O_5 /ha Tech. Opt. 2: SSP+PRP (1:1) [20 kg P_2O_5/ha as SSP & 20 kg P_2O_5/ha as PRP] Tech. Opt. 3: SSP+PRP (2:1) [26.7 kg P_2O_5/ha as SSP & 13.3 kg P_2O_5/ha as PRP]	Tech. Opt. 2: SSP+PRP (1:1) [20 kg P_2O_5/ha as SSP & 20 kg P_2O_5/ha as PRP] produced significantly higher yield (1015 kg /ha) and BC ratio (6.5) of summer blackgram var. WBU-108. But insoluble source of P_2O_5 exhibited higher residual phosphate (58.04 P_2O_5 kg /ha) in soil after harvest
15.	2006	Production Technology of Capsicum	Tech. Opt. 1: Transplanting of Capsicum at 15th October Tech. Opt. 2: Transplanting of Capsicum at 30th October Tech. Opt. 3: Transplanting of Capsicum at 15th November (Farmers Practice)	Tech. Opt. 1 i.e. Transplanting of Capsicum at 15th October produced significantly highest yield (35.62 t/ha) and fetched higher BC ratio (3.10)
16.	2006	Pest Management in Yellow Sarson	Tech. Opt. 1: Proper sowing time + seed treatment + recommended insecticide in yellow sarson Tech. Opt. 2: Proper sowing time + without seed treatment + recommended insecticide in	Tech. Opt. 1 i.e. Proper sowing time + seed treatment + recommended insecticide produced significantly higher yield (8.53 q/ha), lower aphid population and fetched higher BC ratio (2.27) in yellow sarson

			yellow sarson Tech. Opt. 3: Delayed sowing time + without seed treatment + improper dose of insecticide in yellow sarson	
17.	2006	Integrated Pest Management of Potato	Tech. Opt. 1: Seed treatment + supervisory practices in potato Tech. Opt. 2: Seed treatment + supervisory practices + border crops with mustard Tech. Opt. 3: Without seed treatment and without border crops (Farmers practice)	Tech. Opt. 2: Seed treatment with Emisan-6 @ 2 gm/lt of water + supervisory practices + border crops with mustard reduce the late blight infestation (76%) and aphid population (upto 3%) in potato and increased the yield (33t/ha) of potato
18.	2006	Improved Feed Management of Milch Cow	Tech. Opt. 1: Farmers practice (chaffed straw 2.5-3 cm length) Tech. Opt. 2: Paddy straw + green fodder (MP chari) Tech. Opt. 3: Paddy straw + green fodder + urea-concentrate – molasses mixture Tech. Opt. 4: Paddy straw + green fodder + silage –poultry waste- molasses mixture	Tech. Opt. 4: Paddy straw + green fodder + silage –poultry waste- molasses mixture increased voluntary feed intake (1.4 kg/day), weight gain (49.62 kg/animal) and net increase in milk production (1.14 lt/day/animal) in cattle with the BC ratio of 2.52
19.	2006	Cattle Health Management	Tech. Opt. 1: Farmers practice (Only straw) Tech. Opt. 2: Green fodder (MP Chari) Tech. Opt. 3: Antihelmenthic + vitamin & mineral mixture + green fodder	Tech. Opt. 3: Antihelmenthic + vitamin & mineral mixture + green fodder removed infertility of cattle upto 71 % and fetched the BC ratio of 2.5

20.	2007	Plant Nutrient Management in Summer Black Gram	Farmers practice: (Water soluble source of P_2O_5 i.e. SSP)- 40 kg P_2O_5 /ha Tech. Opt. 1: Insoluble Source of P_2O_5 i.e.PRP-40 kg P_2O_5 /ha Tech. Opt. 2: SSP+PRP (1:1) [20 kg P_2O_5/ha as SSP & 20 kg P_2O_5/ha as PRP] Tech. Opt. 3: SSP+PRP (2:1) [26.7 kg P_2O_5/ha as SSP & 13.3 kg P_2O_5/ha as PRP]	Tech. Opt. 2: SSP+PRP (1:1) [20 kg P_2O_5/ha as SSP & 20 kg P_2O_5/ha as PRP] produced significantly higher yield (1040 kg /ha) and BC ratio (6.0) of summer blackgram var. WBU-108. But insoluble source of P_2O_5 exhibited higher residual phosphate (51.55 P_2O_5 kg /ha) in soil after harvest
21.	2007	Production Technology of Capsicum	Tech. Opt. 1: Transplanting of Capsicum at 1st week of October Tech. Opt. 2: Transplanting of Capsicum at 1st week of November Tech. Opt. 3: Transplanting of Capsicum at 1st week of December Tech. Opt. 4: Transplanting of Capsicum at 1st week of January (Farmers Practice)	Tech. Opt. 2 i.e. Transplanting of Capsicum at 1st week of November produced significantly highest yield (42.97 t/ha) and fetched higher BC ratio (3.64)
22.	2007	Pest Management	Tech. Opt. 1: Proper sowing time + seed treatment + recommended insecticide in yellow sarson Tech. Opt. 2: Proper sowing time + without seed treatment + recommended insecticide in yellow sarson	Tech. Opt. 1 i.e. Proper sowing time + seed treatment + recommended insecticide produced significantly higher yield (8.78 q/ha), lower aphid population and fetched higher BC ratio (2.50) in yellow sarson

			Tech. Opt. 3: Delayed sowing time + without seed treatment + improper dose of insecticide in yellow sarson	
23.	2007	Integrated Pest Management of Potato	Tech. Opt. 1: Seed treatment + supervisory practices in potato Tech. Opt. 2: Seed treatment + supervisory practices + border crops with mustard Tech. Opt. 3: Without seed treatment and without border crops (Farmers practice)	Tech. Opt. 2: Seed treatment with Emisan-6 @ 2 gm/lt of water + supervisory practices + border crops with mustard reduce the late blight infestation (72%) and aphid population (upto 4%) in potato and increased the yield (35t/ha) of potato
24.	2007	Improved Feed Management of Cattle	Tech. Opt. 1: Farmers practice (chaffed straw 2.5-3 cm length) Tech. Opt. 2: Paddy straw + green fodder (MP chari) Tech. Opt. 3: Paddy straw + green fodder + urea-concentrate – molasses mixture Tech. Opt. 4: Paddy straw + green fodder + silage –poultry waste- molasses mixture	Tech. Opt. 4: Paddy straw + green fodder + silage –poultry waste- molasses mixture increased voluntary feed intake (1.3 kg/day), weight gain (41.5 kg/animal) and net increase in milk production (1.10 lt/day/animal) in cattle with the BC ratio of 2.45
25.	2007	Cattle Health Management	Tech. Opt. 1: Farmers practice (Only straw) Tech. Opt. 2: Green fodder (MP Chari) Tech. Opt. 3: Antihelmenthic + vitamin & mineral mixture + green fodder	Tech. Opt. 3: Antihelmenthic + vitamin & mineral mixture + green fodder (Jowar MP Chari) reduced infertility of cattle upto 75 % and fetched the BC ratio of 2.7
26.	2008	Plant Nutrient Management in Summer	Farmers practice: (Water soluble source of P_2O_5 i.e. SSP)- 40 kg P_2O_5 /ha	Tech. Opt. 2: SSP+PRP (1:1) [20 kg P_2O_5/ha as SSP & 20 kg P_2O_5/ha as PRP] produced significantly higher yield

		Black Gram	Tech. Opt. 1: Insoluble Source of P_2O_5 i.e.PRP-40 kg P_2O_5 /ha Tech. Opt. 2: SSP+PRP (1:1) [20 kg P_2O_5/ha as SSP & 20 kg P_2O_5/ha as PRP] Tech. Opt. 3: SSP+PRP (2:1) [26.7 kg P_2O_5/ha as SSP & 13.3 kg P_2O_5/ha as PRP]	(1035 kg /ha) and BC ratio (5.9) of summer blackgram var. WBU-108. But insoluble source of P_2O_5 exhibited higher residual phosphate (49.85 P_2O_5 kg /ha) in soil after harvest
27.	2008	Production Technology of French Bean	Farmers practice: Plant density 45X 30 cm i.e 7/ sq.m Tech. Opt.1: Plant density 30 X 15 cm i.e. 22 plants/ sq.m Tech.Opt.2: Plant density 45X 15 cm i.e.15 plants/sq.m	Tech. Opt.1: Plant density 30 X 15 cm i.e. 22 plants/ sq.m produced significantly higher yield (12.2 t/ha) and BC ratio (5.5) in French bean
28.	2008	Improved Pest Management practices of Kharif Paddy	Farmers Practice: Conventional pesticide like Imidachloprid 1ml/ 5 lt water Tech. Opt. 1: Acetamiprid 20 SP (1 ml/ 5 lt of water) + Quinolphos 20 EC (1 ml/l of water)with skip row transplanting (8:2) Tech. Opt.2: Acetamiprid 20 SP (1 ml/ 5 lt of water) + Cypermethrin 20 EC (1 ml/l of water)with skip row transplanting (8:2) Tech. Opt.3: Acetamiprid 20 SP (1 ml/ 5 lt of water) + Chloropyriphos 20 EC (2 ml/l of water)with skip row transplanting (8:2)	Tech. Opt.3: Acetamiprid 20 SP (1 ml/ 5 lt of water) + Chloropyriphos 20 EC (2 ml/l of water)with skip row transplanting (8:2) reduced BPH population upto 90.5% and exhibited higher yield (59 q/ha) of rainy paddy var. MTU-7029

29.	2008	Improved Pest Management Practices	Tech. Opt. 1: Conventional insecticide (Farmers Practice) Tech. Opt.2: SRD Carbosulfan (0.5 ml/lt) + 2 FS Carbosulfan (250 g ai/ha) Tech. Opt. 3: SRD Thiomethoxam (0.2 g/lt) + 2 FS Triozophos (500 g ai/ha) Tech. Opt. 4: SRD Carbofuran (10 g.lt) + 2 FS Ethion (500 g ai/ha) SRD= Seedling root drip FS= Foliar spray	Tech. Opt. 4: Seedling Root Drip with Carbofuran (10 g.lt) + 2 Foliar Spray with Ethion (500 g ai/ha) reduced population of Chilli thrips by 81 % and produced higher yield (2.35 t/ha) and BC ratio of 5.2
30.	2008	Animal Nutrition Management	Farmers practice: Basal diet: poultry feed available in the market or home stead condition Tech. Opt. 1: Basal diet (Normal poultry feed available in the market) with 2.5 % Calcium and 20 mg Zinc sulphate/ kg of feed Tech. Opt. 2: Basal diet (Normal poultry feed available in the market) with 3.0 % Calcium and 30 mg Zinc sulphate/ kg of feed	Tech. Opt. 2: Basal diet (Normal poultry feed available in the market) with 3.0 % Calcium and 30 mg Zinc sulphate/ kg of feed increased egg laying capacity (154 eggs/bird/year) and BC ratio (1.53) in poultry bird rearing
31.	2008	Health Management of Black Bengal goat	Farmers Practice: Albendazole @ 7.5 mg/kg body weight, single dose (2 times in a year) Tech. Opt. 1: Extract of neem seed (20g) + bitter gourd (20g) +garlic (50g) +edible	Tech. Opt. 2: Aloe vera 50-75 g edible mucilage combined with jiggery 50 ml @ 10 g/ 15 kg body weight X 4 days X 3 times in a year reduced worm egg concentration upto 94 % and increased meat production (13.8 kg/animal/year) with

			banana stem (50g) combined with jiggery @ 50 ml/15 kg body weight / animal X 4 days X 3 months interval Tech. Opt. 2: Aloe vera 50-75 g edible mucilage combined with jiggery 50 ml @ 10 g/ 15 kg body weight X 4 days X 3 times in a year	BC ratio 1.67 of Black Bengal Goat
32.	2008	Fish Nutrient Management	Tech. Opt.1: Rice bran (50%) + Mustard Oil Cake (50%) (Farmers Practice) Tech. Opt.2: Rice bran (50%) + Mustard Oil Cake (40%) + Azolla (10%) Tech. Opt. 3: Rice bran (50%) + Mustard Oil Cake (30%) + Azolla (20%)	Tech. Opt.2 i.e. application of Rice bran (50%) + Mustard Oil cake (30%) + Azolla (20%) in fish pond produced significantly better fish yield (33.83 q/ha) and B:C Ratio (3.40)
33.	2008	Nutrition Garden	Farmers Practice: Use of local variety + Improper planning and management Tech. Opt. 1: Use of HYV seed + proper management and planning + FYM (10 t/ha) Tech. Opt. 2: Use of HYV seed + proper management and planning + Vermicompost (5 t/ha)	Tech. Opt. 2: Use of HYV seed + proper management and planning + Vermicompost (5 t/ha) increased the yield of Spinach (10.8 t/ha), Brinjal (15.9 t/ha) and Tomato (20 t/ha) and fetched BC ratio upto 2.5 in backyard nutrition garden
34.	2009	Plant Nutrient Management in Summer Green Gram	Farmers practice: (Water soluble source of P_2O_5 i.e. SSP)- 40 kg P_2O_5 /ha Tech. Opt. 1: SSP+PRP (1:2) [13.3 kg P_2O_5/ha	Tech. Opt. 2: SSP+PRP (1:1) [20 kg P_2O_5/ha as SSP & 20 kg P_2O_5/ha as PRP] produced significantly higher yield (1165 kg /ha) and BC ratio (3.99) of summer greengram

			as SSP & 26.7 kg P_2O_5/ha as PRP] Tech. Opt. 2: SSP+PRP (1:1) [20 kg P_2O_5/ha as SSP & 20 kg P_2O_5/ha as PRP] Tech. Opt. 3: SSP+PRP (2:1) [26.7 kg P_2O_5/ha as SSP & 13.3 kg P_2O_5/ha as PRP] Tech. Opt. 4: SSP+PRP (1:2) [13.3 kg P_2O_5/ha as SSP & 26.7 kg P_2O_5/ha as PRP]	var. PDM 84-139. But SSP+PRP (1:2) [13.3 kg P_2O_5/ha as SSP & 26.7 kg P_2O_5/ha as PRP] exhibited higher residual phosphate (52.07 P_2O_5 kg /ha) in soil after harvest
35.	2009	Improved Pest Management Practices of Kharif Paddy	Farmers Practice: Conventional pesticide like Acephate 1 h/l of water Tech. Opt.1: Acetamiprid 20 SP (1 ml/ 5 lt of water) + Cypermethrin 20 EC (1 ml/l of water)with skip row transplanting (8:2) Tech. Opt.2: Acetamiprid 20 SP (1 ml/ 5 lt of water) + Chloropyriphos 20 EC (2 ml/l of water)with skip row transplanting (8:2)	Tech. Opt.2: Acetamiprid 20 SP (1 ml/ 5 lt of water) + Chloropyriphos 20 EC (2 ml/l of water)with skip row transplanting (8:2) reduced BPH population upto 91.4% and exhibited higher yield (60 q/ha) of rainy paddy var. MTU-7029
36.	2009	Fish Nutrient Management	Farmers practice: irregular feed application Tech. Opt.1: Rice bran (50%) + Mustard Oil Cake (50%) Tech. Opt.2: Rice bran (50%) + Mustard Oil Cake (40%) + Azolla (10%) Tech. Opt. 3: Rice bran (50%) + Mustard Oil Cake (30%) + Azolla (20%)	Tech. Opt.3 i.e. application of Rice bran (50%) + Mustard Oil cake (30%) + Azolla (20%) in fish pond produced significantly better fish yield (26.20 q/ha) and B:C Ratio (3.32)
37.	2009	Production Technology of	Farmers practice: Plant density 45X 30 cm i.e	Tech. Opt.1: Plant density 30 X 15 cm i.e. 22 plants/ sq.m

		French Bean	7/ sq.m Tech. Opt.1: Plant density 30 X 15 cm i.e. 22 plants/ sq.m Tech.Opt.2: Plant density 45X 15 cm i.e.15 plants/sq.m	produced significantly higher yield (13.1 t/ha) and BC ratio (5.43) in French bean
38.	2009	Animal Nutrition Management	Farmers practice: Basal diet: poultry feed available in the market or home stead condition Tech. Opt. 1: Basal diet (Normal poultry feed available in the market) with 2.5 % Calcium and 20 mg Zinc sulphate/ kg of feed Tech. Opt. 2: Basal diet (Normal poultry feed available in the market) with 3.0 % Calcium and 30 mg Zinc sulphate/ kg of feed	Tech. Opt. 2: Basal diet (Normal poultry feed available in the market) with 3.0 % Calcium and 30 mg Zinc sulphate/ kg of feed increased egg laying capacity (155 eggs/bird/year) and BC ratio (1.98) in poultry bird rearing
39.	2009	Animal Health Management	Farmers Practice: Albendazole @ 7.5 mg/kg body weight, single dose (2 times in a year) Tech. Opt. 1: Extract of neem seed (20g) + bitter gourd (20g) +garlic (50g) +edible banana stem (50g) combined with jiggery @ 50 ml/15 kg body weight / animal X 4 days X 3 months interval Tech. Opt. 2: Aloe vera 50-75 g edible mucilage combined with jiggery 50 ml @ 10	Tech. Opt. 2: Aloe vera 50-75 g edible mucilage combined with jiggery 50 ml @ 10 g/ 15 kg body weight X 4 days X 3 times in a year reduced worm egg concentration upto 93 % and increased meat production (8.3 kg/animal/year) of Black Bengal Goat

			g/ 15 kg body weight X 4 days X 3 times in a year	
40.	2010	Production Technology of Boro Paddy	Tech. Opt.-1: 6-8 seedlings/hill of 45 days , spacing 20 cm X 15 cm, No organic manure, 100:50:50 (Farmers Practice) Tech. Opt.-2: 1 seedling/hill of 18 days, spacing 25 cm X 25 cm, organic manure 10 t/ha, 75 :62.5:50 Tech. Opt.-3: 1 seedling/hill of 18 days, spacing 30 cm X 30 cm, organic manure 10 t/ha, 75 :62.5:50	Tech. Opt.-3 i.e. transplanting 1 seedling/hill of 18 days with plant spacing of 30 cm X 30 cm produced significantly higher yield (81.3 q/ha) in SRI method of *boro* paddy
41.	2010	Improved Pest Management practices of Kharif Paddy	Farmers Practice: Conventional pesticide like Acephate 1 h/l of water Tech. Opt.1: Acetamiprid 20 SP (1 ml/ 5 lt of water) + Cypermethrin 20 EC (1 ml/l of water)with skip row transplanting (8:2) Tech. Opt.2: Acetamiprid 20 SP (1 ml/ 5 lt of water) + Chloropyriphos 20 EC (2 ml/l of water)with skip row transplanting (8:2)	Tech. Opt.2: Acetamiprid 20 SP (1 ml/ 5 lt of water) + Chloropyriphos 20 EC (2 ml/l of water)with skip row transplanting (8:2) reduced BPH population upto 92.3% and exhibited higher yield (55.9 q/ha) of rainy paddy var. MTU-7029
42.	2010	Integrated Nutrient Management in Broccoli	Farmers practice: 100:80:40 NPK kg/ha (Totally inorganic) Tech. Opt.1: Recommended 150 : 100:50 NPK	Tech. Opt. 2 1.e. application of 75:50:25 NPK kg/ha (inorganic) + Vermicompost 75 qui/ha, produced significantly higher yield (9.85 t/ha) and BC ratio (2.72) of

			kg/ha (Totally inorganic) Tech. Opt.2: 75:50:25 NPK kg/ha (inorganic) + vermicompost 75 qui/ha	Broccoli
43.	2010	Animal Nutrition Management	Farmers practice: Basal diet: poultry feed available in the market or home stead condition Tech. Opt. 1: Basal diet (Normal poultry feed available in the market) with 2.5 % Calcium and 20 mg Zinc sulphate/ kg of feed Tech. Opt. 2: Basal diet (Normal poultry feed available in the market) with 3.0 % Calcium and 30 mg Zinc sulphate/ kg of feed	Tech. Opt. 2: Basal diet (Normal poultry feed available in the market) with 3.0 % Calcium and 30 mg Zinc sulphate/ kg of feed increased egg laying capacity (149 eggs/bird/year) and BC ratio (2.18) in poultry bird rearing
44.	2010	Fish Nutrient Management	Farmers practice: irregular feed application Tech. Opt.1: Rice bran (50%) + Mustard Oil Cake (50%) Tech. Opt.2: Rice bran (50%) + Mustard Oil Cake (40%) + Azolla (10%) Tech. Opt. 3: Rice bran (50%) + Mustard Oil Cake (30%) + Azolla (20%)	Tech. Opt.3 i.e. application of Rice bran (50%) + Mustard Oil cake (30%) + Azolla (20%) in fish pond produced significantly better fish yield (16.50 q/ha) and B:C Ratio (1.91)
45.	2010	Post Harvest Technology of Horticultural Crops	Farmers practice: Use of any container Tech. Opt.1: Use of galvanized tin container Tech. Opt. 2: Use of galvanized tin container with proper airtight technique (wax sealing)	Tech. Opt. 2: Use of galvanized tin container with proper airtight technique (wax sealing) increased storage life of jaggery (340 days) and BC ratio (1.51)

46.	2010	Integrated Farming System (IFS) based on Fishery	Farmers Practice: Traditional fish farming Tech. Opt.1: Composite fish culture (IMC, prawn) + Poultry farming (RIR and Black Australorp 150 nos) + Pulses (Redgram-Blackgram) Tech. Opt.2: Composite fish culture (IMC, prawn) + Poultry farming (RIR and Black Australorp 150 nos) + vegetables (Ladys' finger- capsicum)	Tech. Opt.1: Composite fish culture (IMC, prawn) + Poultry farming (RIR and Black Australorp 150 nos) + Pulses (Redgram-Blackgram) exhibited higher return (Rs. 49258/ unit i.e. 0.19 ha pond + 150 nos of poultry + 0.13 ha utilized land with pulses) and BC ratio (2.1) in Integrated Farming System
47.	2011	Production Technology of SRI	Tech. Opt.-1: 6-8 seedlings/hill of 45 days , spacing 20 cm X 15 cm, No organic manure, 100:50:50 (Farmers Practice) Tech. Opt.-2: 1 seedling/hill of 18 days, spacing 25 cm X 25 cm, organic manure 10 t/ha, 75 :62.5:50 Tech. Opt.-3: 1 seedling/hill of 18 days, spacing 30 cm X 30 cm, organic manure 10 t/ha, 75 :62.5:50	Tech. Opt.-3 i.e. transplanting 1 seedling/hill of 18 days with plant spacing of 30 cm X 30 cm produced significantly higher yield (90.0 q/ha) and BC ratio (3.22) in SRI method of *boro* paddy
48.	2011	Integrated Nutrient Management in Broccoli Crops	Farmers practice: 100:80:40 NPK kg/ha (Totally inorganic) Tech. Opt.1: Recommended 150 : 100:50 NPK kg/ha (Totally inorganic) Tech. Opt.2: 75:50:25 NPK kg/ha (inorganic)	Tech. Opt. 2 1.e. application of 75:50:25 NPK kg/ha (inorganic) + Vermicompost 75 qui/ha, produced significantly higher yield (9.93 t /ha) and BC ratio (2.32) of Broccoli

			+ vermicompost 75 qui/ha	
49.	2011	Integrated Fishery based Farming System	Farmers Practice: Traditional fish farming Tech. Opt.1: Composite fish culture (IMC, prawn) + Poultry farming (RIR and Black Australorp 150 nos) + Pulses (Redgram-Blackgram) Tech. Opt.2: Composite fish culture (IMC, prawn) + Poultry farming (RIR and Black Australorp 150 nos) + vegetables (Ladys' finger- capsicum)	Tech. Opt.1: Composite fish culture (IMC, prawn) + Poultry farming (RIR and Black Australorp 150 nos) + Pulses (Redgram-Blackgram) exhibited higher return (Rs. 50521/ unit i.e. 0.19 ha pond + 150 nos of poultry + 0.13 ha utilized land with pulses) and BC ratio (2.3) in Integrated Farming System
50.	2012	Production Technology of SRI Method of Paddy Cultivation	Tech. Opt.-1: 6-8 seedlings/hill of 45 days , spacing 20 cm X 15 cm, No organic manure, 100:50:50 (Farmers Practice) Tech. Opt.-2: 1 seedling/hill of 18 days, spacing 25 cm X 25 cm, organic manure 10 t/ha, 75 :62.5:50 Tech. Opt.-3: 1 seedling/hill of 18 days, spacing 30 cm X 30 cm, organic manure 10 t/ha, 75 :62.5:50	Tech. Opt.-3 i.e. transplanting 1 seedling/hill of 18 days with plant spacing of 30 cm X 30 cm produced significantly higher yield (91.2 q/ha) in SRI method of *boro* paddy
51.	2012	Fish Nutrient Management	Farmers practice: irregular feed application Tech. Opt.1: Rice bran (50%) + Mustard Oil Cake (50%)	Tech. Opt.3 i.e. application of Rice bran (50%) + Mustard Oil cake (30%) + Azolla (20%) in fish pond produced significantly better fish yield (18.85 q/ha) and B:C Ratio

			Tech. Opt.2: Rice bran (50%) + Mustard Oil Cake (40%) + Azolla (10%) Tech. Opt. 3: Rice bran (50%) + Mustard Oil Cake (30%) + Azolla (20%)	(1.99)
52.	2012	Integrated Nutrient Management	Farmers practice: 100:80:40 NPK kg/ha (Totally inorganic) Tech. Opt.1: Recommended 150 : 100:50 NPK kg/ha (Totally inorganic) Tech. Opt.2: 75:50:25 NPK kg/ha (inorganic) + vermicompost 75 qui/ha	Tech. Opt. 2 1.e. application of 75:50:25 NPK kg/ha (inorganic) + Vermicompost 75 qui/ha, produced significantly higher yield of broccoli (10.32 t/ha)
53.	2012	Disease Management of Capsicun	Farmers Practice: Seed treatment (MEMC) + Blitox 50% (COC 50% 3-4 times) Tech. Opt.1: Seed treatment (Trichoderma viridi 6 g/. Kg of seed) + Mancozeb (2.5 g/lit at 20 DAS) + COC 50 % (4 g/lit at 35 DAS)+ Mancozeb (2.5 g/lit at 45 DAS) Tech. Opt.2: Seed treatment (Trichoderma viridi 6 g/. Kg of seed) + Mancozeb (2.5 g/lit at 20 DAS) + Metalaxyl- Mancozeb (2.5 g/lit at 35 DAS)+Dimethomorph- Metriam (1 g +3 g/lit at 45 DAS) Tech. Opt.3: Seed treatment (Trichoderma viridi 6 g/. Kg of seed) + Mancozeb (2.5 g/lit	Tech. Opt.3: Seed treatment (Trichoderma viridi 6 g/. Kg of seed) + Mancozeb (2.5 g/lit at 20 DAS) + Corzet (2.5 g/lit at 35 DAS)+ COC 50 % (4 g/lit at 45 DAS)+ Mancozeb (2.5 g/lit at 45 DAS) produced significantly higher yield (33.7 t/ha) and BC ratio (3.0) in potato cultivation

			at 20 DAS) + Corzet (2.5 g/lit at 35 DAS)+ COC 50 % (4 g/lit at 45 DAS)+ Mancozeb (2.5 g/lit at 45 DAS)	
54.	2012	Fish based Integrated Farming System	Farmers Practice: Traditional fish farming Tech. Opt.1: Composite fish culture (IMC, prawn) + Poultry farming (RIR and Black Australorp 150 nos) + Pulses (Redgram-Blackgram) Tech. Opt.2: Composite fish culture (IMC, prawn) + Poultry farming (RIR and Black Australorp 150 nos) + vegetables (Ladys' finger- capsicum)	Tech. Opt.1: Composite fish culture (IMC, prawn) + Poultry farming (RIR and Black Australorp 150 nos) + Pulses (Redgram-Blackgram) exhibited higher return (Rs. 57357/ unit i.e. 0.19 ha pond + 150 nos of poultry + 0.13 ha utilized land with pulses) and BC ratio (2.3) in Integrated Farming System
55.	2013	Weed management	Farmers' Practice: Hand Weeding Tech. Opt. 1: Pyrazosulfuron- ethyl@ 2.5 g ai/ha as pre emergence (1-3 DAT) Tech. Opt. 2: Metsulfuron-methyl + chlorimuron-ethyl @ 4 g ai/ha at 7-12 DAT Tech. Opt. 3: Pretilachlor @ 1 lit ai/ha as pre emergence (1-3 DAT)	Tech. Opt. 3: Pretilachlor @ 1 lit ai/ha as pre emergence (1-3 DAT) exhibited higher yield (55.9 q/ha) of rainy paddy var. MTU-7029.
56.	2013	Nutritional Management in Fishery	Farmers Practice: irregular feed application without growth promoters Tech. Opt. I: Yeast (2%)+ Coablt Chloride (0.1%) with scientific feed	The Trial is going on.

			Tech. Opt. II: Yeast (2%)+ Vit.B_{12} (0.5%) with scientific feed Tech. Opt. III: Yeast (2%) + Vit. B Complex (0.5%) with scientific feed Scientific feed= Rice Bran (50%)+ MOC (50%)	
57.	2013	Nutrient Management in Yellow Sarson	Farmers' Practice: 80:20:20 NPK Kg/ha Tech. Opt. –I: State recommendation (60:30:30 NPK Kg/ha) Tech. Opt. –II: Soil Testing based NPK	The Trial is going on.
58.	2014	Varietal Replacement of Brinjal	Farmers' Practice: Local Selection Tech. Opt. – I: Indam-504 Tech. Opt. – II: Indam-902	The Trial is going on.
59.	2014	Varietal Replacement of Cucumber	Farmers' Practice: Local Selection Tech. Opt. – I: Snow white Tech. Opt. – II: Swadisht	The Trial is going on.

60.	2014	Weed Management in Summer Pulse	Farmers' Practice: No Weeding Tech. Opt. – I: Pendimethalin @0.75 lit a.i /ha as pre- emergence (0-3 DAS) Tech. Opt. – II:Quizalofop –P-ethyl @ 50 ml a.i./ha as early post emergence (15-20 DAS) Tech. Opt. – III: Fenoxaprop-P-ethyl @ 60 ml a.i/ha as early post emergence (15-20 DAS)	The Trial is going on.
61.	2014	Fish based Integrated Farming System	Framers practice: Traditional Fish Farming Tech. Opt. I: Composite fish culture+Poultry farming+Azolla+Pulses Tech. Opt. II: Composite fish culture+Poultry farming+Azolla+vegetables	The Trial is going on.

OFT on SRI

OFT on Broccoli

OFT on Integrated Farming programme





Vegetable cultivation under Integrated Farming Programme


B. On Station Trials (OSTs):- Since its inception, the Rathindra KVK has conducted 08 numbers of On Station Trials on the KVK Farm on various Agricultural Technologies which are given below in the Tabular Form:-

Sl. No.	Year	Title of the Trial	Result
1.	1995	Use of Chloropyriphos in sugar cane fields for control of Termites	Use of Dursban @ 2.5 ml /lt water above the soil significantly reduced the termite population
2.		Effect of sulfur in Rapeseed	Use of sulfur before sowing increased the yield 11 %
3.		Varietal trial in Brinjal	The variety Pusa Purple Round produced significantly better yield (39.4 t/ha) than others
4.		Varietal trial in Tomato	The variety Pusa Hybrid -1 produced significantly better

			yield (9.7 t/ha) than others
5.	2003	Varietal evaluation programme on cotton	LRA- 5166 produced significantly higher yield (220 kg /ha) than PSS-1, PSS-2, PSS-8
6.	2005	Weed Management in kharif paddy	Use of Pyrazosulfuron ethyl produced significantly higher kharif paddy yield (3.4 t/ha) than those of Pretelachlor and hand weeding
7.		Performance evaluation of granular pesticide in dry seed bed of kharif paddy in tungro and stem borer susceptible area	Cartap hydrochloride @ 22.5 kg /ha at 10 DAT produced higher yield (3.1 t/ha) of paddy (var. MTU-7029) than those of without granular insecticide.
8.		Performance of marketed organic manure in kharif paddy var. MTU 1010	Recommended fertilizer management exhibited higher yield of 2.1 t/ha than the marketed organic manure (Enrich @500 kg/ha) at the time of final land preparation .

Chapter – VII

Extension Activities undertaken by the Rathindra KVK

Sl. No.	Year	Field Days No. Of Participants (No. Of Events)	Agril. Exhibitions No. Of Participants (No. Of Events)	Farmers' Fairs / Technology Week No. Of Participants (No. Of Events)	Scientists' Visits to Farmers' Fields No. Of Participants (No. Of Events)	Farmers Visit to KVK No. Of Participants (No. Of Events)	Radio Programmes No. Of Participants (No. Of Events)	TV Programmes No. Of Participants (No. Of Events)	Film / CD Shows No. Of Participants (No. Of Events)	Extension Literature Produced No. Of Participants (No. Of Events)	Audio-Visual Materials Produced No. Of Participants (No. Of Events)	Training Camps on SHGs organized No. Of Participants (No. Of Events)	Farm Science / Farmers, Clubs Organized No. Of Participants (No. Of Events)	Animal Health Camps Organized No. Of Participants (No. Of Events)	Awareness Camps Organized No. Of Participants (No. Of Events)	Kisan Mobile Advisory Services (KMAS) No. Of Participants (No. Of Events)	Scientific Articles No. Of Participants (No. Of Events)	Any Other Activities No. Of Participants (No. Of Events)
01.	1994-1995	95 (02)	-	175 (01)	-	46 (01)	-	-	-	175 (03)	-	-	-	25 (04)	20 (01)	-	-	-
02.	1995-1996	151 (04)	Not Assessed (01)	800 (01)	90 (15)	195 (60)	Not Assessed (01)	-	-	375 (05)	Not Assessed (02)	-	120 (01)	137 (03)	302 (03)	-	Not Assessed (05)	Ex-Trainees Conference 45 (01)
03.	1996-1997	106 (04)	-	996 (01)	-	205 (75)	-	-	-	425 (05)	-	-	-	63 (02)	-	-	-	Ex-Trainees Conference 52 (01)
04.	1997-1998	143 (04)	-	1100 (01)	39 (11)	215 (80)	-	-	-	225 (03)	-	-	-	43 (01)	-	-	-	Ex-Trainees Conference 40 (01)
05.	1998-1999	155 (04)	Not Assessed (01)	1350 (02)	34 (08)	238 (92)	-	-	-	170 (02)	-	-	125 (01)	-	-	-	Not Assessed (05)	Ex-Trainees Conference 47 (01)
06.	1999-2000	80 (03)	Not Assessed (01)	1375 (02)	48 (12)	260 (102)	-	-	-	180 (02)	-	30 (01)	-	-	95 (01)	-	Not Assessed	Ex-Trainees Conference 107 (02)

																	(04)	
07.	2000-2001	150 (07)	-	1231 (02)	57 (14)	243 (104)		Not Assessed (11)		1100 (05)						-	Not Assessed (04)	Farmers – Scientists Meet 89 (02)
08.	2001-2002	275 (13)	-	1450 (02)	60 (15)	211 (109)	-	Not Assessed (22)	-	950 (05)	-	-	165 (02)	-	305 (15)	-	Not Assessed (06)	Farmers – Scientists Meet 33 (02)
09.	2002-2003	185 (07)	-	1200 (01)	87 (12)	201 (112)	Not Assessed (14)	Not Assessed (03)	-	900 (05)	-	100 (05)	-	180 (12)	28 (01)	-	-	News Paper Coverage Not Assessed (04)
10.	2003-2004	304 (12)	-	1200 (01)	180 (12)	365 (70)	-	Not Assessed (15)	-	1400 (07)	-	-	165 (02)	-	305 (15)	-	Not Assessed (06)	News Paper Coverage Not Assessed (03) Ex-Trainees Conference 150 (02)
11.	2004-2005	327 (11)	-	1300 (01)	345 (35)	665 (90)	Not Assessed (25)	Not Assessed (13)	-	850 (07)	-	-	100 (01)	-	-	-	Not Assessed (16)	News Paper Coverage Not Assessed (09) Ex-Trainees Conference 60 (02)
12.	2005-2006	1477 (39)	-	2080 (02)	381 (35)	1609 (341)	Not Assessed (24)	Not Assessed (07)	-	750 (03)	Not Assessed (02)	61 (04)	352 (05)	71 (02)	105 (01)	-	-	News Paper Coverage Not Assessed (24)
13.	2006-2007	446 (16)	-	1476 (02)	643 (106)	704 (251)	Not Assessed (56)	Not Assessed (21)	84 (01)	900 (03)	Not Assessed	121 (06)	-	78 (02)	84 (01)	-	-	Popular Articles published in vernacular Language Not Assessed

											(03)						(29) Method Demostrations 51 (02) Work Shops 19 (01) News Paper Coverage Not Assessed (09)
14.	2007-2008	357 (13)	Not Assessed (02)	Not Assessed (02)	592 (100)	517 (195)	Not Assessed (39)	Not Assessed (10)	188 (04)	800 (04)	Not Assessed (05)	180 (09)	-	86 (04)	129 (02)	-	Not Assessed (04)	Work shops 111 (01) News Paper Coverage Not Assessed (06)
15.	2008-2009	209 (17)	Not Assessed (01)	Not Assessed (01)	217 (156)	137 (121)	Not Assessed (26)	Not Assessed (07)	Not Assessed (04)	2200 (11)	Not Assessed (05)	200 (10)	Not Assessed (05)	62 (03)	98 (02)	-	-	Work shops 49 (02) News Paper Coverage Not Assessed (04)
16.	2009-2010	190 (18)	Not Assessed (03)	Not Assessed (03)	685 (81)	840 (101)	Not Assessed (31)	Not Assessed (06)	165 (05)	800 (04)	Not Assessed (05)	27 (02)	85 (04)	69 (02)	150 (05)	-	Not Assessed (04)	News Paper Coverage Not Assessed (03)
17.	2010-2011	298 (17)	-	Not Assessed (01)	499 (48)	442 (53)	Not Assessed (25)	Not Assessed (01)	62 (02)	1300 (11)	Not Assessed (06)	21 (01)	44 (01)	31 (02)	140 (02)	-	Not Assessed (03)	-
18.	2011-2012	352 (14)	-	Not Assessed (14)	499 (48)	506 (82)	Not Assessed (15)	Not Assessed (14)	166 (08)	2000 (10)	Not Assessed (06)	31 (02)	-	412 (21)	45 (01)	-	Not Assessed (04)	-
19.	2012-	596	-	Not	422	1088	Not	Not	290	2400	Not	40	-	-	108	6754	Not	-

	2013	(18)		Assessed (01)	(69)	(151)	Assessed (06)	Assessed (03)	(06)	(24)	Assessed (06)	(02)			(02)	(275)	Assessed (06)	
20.	2013-2014 (Up-to 28.02.2014.)	866 (19)	-	-	535 (74)	408 (151)	Not Assessed (07)	Not Assessed (07)	-	1000 (05)	Not Assessed (06)	38 (02)	-	-	135 (02)	4805 (61)	Not Assessed (06)	
Total		**6762 (242)**	**Not Assessed (09)**	**15733 (41)**	**5413 (851)**	**9095 (2341)**	**Not Assessed (269)**	**Not Assessed (140)**	**955 (30)**	**18900 (124)**	**Not Assessed (46)**	**849 (44)**	**1156 (22)**	**1257 (58)**	**2049 (54)**	**11559 (336)**	**Not Assessed (79)**	**Ex-trainees Conference 454 (10)** **News Paper coverage Not Assessed (58)** **Popular Articles published in Vernacular Language Not Assessed (29)** **Farmer – Scientist Meet 122 (04)** **Method Demonstration 51 (02)** **Work shops 179 (04)**



Awareness programme at newly adopted villages



Parthenium Awareness Week Observance




World Environment Day Celebration

Participated in Innovator's Meet at the Office of the Zonal Project Directorate, ICAR, Kolkata

Chapter – VIII

Women and Youth Empowerment

Women Empowerment by Rathindra KVK

Traditionally, managing the home, nurturing and grooming children have been considered to be the primary responsibility of women. Apart from fulfilling these responsibilities, women also substantially contribute to the livelihood of the family. However, women do not receive due recognition in spite of their immense contribution to the development of their families. Due to gender stereotypes, they are not treated as equal partners in the family. The major concerns of women are lack of education and technical skills, marriage at an early age, neglect of their health and little or no control over resources. Hence, they are denied opportunities for their development and active participation in society.

Empowerment of Women cuts across all the programmes of Rathindra KVK. Realising their prominent role, women empowerment has been considered as an integral component of all the sustainable rural livelihood programmes. Based on long experience, the Rathindra KVK has developed a strategy for women empowerment. Reduction in hardship along with capacity building of women and gender sensitisation of various sections of the community are the major aspects. This will lead to enhancement in the status of women and enable them to participate in decision making processes. As an integral component of any poverty alleviation programme, Rathindra KVK has given major emphasis to empowerment of women and has also demonstrated the role of women not only in giving a boost to their economic condition but also in preserving our culture and moral values. To ensure participation of illiterate rural women in the mainstream of community development, Rathindra KVK has introduced several activities. These include reduction of their drudgery, awareness generation on using of safe potable water sources, promotion of kitchen gardens, skill development in making handicrafts and value addition and post harvest technologies of horticultural products, preventive health care and promotion of Self Help Groups and Micro-enterprises. The Rathindra KVK has also been helping them to organise themselves to assess their needs and identify suitable interventions to solve their problems. **Since its inception in 1994, the Rathindra KVK has given Training to 4,464 numbers of Farm Women and female Rural Youths on various issues under various types and duration of Training Courses.**

In most of the development programmes, even related to the management of natural resources promoted by Rathindra KVK, women are being encouraged to form Self Help Groups (SHGs) of 15-20 members to plan their own activities and implement them effectively. SHGs in many locations have come together and formed their own federations. Special efforts are being made for ensuring the membership of women in village level organisations such as watershed committees, village development committees and Gram Panchayat.

a. Economic Empowerment Achievements

The KVK has been giving emphasis on improving the livelihood conditions of rural women and empowering them with the help of appropriate technologies for improvement of farm and home conditions. The KVK has always laid special emphasis for development and empowerment of women who constitute more nearly half of the district population. Promotion of micro-enterprises is an important aspect of women empowerment. Among these activities, trade is the most popular activity followed by agriculture, animal husbandry and food processing. However, over a period of time, agriculture, animal husbandry and food processing supersede trade as many individuals participate in enhancing their production at the family level and try to organise themselves to market them collectively. **Since its establishment in 1994, Rathindra KVK has given Short Duration Training to nearly 1723 Farm Women on various aspects of Handicrafts and Preservation based Livelihood Development, 28 Farm Women on Drudgery reduction and 55 Farm Women on Advanced Horticultural Practices. Besides these activities, the Rathindra KVK has also provided Long Duration Residential Training for entrepreneurship development to 809 Female Rural Youths under 63 numbers of Training Courses.** Following are the farming and non-farm training courses that address the needs of the women of the district.

Activities on Farming Practices

- Plant propagation techniques
- Preparation and use of bio-fertilizers like *Azolla*
- Vermi-composting
- Backyard poultry
- Maintaining dairy
- Raising of vegetable nurseries

• Use of improved implements for seeding, weeding and inter-cultural operations (mainly for drudgery reduction)
• Preservation of fruits and vegetables
• Value addition of horticultural products

Activities on Non-Farming Practices

• Preparation of Agar-battis
• Preparation of fruit and vegetable preserves
• Candle making
• Kantha Stitch products
• Preparation of Jute based handicrafts
• Tailoring and embroidery
• Production of mushrooms

Rathindra KVK has trained 725 Farm Women on aspects of women empowerment through Group Formation since 1974 and 22 SHGs have been organized by the Rathindra KVK supporting more than 450 rural families for micro-credit and savings development in the Birbhum District. Among them, 20 SHGs are linked with banks.

The details of training programmes conducted by the Rathindra KVK for entrepreneurship development among the female Rural Youths are given in the following Table.

Entrepreneurship Development Training Programmes conducted for Female rural Youths by the Rathindra KVK (1994 – 2014)

Sl. No.	Title of the Training	No. Of Programmes	No. Of Female rural Youths Trained
01.	Post-harvest Management, Preservation and Value Addition of Horticultural Products	09	147
02.	Applique Work	01	12
03.	Preparation of Agar-batti	03	36
04.	Low Cost Fish Feed preparation	01	15
05.	Mushroom cultivation	02	22
06.	Fabric Work	02	31
07.	Preparation of simple and decorative Candles	02	20
08.	Batique Work	06	66
09.	Craft Work	10	126
10.	Kantha Stitch	05	61
11.	Tie and Dye	06	79
12.	Vermi-Composting	05	60
13.	Preparation of balanced Feed for Fish and Prawn	01	15
14.	Formation of Self Help Groups (SHGs)	01	65
15.	Commercial Poultry, Broiler and Duckery	03	26
16.	Nutritional Gardening	02	22
17.	Seed Production Practices of Cruciferous and	01	01

	Solanaceous Vegetables		
18.	Hygienic Dairy Farm Management	01	02
19.	Fodder Cultivation	02	03
Total		**63**	**809**

b. Social Empowerment Achievements

The impact of women empowerment in the project areas can be seen in the improved socio-economic status of women, increased attendance of children in schools, reduction in sickness incidences, improved livelihood and better quality of life. In the process of developing the community and promoting income generation activities, many rural women have taken up several initiatives and provided leadership to the community, in spite of being illiterate and poor. The process of change can be seen at many places where the community has recognised the status of women and their contribution in not only managing their families, but also to the economic and social development of the entire community. Most women are participating in Gram Sabhas. Many active leaders of the SHGs have been elected to various Panchayeti Raj Institutions (PRIs) and village cooperatives.

The elder male members in the family may not want women to go out on their own. They may feel threatened. Therefore, it becomes necessary to sensitise men about the need for women empowerment. Opening of joint bank accounts and registering assets and land titles jointly also need persuasion. Recognition of women's services to the family and society can empower them further and provide them equal status in the society.

c. Nutritional Empowerment Achievements

Neglect of women's health is common and women take this situation as 'given'. Therefore, efforts are made to build awareness on improvement in hygiene, sanitation, maternal and child health, family welfare and family planning. Upgrading the skills of local healers and midwives, training of mid-wives, herbal healers and local youth as health guides for first-aid, are some of the key approaches adopted by the Rathindra KVK. Encouraging the community for enrolment of girls in schools and prevention of child marriage are other interventions which support community health as well.

Since 1974, Rathindra KVK has organized both On Campus and Off Campus Training Programmes for awareness generation on health and nutritional issues involving 1442 Farm Women. Most of these Trainees later on are working as Voluntary health Workers arousing the awareness of rural women and their families' awareness about health and related nutritional issues affecting their day to day lives. Women members in SHGs are encouraged to conduct annual health check up and avail of health insurance schemes for themselves and their family members. Kitchen garden is promoted by the Rathindra KVK at the family level which ensures supplementary nutrition for the family at their doorsteps.

The prime motive of transferring knowledge about the vital role of nutrition, among the target group, especially focusing on the vulnerable viz., pregnant women, lactating mothers and children, is to arrest the rising rate of malnourishment cases. The course content included A. Know-how and do-how of the low cost nutritious diets/recipes with the locally available food stuffs; B. Importance of nutrient retention through proper cooking methods; C. Prevention of nutritional deficiencies by providing insight on the essential nutrients and their functions and, D. Raising of kitchen gardens to provide easy access to essential green and leafy vegetables.

Trainees numbering 900 have reported that their medical expenses have come down by 35 per cent and food consumption pattern was improved in most households after the training.

With a view to develop a sturdy and resistant body constitution, health education has focused on certain health guidelines listed below

A. Post and ante-natal care of mother and child; B. Clean surroundings and good sanitation (to prevent air-borne diseases); C. Hygienic cooking practices to decrease susceptibility to diseases; D. Clean and safe potable water to prevent water borne diseases; knowledge and practice of first-aid (during emergencies) and, E. Treatment/management of diarrhoea through administration of ORT.

Hygienic practices are being followed by 40 per cent of the families as against the comparative figure of only two per cent hygiene management in the pre-training period.

With collective decision of women in planning and implementation of various income generation activities and community services such as promotion of functional literacy, preventive health care and gender equity, rural women have ensured economic progress of their members, while developing communal harmony and kinship amongst the families of the SHG members. The participating families have made significant progress even in backward regions of Birbhum District like Rajnagar and Khayrasol CD Blocks. Presently, the women groups are effectively handling social issues such as infant mortality, dowry and child marriage, family planning, vaccination and health care, prevention of alcohol consumption, etc., in their community.

Training programmes of Home Science Section

Finished products after Training programmes (Home Science Section)

Food Processing Training Programmes

Training programme on Agarbati preparation

B. Youth Empowerment by Rathindra KVK

To start with a profile of rural India, the real image of India is not reflected in its metropolises or big cities, but in the diverse and complex matrix of her rural societies. Despite the large-scale migration to cities in recent years due to rapid industrialization and urbanization, still 672 million people live in villages and are dependent directly or indirectly on land based vocations. Agriculture will continue to be the main stay of Indian Economy employing larger sections of our society than industrial sector. The Indian farmers and agricultural labourers cannot hope to develop unless agriculture becomes a remunerative occupation for them. The agro-industrial sub-sector has yet to unfold its potentiality for value addition to farm products and more employment. The agricultural development, like any other field, has to be based on the application of science and technology, and more so in view of decreasing land and water resources per capita.

The Rathindra KVK is a grass-root level institution established in the heart of rural areas within the District of Birbhum on a farm with all facilities for residential and practical training of short duration. Campus training is also organized in the villages for poor resource farmers who cannot afford to come forth to institutional courses. The training is all down-to-earth and tailor-made; they are organized on the principles of "teaching by doing" and "learning by doing". In other words, training is mostly imparted by giving work experience, rather than traditional lecture methods.

Vocational Trainings:

The training programmes for rural youth were organized for imparting skill oriented trainings on increasing production and productivity of crops, orchard management, production and value addition of fruit plants, livestock production and management, economic empowerment of women, methods of protective cultivation, farm machinery, tools and implements, processing and value addition, fisheries, production of inputs at site, and capacity building and group dynamics.

During off-season period, the Rathindra KVK in order to prevent migration of labour to certain extent in the district, the Rathindra KVK has initiated many vocational trainings programmes to rural youth on agriculture and other allied activities like Nursery Management, Integrated Fish Farming, and Soil Testing Kit based Analysis of Soil, Mushroom Production etc. **Till date the Rathindra KVK has trained 2660 numbers of Rural Youth on various Farming activities and 1272 numbers of Rural Youths on various topics of Non-Farming Activities; adding together the Rathindra KVK has trained 3932 numbers of Rural Youths on various topics since its inception in 1994.**

After training, most of the trainees have set up their own units with a little technical assistance from the Rathindra KVK. Trainings have been both knowledge-based and skill-based and have been conducted on-campus on a residential basis for duration of 21 days to 30 days and off-campus for 2 to 5 days. These Trainings for the Rural Youths are basically focussed on A. Farming Activities and B. Non-farming Activities.

Training of Rural Youths by the Rathindra KVK on Farming Activities

Sl. No.	Year	Commercial Broiler Poultry, Duckery Etc	Integrated Fish Culture Tech. With Duckery Poultry, Horticulture Etc	Vaccination Techniques For Dairy Breeds	Nutrition Gardening	Plant Propagation Practices	Nursery Raising & Its Management	Seed Production Practices Of Cruciferous & Solanacious Veg.	Hygienic Dairy Farm Management	Improved Management Of Goatery	Fodder Cultivation	Preparation Of Phosphoh-Humin Complex & Supper Compost	Preparation & Management Of Nursery Pond	Breeding Of IMC & Hatchery Management	Integrated Crop Production Based On High Value Vegetables, Pulse & Oil Seed	Improved Cultivation Practices Of Fruits	Seed Production Technology Of Pulses	Seed Production Technology Of Cereals	Plant Protection Practices Based On Indigenous Knowledge Based Bio-Pesticides Preparation
1	1994-1995	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	1995-1996	-	-	-	-	40	31	36	-	-	-	-	30	20	-	-	-	22	-
3	1996-1997	54	25	15	-	-	-	20	-	-	-	22	20	20	-	-	-	20	20
4	1997-1998	24	25	35	-	-	-	-	-	-	-	-	-	-	32	-	-	-	-
5	1998-1999	-	85	-	12 (W -12)	30	-	-	-	-	-	-	-	-	-	-	-	20	-
6	1999-2000	-	45	-	10 (W -10)	33	-	-	-	-	-	20	40	-	-	-	-	82	-
7	2000-2001	-	37	-	-	-	-	9 (W – 1)	-	-	-	-	24	-	-	-	34	35	-
8	2001-2002	15(W -15)	-	-	-	25	-	-	-	-	-	-	13	-	-	-	-	35	-
9	2002-2003	59	-	-	26	37	-	19	-	-	-	-	20	20	25	-	-	48	-
10	2003-2004	-	-	-	-	16	-	26	-	-	-	-	45	21	41	-	-	25	25
11	2004-2005	42 (W -4)	-	-	-	25	24	19	15 (W – 2)	-	18 (W -2)	-	-	-	-	-	-	-	-
12	2005-2006	28 (W -7)	-	-	-	28	43	-	37	38	32 (W -1)	-	31	-	-	-	-	-	-
13	2006-2007	32	-	-	-	46	20	-	32	-	30	-	20	-	-	10	-	-	25
14	2007-2008	32	-	-	-	15	17	-	-	-	-	-	20	-	-	-	-	-	-
15	2008-2009	20	-	-	-	-	10	-	-	-	-	-	-	16	-	-	-	-	-
16	2009-2010	20	-	-	-	-	10	-	-	30	-	-	-	16	-	-	-	-	-
17	2010-2011	-	-	-	-	-	15	-	-	30	-	-	-	26	-	-	-	-	-
18	2011-2012	-	-	-	-	-	11	-	-	25	-	-	-	22	25	-	-	-	-
19	2012-2013	-	-	-	-	-	26	-	-	-	-	-	-	24	-	32	-	-	-
20	2013-2014	-	-	-	-	-	30	-	-	-	-	-	-	25	-	-	-	-	-

	(Up-to 28.02.2014.)																		
Total		**326 (W – 26)**	**217**	**50**	**48 (W – 22)**	**295**	**237**	**129 (W – 1)**	**84 (W – 2)**	**123**	**80 (W – 3)**	**42**	**263**	**210**	**123**	**42**	**34**	**287**	**70**
Grand Total – 2660 (W – 54)																			

N.B.:- W = Women

B. Training of Rural Youths by the Rathindra KVK on Non-Farming Activities

Sl. No.	Year	Collection of blood, serum & stool for identification of diseases of cattle	Appliqué Work	Preparation of Augarbati	Low Cost Fsh & Prawn feed Preparation	Mushroom Cultivation	Fabric Work	Post-harvest Management ,Preservation & value addition of horticultural crops	Preparation of simple & decorative candles	Preparation of balanced feed for fish & prawn	Least cost feed formulation using solver in MS-Excel	Routine analysis of soil	Bee-keeping	Batique Work	Craft Work	Kantha stitch	Tie & Dye	Vermi-composting	Formation of SHG,s
1	1994-1995	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	1995-1996	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	1996-1997	-	-	-	-	-	-	-	-	-	-	-	-	-	4(W -4)	12(W-12)	-	-	-
4	1997-1998	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21(W – 21)	-
5	1998-1999	-	-	-	-	-	-	-	-	-	-	-	-	14 (W - 14)	-	-	12 (W - 12)	-	-
6	1999-2000	-	-	-	-	-	-	16 (W – 16)	-	-	-	-	-	-	-	39 (W-39)	16 (W - 16)	-	-
7	2000-2001	-	-	-	-	-	-	17 (W – 17)	-	-	-	-	-	-	08 (W – 8)	10 (W-10)	20 (W - 20)	08 (W – 8)	-
8	2001-2002	-	-	-	-	-	-	17 (W – 17)	-	-	-	-	-	10 (W – 10)	08 (W – 8)	-	10 (W – 10)	23 (W – 23)	-
9	2002-2003	-	-	-	-	-	-	24 (W – 24)	-	-	-	-	-	-	15 (W – 15)	-	10 (W – 10)	08 (W – 08)	-
10	2003-2004	-	-	-	32	-	10 (W –	-	-	-	-	-	-	22 (W -	-	-	-	-	65 (W

							10)							22)					- 65)
11	2004-2005	20	12 (W – 12)	16 (W – 16)	23	-	-	16 (W – 2)	-	-	-	-	-	-	16 (W – 16)	-	-	-	-
12	2005-2006	-	-	20 (W – 20)	20	30	21 (W – 21)	11 (W – 11)	10 (W – 10)	20	-	-	-	-	20 (W – 20)	-	11 (W – 11)	-	-
13	2006-2007	-	-	-	20	30	-	-	10(W-10)	-	51	-	-	10 (W - 10)	10 (W - 10)	-	-	-	-
14	2007-2008	-	-	-	15(W-15)	40(W - 20)	-	15 (W – 15)	-	15(W – 15)	31	-	-	10 (W - 10)	10 (W - 10)	-	-	-	-
15	2008-2009	-	-	-	-	20	-	16 (W – 16)	-	-	-	20	20	-	-	-	-	-	-
16	2009-2010	-	-	-	-	-	-	-	-	-	-	-	-	-	15 (W - 15)	-	-	-	-
17	2010-2011	-	-	-	-	-	-	-	-	-	-	23	-	-	-	-	-	-	-
18	2011-2012	-	-	-	-	20	-	-	-	-	-	20	-	-	-	-	-	-	-
19	2012-2013	-	-	-	-	25 (W – 2)	-	15 (W – 15)	-	-	-	20	-	-	-	-	-	-	-
20	2013-2014 (Up-to 28.02.2014.)	-	-	-	-	25	-	-	-	-	-	29	-	-	20 (W – 20)	-	-	-	-
Total		**20**	**12 (W – 12)**	**36 (W – 36)**	**110 (W – 15)**	**190 (W – 22)**	**31 (W – 31)**	**147 (W – 147)**	**20 (W – 20)**	**35 (W – 15)**	**82**	**112**	**20**	**66 (W – 66)**	**126 (W – 126)**	**61 (W-61)**	**79 (W – 79)**	**60 (W – 60)**	**65 (W – 65)**
Grand Total – 1272 (W – 755)																			

N.B.:- W = Women

Long- duration training programme of Rural Youths on Soil Testing

Training Programme on Plant Propagation Practices


Seed treatment of Elephant's Foot Yam (EFY) seed with fungicides
EFY seed planted by the trainees during short- duration On-campus Training programme
Rural Youths engaged for intercultural operation during long duration training Programme
Pit-filling with organic manure for planting of EFY seeds

Breeding of Carp (Mrigel)

The Rathindra KVK has been playing the role of catalyst by providing entrepreneurship Training to Rural Youths of the Birbhum District on a diverse field of Topics ranging from Plant propagation techniques to Mushroom production involving **3932 numbers of unemployed Rural Youths** till date.

Enterprises of Rural Youths facilitated by the Rathindra KVK, Birbhum

Sl. No.	Name	Address and Contact Phone No.	Enterprise	Year of establishment	Type of support from Rathindra KVK	Average Production per Year	Monthly Income / Person before the establishment	Monthly Income / Person after the establishment	Percentage of Change in Yearly Income / Person

							of the Enterprise	**of the Enterprise**	
01.	Sri Sandip Kumar Das	C/o. Kamala Krishi Bhandar, Trishulapatty, Bolpur, P.O. – Bolpur, Dist. – Birbhum. Mobile:- 09434249788	Retail Outlet for selling Pesticides, Fertilizers, Seeds, Farm Implements etc.	2004	Training on various aspects of using Inputs in Horticultural Crop Cultivation and Integrated Fishery Management	Average Yearly Sale is Rs. 6,00,000.00	Rs. 2,000.00	Rs. 10,000.00	500.00
02.	Sri Anowar Hossain Chowdhury	Village:- Kendradangal, P. O. – Sattore, Dist. – Birbhum Mobile:- 07797525345	Commercial Poultry Farming	2009	Training on various aspects of scientific Poultry Farming	32,000 – 36,000 Birds	Rs. 1,000.00	Rs. 7,500.00	750.00
03.	Sri Mohhamad Arif Hossain	Village:- Kendradangal, P. O. – Sattore, Dist. – Birbhum Mobile:- 09800982513	Commercial Poultry Farming	2012	Training on various aspects of scientific Poultry Farming	24,000 – 27,000 Birds	Rs. 3,000.00	Rs. 7,500.00	250.00
04.	Sri Santosh Ghosh	Village:- Amgoria, P. O. – Bishnukhanda, Dist. – Birbhum. Mobile:- 08768223700	Fishery	2004	Training on various aspects of Fishery	7 – 8 Quintals of Fish Fingerlings and 5 – 6 Quintals of Table Fishes	Rs. 300.00	Rs. 6,000.00	2000.00

						per Hectare			
05.	Sri Abhijit Mondal	Village:- Balta, P. O. – Batikar, Dist. – Birbhum. Mobile:- 07797640384	Fishery	2000	Training on various aspects of Fishery	10 – 11 Quintals of Fish Fingerlings and 7 – 8 Quintals of Table Fishes per Hectare	Rs. 1,000.00	Rs. 8,000.00	800.00
06.	Sri Buddhadeb Ghosh	Village:- Amgoria, P. O. – Bishnukhanda, Dist. – Birbhum. Mobile:- 09475097332	Fishery	2000	Training on various aspects of Fishery	6 – 7 Quintals of Fish Fingerlings and 6 – 7 Quintals of Table Fishes per Hectare	Rs. 500.00	Rs. 7,000.00	1400.00
07.	Sri Kanka Soren	Village:- Kankutia, P. O. – Raipur, Dist. – Birbhum. Mobile:- 08670072493	Fishery	2004	Training on various aspects of Fishery	7 – 8 Quintals of Fish Fingerlings, 4 – 5 Quintals of Table Fishes and 35 – 40 kgs. Of Giant Prawn per Hectare	Rs. 400.00	Rs. 7,000.00	1750.00
08.	Sri Satyanarayan Mondal	Village:- Udaypur, P. O. – Saota, Dist. –	Fishery	2006	Training on various aspects of Fishery	4 – 5 Quintals of Fish Fingerlings	Rs. 550.00	Rs. 5,500.00	1000.00

		Birbhum. Mobile:- 08926206568				and 6 – 7 Quintals of Table Fishes per Hectare			
09.	Sri Bariul Molla	Village:- Jadavpur, P. O. – Sattore, Dist. – Birbhum. Mobile:- 08389841515	Fishery	2008	Training on various aspects of Fishery	8 – 9 Quintals of Table Fishes per Hectare	Rs. 400.00	Rs. 5,000.00	1250.00
10.	Sri Chandan Ghosh	Village:- Angora, P. O. – Bandar, Dist. – Birbhum. Mobile:- 09732000728	Fishery	2008	Training on various aspects of Fishery	9 – 10 Quintals of Table Fishes per Hectare	Rs. 500.00	Rs. 6,000.00	1200.00
11.	Sri Arabinda Ghosh	Village:- Balta, P. O. – Batikar, Dist. – Birbhum. Mobile:- 08972285769	Fishery	2000	Training on various aspects of Fishery	7 – 8 Quintals of Fish Fingerlings and 8 – 9 Quintals of Table Fishes per Hectare	Rs. 1,500.00	Rs. 6,500.00	433.33
12.	Sri Samsuzzoha	Village:- Tilutia, P. O. – Kurumba, Dist. – Birbhum. Mobile:-	Fishery	2006	Training on various aspects of Fishery	7 – 8 Quintals of Table Fishes per Hectare	Rs. 500.00	Rs. 4,000.00	800.00

		09932408158							
13.	Sri Dilip Dolui	Village:- Durgapur, P. O. – Dhanyasara, Dist. – Birbhum. Mobile:- 09153404954	Fishery	2000	Training on various aspects of Fishery	6 – 7 Quintals of Fish Fingerlings and 8 – 9 Quintals of Table Fishes per Hectare	Rs. 650.00	Rs. 6,000.00	923.10
14.	Sri Tapan Ghosh	Village:- Bishnubati, P. O. – Sattore, Dist. – Birbhum. Mobile:- 09614057093	Fishery	2006	Training on various aspects of Fishery	5 – 6 Quintals of Table Fishes per Hectare	Rs. 300.00	Rs. 3,500.00	1166.67
15.	Sri Jagannath Biswas	Village:- Raipur, P. O. – Raipur, Dist. – Birbhum. Mobile:- 08016340312	Fishery	2002	Training on various aspects of Fishery	18 – 19 Quintals of Table Fishes per Hectare	Rs. 1,800.00	Rs. 7,500.00	416.67
16.	Sri Rabi Dhibar	Village:- Raipur, P. O. – Raipur, Dist. – Birbhum.	Fishery	2002	Training on various aspects of Fishery	18 – 19 Quintals of Table Fishes per Hectare	Rs. 2,500.00	Rs. 8,000.00	320.00
17.	Smt. Mallika Das	Village:- Raipur, P. O. – Raipur, Dist. – Birbhum. Mobile:- 09474024981	Jute based Handi-Crafts	2007	Training on various aspects of Jute Craft	Depend on Market demand	Rs. 350.00	Rs. 10,000.00	2857.14 **The enterprise of Smt. Mallika Das**

									is giving employment opportunity to 2 males and 5 females round the year.
18.	Smt. Alpana Majumder	Village:- Kankutia, P. O. – Raipur, Dist. – Birbhum. Mobile:- 08016550243	Kantha Stitch	2006	Training on various aspects of Kantha Stitch	Depends on Market demand	Rs. 1,000.00	Rs. 1,80,000.00	18000.00
19.	Sri Barun Garai	Village:- Makrampur, P. O. – Bolpur, pin. – 731204, Dist. – Birbhum Mobile:- 08436230022	Breeding of Dogs, Breed:- Spitz	2011	Training on various aspects of Animal Husbandry	06 – 12 Puppies per Year	Rs. 5,000.00	Rs. 6,000.00	120.00
20.	Sri Subrata Maji	Village:- Dhanyasara, P. O. – Panchshoya, Pin. – 731255, Dist. – Birbhum Mobile:- 09474022670	Certified and Foundation Paddy Seed Production for Pally Sree Ltd.	1999 2006	Training on various aspects of Crop Sciences as well as conducting FLD and OFT	3,50,000 kgs of Paddy Seeds 6,50,000 kgs	Rs. 1,000.00	Rs. 50,000.00	5000.00

			Potato Production for Chips preparation by Pepsico India Ltd.			of Potato			

Chapter – IX

Linkage Development

The Rathinda KVK maintains functional linkages with a number of institutions like,

- Departments of Agriculture, Animal Resource Development, Fisheries, Soil and Water Conservation, Social Welfare etc. Of Govt. Of West Bengal.
- All India Radio and Doordarshan
- NABARD and Nationalized Banks and Co-operative Societies
- ATMA
- ICAR Research Institutes etc
- State Agricultural Universities like Bidhan Chandra Krishi Viswavidyalaya
- Zillah Parishad at the District level, Panchayat Samity at the CD Block level and Gram Panchayats at the cluster of village level.

Sl. No.	Name of the Organization	Sustainability of the Linkage	Nature of Linkages and Farmers' Benefit from the Linkage
1.	Palli Sanghatana Vibagh, Visva-Bharati, Sriniketan, Birbhum	The linkage with this Palli Sanghatana Vibagh, Visva-Bharati has been started by the Rathindra KVK since its inception in 1994 and it is going on smoothly on an environment of mutual trust and need.	This linkage is mainly focussing on organizing joint Training programmes for the villagers as well as giving exposure to the clientele of the Rathindra KVK as about the field level situation

2.	All India Radio, Santiniketan Kendra, Birbhum, West Bengal	The linkage with AIR has been started by the Rathindra KVK since 1995 and it is still going on in full stream.	Broadcasting of different Rathindra KVK activities as well as live Phone –In Programmes are being organized. As a result a vast number of farmers, farm women and rural youth are being exposed to multiple information regarding multiple issues. This is necessary to mention that already AIR, New Delhi has awarded three adopted farmers and regular listeners of AIR Programmes of the Rathiondra KVK for their excellent contribution to farming activities.
3.	Doordarshan, Santiniketan Kendra, Birbhum, West Bengal	The linkage with Doordarshan has been started by the Rathindra KVK since 2005 and it is still going on full stream.	Telecasting of different Rathindra KVK activities as well as live phone – In Programmes are being organized. As a result a vast number of farmers, farm women and rural youth are being exposed to multiple information regarding multiple issues. This is necessary to mention that the viewers of these Programmes have been immensely benifited by viewing Method Demonstration on various new Technologies.
4.	Bidhan Chandra Krishi Viswavidyalaya, West Bengal	The linkage with Bidhan Chandra Krishi Viswavidyalaya has been started by the Rathindra KVK since its inception in 1994 and it is still going on full stream.	This linkage is mainly on the following aspects:- - Conducting regular basis Human Resource Development Training Programme in different discipline. - Facilitate for Annual Action Plan Development. - Facilitate On Farm Testing .Modules. - Provide different location specific germ-plasm. All the linkage activities profoundly help the Rathindra KVK clientele in

			updating their knowledge, skill and attitude.
5.	IARI, Regional Station, Samastipur, Bihar	The linkage with IARI has been started by the Rathindra KVK in 2012 – 2013 and it is now going on in full stream.	The linkage is mainly based on Collaborative Demonstration Programmeon newer Wheat and Paddy varieties. As a result of this linkage, the farmers of Birbhum District are being exposed to nearly Thirty (30) newer varieties of Wheat anf Four (04) varieties of scented as well as non-scented paddy varieties. Some varieties have shown very good potential for future introduction in the District. - Provide Weather related for Crop based Action Plan Development.
6.	CIFRI, Barackpur, 24 Parganas (North), West Bengal	This linkage has been started by the Rathindra KVK in the year 1998 and it is still going on in the fullest stream.	• - This linkage is basically focussed on getting Technical Support on Glass Jar Hatchery and low cost Fish Feed Preparation. Utilizing this linkage a farmer named Sri Sunil Das, Village – Srichandrapur, P. O. – Sattore, Dist. – Birbhum, West Bengal (Mobile Phone No. – 09679885667) prepared a model of Glass Jar Hatchery using low cost materials. This innovative approach was sent to ICAR. The Model of Low Cost Glass Jar Hatchery innovated by Sri Sunil Das was detailed in the Compilation titled, "Farm Innovators", published by the ICAR in October, 2010 (Page No. – 148).
7.	Line Departments like Agriculture, Horticulture and Food Processing Industries,	This linkage has been initiated by the Rathindra KVK since its inception 1994 and it is getting momentum day by day.	This linkage is basically on Technological back-stopping.

	Animal Resource Development, Fisheries etc. Of the Govt. Of West Bengal, Birbhum, West bengal		
8.	National Research Centre on Weed Control, Jabbalpur, Madhya Pradesh	This linkage has been intiated by the Rathindra KVK in the Year 2007 and it is still going on.	The linkage is now focussing on Technical Support for organizing Training and Awareness Camps for controlling weeds specifically weeds like Parthenium. The farmers of this District get immense benefit as they get exposure on Parthenium and other weeds through participating in "Parthenium Control Week Programme".
9.	ATMA, Birbum, West Bengal	This linkage has been started in the year 2007 and now it is getting momentum.	The linkage is now focussing on Orientation Farmers' training and Programme Training for Head Master / Achiever Farmer. Various Short Term Researches on Topics related with Fishery, Agronomy etc. Are also being performed utilizing these linkages Programme.
10.	NABARD, Birbhum, West Bengal	This linkage programme has been initiated from 2003 and it is still going on.	The linkage mainly focuses on formation of Farmers Club, organizing Training for vulnerable areas, Organizing Technology Weeks etc. Some Farmers' Clubs are doing excellent work and they are benefitted from this Linkage.
11.	ETV, Kolkata	This linkage was operational from 2001 to 2007. It has been stopped due to	This linkage was based on broadcasting Rathindra KVK activities and newer farm and related technology demonstration through ETV

		administrative decision of E-TV Channel authority.	Annadata programme. The farmers of Birbhum district were immensely benefitted from exposure to various newer Agricultural and related technologies as well as advisory services provided by the Channel.
12.	State Agricultural Management, Extension and Training Institute (SAMETI), Narendrapur, 24 Parganas (South), West Bengal.	The linkage with SAMETI has been started by the Rathindra KVK in 2009 and it is still going on full stream.	This linkage is mainly on the following aspects - Conducting regular basis Human Resource Development Training Programme in different discipline for Scientists of the Rathindra KVK. - All the linkage activities profoundly help the Rathindra KVK clientele in updating their knowledge, skill and attitude.
13.	IFFCO, Kolkata, West Bengal	The linkage with IFFCO has been started by the Rathindra KVK in 2002 and it is still going on full stream.	The linkage basically focuses on Training and Visit of the farmers' fields. The farmers get benefit through getting information on nutritional status of the soil as well as the proper fertilizer and manuring procedures.
14.	Fertilizer Association of India (FAI), Kolkata, West Bengal	The linkage with FAI has been started by the Rathindra KVK in 2014 and it is still going on full stream.	The linkage basically focuses on performing various Short Term Research on various crop nutrition and related issues, Training and Visit of the farmers' fields. The farmers get benefit through getting information on nutritional status of the soil as well as the proper fertilizer and manuring procedures..
15.	Coconut Development Board, State Centre, Salt Lake City, Kolkata, West Bengal	The linkage with Coconut Development Board has been started by the Rathindra KVK in 2014 and it is still going on full stream.	• This linkage is basically giving Residential Training to selected Rural Youths on "Friends of Coconut Trees (FOCT)" and d popularizing Innovative Machine for raising ut in the Coconut Trees. The first of this Type Training has been organized in collaboration with nRathindra

			KVK at the Rathindra KVK this Year. Sri Ashutosh Garai, Son of Sri Ajit Kumar Garai, a resident of Village – Pundra, CD Block – Nanoor, Police Station – Nanoor, Dist. – Birbhum (Mobile Phone No. – 09475171233) and Sri Malay Das, Son of Sri Ananta Das, a resident of Village – Pundra, CD Block – Nanoor, Police Station – Nanoor, Dist. – Birbhum (Mobile Phone No. – 08101415057) were selected as First and Second Rank holder respectively among the 22 trainees in the Six Days Residential Training Programme on "Friends of Coconut Trees (FOCT)" **(First of its kind Training Programme organized in the State of West Bengal")** jointly organized by the Coconut Development Board, State Centre, West Bengal, Salt Lake City, Kolkata and Rathindra Krishi Vigyan Kendra at the Rathindra Krishi Vigyan Kendra Campus from 13.01.2014 to 18.012014 and now they are performing as **Master Trainers** throughout the State.
16.	TATA Rallis India Ltd., Kolkata, West Bengal	The linkage with TATA Rallis has been initiated by the Rathindra KVK in 2012 and it is going on.	This linkage is basically focuses on Capacity Build Up Training for clientele of Rathindra KVK on Wheat, Potato, Mustard and Rabi Vegetables Crop Management.
17.	Tagore Society For Rural Development, Santiniketan, Birbhum West Bengal	The linkage with this reputed NGO has been initiated by the Rathindra KVK since 2009 and it is now going on in full stream.	This linkage gives importance as well as focuses on Training and Demonstration for stakeholders for far flung areas of Birbhum District where normal working linkage of KVK with villagers of those areas are very weak.
18.	Luthern World Services, Kolkata,	The linkage with this reputed NGO has been initiated by the Rathindra KVK since 2000	This linkage gives importance as well as focuses on Training and Demonstration for stakeholders for far flung areas of Birbhum District,

	West Bengal	and it is now going on in full stream.	especially areas bordering Jharkhand State where normal working linkage of KVK with villagers of those areas are very weak.
19.	Asansol Burdwan Seva Kendra, Burdwan, West Bengal	The linkage with this reputed NGO has been initiated by the Rathindra KVK since 2007 and it is now going on in full stream.	This linkage gives importance as well as focuses on joint Training and Demonstration for stakeholders for various non-adopted villages of Birbhum District as well as far flung areas of Birbhum District, especially areas where normal working linkage of KVK with villagers of those areas are very weak.
20.	Manab Jamin, Birbhum, West Bengal.	The linkage with this reputed NGO has been initiated by the Rathindra KVK since 2007 and it is now going on in full stream.	This linkage gives importance as well as focuses on joint Training and Demonstration for stakeholders for various non-adopted villages of Birbhum District.
21.	Development Research Communication and Service Centre, Kolkata, west Bengal.	The linkage with this reputed NGO has been initiated by the Rathindra KVK in the year 2013 and it is now going on in full stream.	This linkage mainly emphasizes on giving quality Training to the Rural Youth getting admitted in the Community College run by this NGO at Bolpur through delivering Lectures and giving exposures to hands-on field level situation by the experts from the Rathindra KVK who work as Resource Persons on various subjects like fishery, soil testing, horticulture etc.
22.	Bolpur Krishija Samabay Samity, Bolpur, Birbhum, West Bengal	This linkage has been established by the Rathindra KVK since its inception in 1994 and it is still going on fullest stream.	This linkage is basically focuses on supply of quality agricultural inputs for various FLD and OFT Programmes of the Rathindra KVK undertakes. As a result, the clientele of the Rathindra KVK is immensely benifitted through experiencing newer and better quality agricultural inputs.
23.	Comprehensive Area Development	This linkage has been established by the Rathindra KVK in 2004 and it is still going	This linkage is basically focuses on supply of quality breeder and foundation seeds of Pulses and Oilseeds for various FLD and OFT

	Corporation (CADC) KVK, Sonamukhi, Bankura, West Bengal	on fullest stream.	Programmes of the Rathindra KVK undertakes. As a result, the clientele of the Rathindra KVK is immensely benefitted through experiencing newer and better quality seeds.
24.	Comprehensive Area Development Corporation (CADC), Ranaghat – II, Arangghata, Nadia, West Bengal	This linkage has been established by the Rathindra KVK in 2012 and it is still going on fullest stream.	This linkage is basically focuses on supply of quality breeder and foundation seeds of Pulses for various FLD and OFT Programmes of the Rathindra KVK undertakes. As a result, the clientele of the Rathindra KVK is immensely benifitted through experiencing newer and better quality seeds.
25.	National Seed Corporation, Kolkata, West Bengal	This linkage has been established by the Rathindra KVK since its inception in 1994 and it is still going on fullest stream.	This linkage is basically focuses on supply of quality breeder and foundation seeds of various Crops for various FLD and OFT Programmes of the Rathindra KVK undertakes. As a result, the clientele of the Rathindra KVK is immensely benifitted through experiencing newer and better quality seeds.
25.	West Bengal State Seed Corporation, Kolkata, West Bengal	This linkage has been established by the Rathindra KVK since its inception in 1994 and it is still going on fullest stream.	This linkage is basically focuses on supply of quality breeder and foundation seeds of various Crops for various FLD and OFT Programmes of the Rathindra KVK undertakes. As a result, the clientele of the Rathindra KVK is immensely benifitted through experiencing newer and better quality seeds.
26.	Panchayati Raj Institutions (PRIs), Birbhum, West Bengal	This linkage has been established by the Rathindra KVK since its inception in 1994 and it is still going till date.	This linkage helps the Rathindra KVK to get base-line information for choosing Target Areas both on Geographical Terms as well as on Technological Terms by going through various surveys and reports generated by the PR Institutions of the Birbhum District.

27.	Other Krishi Vigyan Kendras (KVKs)	This linkage has been established by the Rathindra KVK since its inception in 1994 and it is still going till date.	This linkage helps the farmers of various Districts to have an exposure and visit to Rathiondra KVK and exchange ideas and experiences with farmers of the District of Birbhum and Scientists of the Rathindra KVK.

N.B. : The nature of linkage may also be focussed in terms of identification of training needs and conducting of training programmes, joint implementation of programme for increasing productivity of crops/enterprises, joint diagnostic survey, contribution received for infrastructure development identification of target groups for implementing the Rathindra KVK activities such as training, OFT, demonstrations or any other.

Joint Training Programmme with NGO held at Rajnagar Block of Birbhum District

Joint training programme with Tagore Society at Samsad Village

Sponsored Training Programme (ATMA)



Sponsored Training Programmes



Farmers & Farm Women from DaKhin Dinajpur District visited KVK orchard

KVK assisted field work of BSW &MSW students of Social Work Deparment of Visva-Bharati at Dagapara Village

B. Resource Mobilization

The Rathindra KVK is fully financed by the ICAR. Besides the funds from ICAR, the Rathindra KVK has access to some other sources of funds though the amount is very small. These other types of resource bases are given below in a Tabular Form.

Sl. No.	Year	Funding from Agencies other than ICAR	Sale of KVK produced Seeds, Planting Materials, Bio-control Agents, Vermin-Compost, Seeds of Mushroom, Home-made	Hostel Rents	Seminar Hall Rents

			Crafts, Value Added Horticultural Products, *Azolla* etc.		
01.	1994-1995	-	-	-	-
02.	1995-1996	-	-	-	-
03.	1996-1997	-	Rs. 7,581.00	-	-
04.	1997-1998	-	Rs. 9,077.83	-	-
05.	1998-1999	-	Rs. 3,800.00	-	-
06.	1999-2000	-	Rs. 7,000.00	-	-
07.	2000-2001	-	Rs. 25,500.00	-	-
08.	2001-2002	-	-	-	-
09.	2002-2003	-	-	-	-
10.	2003-2004	-	-	-	-
11.	2004-2005	-	Rs. 27,530.00	-	-
12.	2005-2006	-	Rs. 37,844.00	-	-
13.	2006-2007	-	Rs. 57,858.00	-	Rs. 1,000.00
14.	2007-2008	-	Rs. 41,952.00	-	-
15.	2008-2009		Rs. 96,978.00	-	Rs. 3,500.00
16.	2009-2010	NABARD Fund:- Rs. 60,000.00 for organizing Technology Week	Rs. 1,03,887.00	Rs. 4,200.00	Rs. 1,500.00
17.	2010-2011	ATMA Fund:- Rs. 4,28,000.00	Rs. 69,390.00	Rs. 21,650.00	Rs. 5,000.00

		NABARD Fund:- Rs. 70,000.00 for Kisan Mela to be organized by the Farmers' Clubs			
18.	2011-2012	ATMA Fund:- Rs. 42,500.00	Rs. 6,484.00	Rs. 1,11,100.00	Rs. 16,000.00
19.	2012-2013	ATMA Fund:- Rs. 62,500.00	Rs. 20,126.00	Rs. 95,160.00	Rs. 10,500.00
20.	2013-2014	-	Rs. 20,980.00	Rs. 31,900.00	Rs. 3,000.00
Total		**Rs. 6,63,000.00**	**Rs. 5,29,987.83**	**Rs. 2,64,010.00**	**Rs. 40,500.00**
Grand Total:- Rs. 14,97,497.83					

C. Awards and Recognizations

- Sri Mahadeb Ghosh of Vill. – Kartick Danga, Block – Bolpur-Sriniketan, Dist. – Birbhum, Sri Debesh Mitra of Vill. – Raipur, Block – Bolpur-Sriniketan, Dist. – Birbhum and Sri Jogen Ghosh of Vill. – Kartick Danga, Block – Bolpur-Sriniketan, Dist. – Birbhum were awarded by the Director General of All India Radio, Prasar Bharati, Broadcasting Corporation of India for adopting modern agricultural techniques and encouraging fellow farmers as a sequel to the listening of "Kishanvani Programme" broadcasted from Shantiniketan Station of All India Radio on the 25th. April. , 2008.

- A training programme on carp breeding and hatchery management was conducted in 2009 – 2010. A trainee, Sri Sunil Das, Village - Srichandrapur, P. O. - Sattore, Dist. – Birbhum, West Bengal (Mobile Phone No. – 09679885667) prepared a model of Glass Jar Hatchery using low cost materials. This innovative approach was sent to ICAR. The Model of Low Cost Glass Jar Hatchery innovated by Sri Sunil Das was detailed in the Compilation titled, "Farm Innovators", published by the ICAR in October, 2010 (Page No. – 148).

- The innovative farmer, Sri Sunil Das was invited to demonstrate the model at the National Farm Innovators' Meet – 2010 held at the JSS Krishi Vigyan Kendra, Suttur, Mysore, Karnataka. The Model was praised by Dr. S. Ayappan, Honourable Director General, ICAR and Sri Sunil Das was presented with a "Certificate of Appreciation" for contribution and participation in the said Meet by Dr. S. Ayappan, Honourable Director General, ICAR and Dr. K. D. Kokate, Honourable Deputy Director General (Agricultural Extension), ICAR. Sri Sunil Das's effort was lauded as an encouragement for reshaping the farmer oriented farm technologies across the country.

- Further, Sri Das went to MPAU&T, Udaipur, Rajasthan at the 5th. National Conference of KVK, 2010, held at the MPAU&T, Udaipur, Rajasthan from 22.12.2010 to 24.12.2010 and exhibited the model of Glass Jar Hatchery before the Honourable President of India and other dignitaries. Sri Sunil Das, the innovative farmer, obtained a memento from the Indian Council of Agricultural Research (ICAR) for his innovative approach on Glass Jar Hatchery.

- SUHRIT, a Self Help Group consisting of mainly Schedule Tribe Community members of Village:- Kankutia, P. O. – Raipur, Dist. – Birbhum, formed with active patronage and support from the Rathindra KVK, has got the First Prize in the Krishi Mela organized by the Bolpur – Sriniketan Community Development Block Office, Govt. of West Bengal in 2010 for Giant Prawn Cultivation. The members of this Group has got Training on Giant Prawn Cultivation from the Rathindra KVK in the Year 2008 – 2009.

- Sri Ashutosh Garai, Son of Sri Ajit Kumar Garai, a resident of Village – Pundra, CD Block – Nanoor, Police Station – Nanoor, Dist. – Birbhum (Mobile Phone No. – 09475171233) and Sri Malay Das, Son of Sri Ananta Das, a resident of Village – Pundra, CD Block – Nanoor, Police Station – Nanoor, Dist. – Birbhum (Mobile Phone No. – 08101415057) were selected as First and Second Rank holder respectively among the 22 trainees in the Six Days Residential Training Programme on "Friends of Coconut Trees (FOCT)" **(First of its kind Training Programme organized in the State of West Bengal")** jointly

organized by the Coconut Development Board, State Centre, West Bengal, Salt Lake City, Kolkata and Rathindra Krishi Vigyan Kendra at the Rathindra Krishi Vigyan Kendra Campus from 13.01.2014 to 18.012014 and now they are performing as **Master Trainers** throughout the State.

- **Sri Abhishek Mondal, Village:- Bora, P. O. – Bohira, Pin. – 731234, dist. – Birbhum (Mobile Phone No. – 09732107975), a closely related farmer of Rathindra KVK has been awarded the "Mahindra Samriddhi Agri Award - 2014" for his remarkable achievement in Mechanization in Potato Planting on 24.02.2014 in New Delhi by Sri Anand Mahindra. This Award was first time awarded to a farmer of West Bengal.**

Chapter – X

Impact Assessment

Over All Impact of Rathindra KVK

A. Rationale

The Rathindra KVK used the working definition of "impacts" as "sustained changes in people/farmers lives brought about by specific interventions". Therefore, impact analysis presented here referred not to any immediate outputs or effects of a programme but to the everlasting and sustained changes brought about. In light of the above, impact assessment is therefore, an evaluation of how, and to

what extent change had occurred". This required an understanding of the perspectives of various stakeholders particularly the local population.. The Rathindra KVK has taken up initiatives such as organizing women and men farmers providing technologies for Crop Diversification , promoting activities to supplement peoples income and relevant infrastructure, developing entrepreneurships for Rural Youths so that, collectively the Rathindra KVK can achieve the KVK mandate and the goals of social, economic and institutional development. The Process of impact assessment examined the factors of efficiency, effectiveness and consistency of the interventions. The specific activities implemented based on the mandate of KVK were already explained in detail in the previous chapters.

B. Institutional / Social Impacts

The Rathindra KVK provided the much needed organizational and institutional base in the form of Farm Science Clubs, Farmers' Clubs and Self Help Groups (SHGs) to the women and men farmers and rural youths. Later the Rathindra KVK got involved in building social and technical awareness, transfer of technology, empowering communities and brings about economic and social change. The primary target group is practicing farmers, farm women and rural

youths, who have become the core of delivery system. Over **30,880** practicing farmers, farm women, rural youths and extension functionaries have been trained in knowledge and skill aspects of various technologies in the operational area of the Rathindra KVK.

Right from the beginning, the Rathindra KVK has paid much attention to intensify the involvement of the practicing farmers, farm women and rural youth at village level and develop necessary skills to build up the capacity among these stakeholders. These clientele of the Rathindra KVK are partners in development in the truest sense for they are involved in the practical implementation of the training programmes The participatory approach in imparting the trainings have developed self confidence in the Trainees.

Role of the Rathindra KVK in helping the vulnerable sections of the Rural Population viz. SC, ST, Minorities, Women and Rural Youth:-

The main thrusts of the Rathindra KVK is the human resource building at the grass-root level for effective and area specific transfer of technology and promote its adoption at the micro level. Keeping in view the primary necessities of the above mentioned vulnerable target group, the mandate of the Rathindra KVK have been designed to "help people to help themselves" in acquiring the skills to meet their needs. As agricultural labourers and small cultivators have no steady income, trainings are imparted in various appropriate income generation programmes like low volume high value horticulture, vermin culture, fishery, poultry and duckery, handi-crafts, kantha stitch, Batique work methods etc. Location specific trainings are given to the women farmers so as to upgrade their existing available natural resources. To bridge the gap between research and extension, demonstrations form an integral part of trainings to expose farmers to latest management practices in agriculture. On farm trails have been conducted on the cultivators' fields to create awareness about the latest management methods and dissemination of proven technology. This has helped in establishing feedback mechanism between the scientists and society resulting in modification of the technology to suit to the locality, socio-economic and cultural situations.

Further, KVK investigators have interviewed a group of 20 randomly selected men and women ex-trainees of the Rathindra KVK about their perception of change over a period time in 2013 -2014. They came out with the following information:-

i. All their children are attending schools more regularly.

ii. Health and sanitation improvements have become possible.

iii. Perception of own wellbeing and better-off living conditions was felt by the trainees..

iii. The trainees clearly perceived positive changes in quality of life due to increased productivity, support availability and income improvement.

iv. The trainees also felt that the quality of diet and nutritional security had improved than before.

V. Las but not the least the Trainees clearly perceived that there was a huge improvement in technical knowledge and skills regarding farming and related activities as well as non-farming activities.

C. Economic Impacts

Economic impact of the Rathindra KVK has come about through

i. Adoption of yield raising technologies i.e. FLDs/OFTs and other extension activities supported by the Rathindra KVK budget.

ii. Training and capacity building activity contributed in implementing value added activities through Income generating activities - micro enterprises at individual level and group level.

iii. Technologies transferred to project area are manifold which can broadly be listed into the following:-

a. Introduction of new varieties particularly in high volume low cost horticultural crops like Elephant's Foot Yam, Drumsticks and low volume high cost vegetables like Capsicum and Broccoli, agronomic crops like Pulses like Black Gram, Green Gram etc. and Oilseeds Crops like Sesame, Lentil, Rape Seeds, Mustard etc.

b. Skills in grafting and nursery

c. Mixed Fish farming with Indian Major Carps along with Giant Prawns

d. Integrated Poultry Management

e. Integrated Goatery Management based on **Black Bengal Breed**

f. Scientific Dairy Management

c. Integrated Pest Management (IPM)

d. Integrated Nutrition Management (INM) based Soil Testing

The fact that the Rathindra KVK follows group oriented strategies, KVK's activities have got intertwined to give a **synergy** to productivity increases in the area through technology transfer. The cropping intensity in the project area i.e. the District of Birbhum has gone up from less than 80 percent in the pre-independence era to 161.88 percent in 2011 – 2012. Thus, the overall impact and its benefits in Birbhum District (Targeted area) are manifold.

D. Technology Impacts

The Rathindra KVK conducted a group exercise of participatory nature with ex-trainees in Kankutia, Senkapur, Deuli, Kartickdanga, Srichandrapur and Bishnubati villages of the District of Birbhum to ascertain the impact created by activities of the Rathindra KVK. The following table describes the process using the participatory tool called trend analysis to obtain the results.

The Methodology

KVK invited those ex-trainees who participated at least in one of the Two Days On Campus and in one of the Three Days Off Campus Training Programmes conducted by the Rathindra KVK. The farmers (87 in numbers belonging to various villages) were given tamarind seeds and the staff explained the purpose of exercise. The impact/ learning outcomes were listed as knowledge, information, adoption and economic benefit. The ex-trainee was expected to give a rating for before (before the intervention of the Rathindra KVK) and present periods, 'then' and 'now'. Depending on their assessment, they placed a number of tamarind seeds. As could be seen in the Table, there was multifold improvement in every aspect as assessed by the farmers of Kankutia, Senkapur, Deuli, Kartickdanga, Srichandrapur and Bishnubati villages adopted by the Rathindra KVK way back in the Year 2002 - 2003.

Impact of the activities of the Rathindra KVK as assessed by the 87 farmers

Sl. No.	Impacts	Average Impact as perceived by the Trainees (Then)	Average Impact as perceived by the Trainees (Now)	Percentage of Change as perceived by the Trainees
01.	Impact on Knowledge	000	00000000	266.67

02.	Impact on Information	00	0000000	350.00
03.	Impact on Adoption	0	000000	600.00
04.	**Economic Impact**	**0000**	**000000**	**150.00**

N.B.:- Here "0" means a Tamarind Seed.

Also an analysis of multi-dimensional nature of the selected best Five Technologies (disseminated by the Rathindra KVK) ranked on the basis of Percentage Rate of Adoption among the Trainees was made on actual study, questionnaire/group discussion etc. with ex-participants of the Training Programmes and it was presented in the following Table.

Impact of the Technologies disseminated by the Rathindra KVK

Name of the specific technology / skill transferred	No. of Trainees	% of adoption	Change in income (Rs./Unit)	
			Before Training	After Training
Cultivation of Elephant Foot Yam using varieties Kavoor and Bidhan Kusum	256	87	Rs.1,58,400/-per ha	Rs.5,07,712/- per ha
Integrated Fish Culture Techniques	217	68	Rs.3300/- per 0.13 ha	Rs.5200/- per 0.13 ha
Scientific Poultry, Duckery etc. Farming	326	50	Rs.200/-per 100 bird in 45 days	Rs.600/-per 100 bird in 45 days
Mushroom Cultivation	190	45	-	Rs. 4000/- per Year for a Room of 10 ft. X 14 ft. Area
Preparation and use of Vermin-compost in small scale basis	60	39	-	Rs. 7000/- per 2.5 ft X 2.0 ft

				X 3.0 ft area /year

- **Some Success Stories related with Rathindra KVK**

A. Fresh Water Giant Prawn in Composite Fish Culture:

A tribal self help group of village Kankutia, Birbhum showed interest in culture of giant prawn along with carp. In this regard a front line demonstration programme was undertaken. This tribal group of 25 members headed by Sri Kanka Soren was motivated by training to undertake this programme. Giant Prawn juvenile were introduced along with carps (except bottom dwellers). A number of 1000 prawn juveniles were stocked in the pond area of 0.13 ha. After a period of 6 months the prawns attained an average size of 90 g. The group sold a stock of 65 kg of prawn @ Rs. 300 per Kg with the gross return of Rs.19,500/- only from prawn. Another Rs. 16,000/- was obtained from selling carps. The cost of prawn juvenile and feed was found only Rs. 4,500/-. The result of prawn culture along with composite fish motivated other farmers for prawn culture. The farmers from other villages are now showing interest in prawn culture in the next year.

Photographs on Fresh Water Giant Prawn in Composite Fish Culture

B. Cultivation of Broccoli- a Huge Success:

Widespread adoption of Broccoli, a high end, high value vegetable crop in the adopted villages of Rathindra KVK is transforming lives of many small scale farmers and marginal subsistence farmers of the Birbhum District, West Bengal. Farmers like Sri Monotosh Ghosh, Sri Tapan Ghosh, Sri Sadai Mete and Sri Goutam Mete of village Bishnubati, Community Development Block Bolpur-Sriniketan, District- Birbhumpoint to the success as a result of untiring effort of the scientist of Rathindra KVK. Sri Monotosh Ghosh fetched a profit of Rs. 15,000 /- from a plot of 10 kathas (0.067 ha) while Sri Tapan Ghosh earned a profit of Rs. 12,200/- from a plot of 8 kathas(0.053 ha). Marginal farmers like Sri Sadai Mete and Sri Goutam Mete also earned a profit of Rs. 4,300/- and Rs. 5,300/- from their plots of 5 kathas (0.033 ha) and 4 kathas (0.027 ha) respectively. These Broccoli cultivators got a market price of Rs. 8/- to Rs. 12/- per pieces of Broccoli. This high value crop has a huge potential to be grown all over the District of Birbhum, as this crop has a heavy demand from the large chains of Shopping Malls, Restaurants, Hotels as well as common people.

Photographs on Broccoli Cultivation

C. Commercial Cultivation of Capsicum- a success story:

Capsicum, a high value (both financially and nutritionally) vegetable crop has a immense potential to be grown on a large scale commercial basis as this crop has a heavy national and state demand from shopping malls, restaurants, hotels and general people . Rathindra KVK has successfully spread the cultivation of this crop in the mandate District. The successes of the farmers like Sri Monotosh Ghosh, Sri Tapan Ghosh, Sri Pitambar Ghosh and Sri Bakul Mete of the village Bishnubati, Bolpur – Sriniketan Block, Birbhum supported the claim. Sri Monotosh Ghosh and Sri Tapan Ghosh earned a profit of Rs. 13,000/- and Rs. 8,390/- from the plot size of 5 katha(0.033 ha) and 3 kathas (0.02 ha) respectively. Sri Pitambar Ghosh a small farmer earned a huge profit of Rs. 14,250/- from a mere plot size of 4 kathas (0.027 ha), while a smaller plot of a size of 2 kathas gave a profit of Rs. 7,400/- to Sri Bakul Mete. Growers of capsicum fetched a market price of Rs. 30 to 35 /- per kilogram of capsicum on an average. Their production ranged from 6 quintals to 3 quintals. So, large scale commercial cultivation of capsicum can transform the agricultural scenario of the Tagore –land.

Photographs on Capsicum Cultivation

D. Preparation of Agar-Batti:

During agro-ecosystem analysis at village Digha, Nimgaria and Meherpur some women showed their interest for formation of self help group. Smt. Tapati Thakur, Village – Digha, P.O. - Nimgaria was one of them. According to the need of the village women, two groups were formed at village Digha. Smt Thakur is one of the group leaders. Through agro –ecosystem analysis it was found that the main source of income of the villages is agriculture. But most of the women are house wives.

According to the need of the house wives the Home Science unit of RKVK planned for imparting some skill oriented training programmes. Among these training programmes "Preparation of Agarbati" was organised in the year 2006 and Smt Tapati Thakur was one of the trainees. She completed the training very successfully and she trained the other 5 members of her group. After that Smt Thakur and the other 5 members of her group planned to produce agarbati. For this purpose Tapati came to KVK for raw material KVK arranged for her bank loan and raw material from Kolkata.

After collection of raw materials she started to produce agarbati with the help of other 5 members from January, 2007. She gives the charge to other members Rs.20 per kg of sticks. Now, she is earning Rs. 850/- per month apart from all expenses. The other members are also earning Rs. 15/- to 20/- per day by producing 1 kg sticks. In this way she is using her leisure time and earning money to help her family as house wife. Already she had repaid her first loan and applied for 2nd loan for large scale production.

Seeing her success the other house wives in the villages are encouraged.

E. Small Scale Seed Production:

Use of good quality seed is necessary to achieve satisfactory crop yield. Seed replacement rate is still behind the recommended rate for most of the crops. Similar situation exists in Birbhum district. The farmers do not get good seed at reasonable rate. They are often cheated by the malpractices of seed sellers. Seed production and seed replacement rate are correlated. In this context, Rathindra KVK arranged training programmes to train the farmers to produce quality seeds of different crops. After completion the training programmes Sri Jogen Ghosh, a small farmer of village Kartik Danga, P.O. Raipur, Dist. Birbhum, produced seeds of paddy, wheat, sesame, black gram, green gram of different varieties as per the instruction of the KVK scientists and sold nearly 1065 kg pure seeds as TL seeds to

different farmers of 10 different villages in the year 2006-07. In this way he earned extra Rs. 15,700.00 from seeds beside the normal production of different crops. Now, he is popular as an honest seed producer among the farmers. Regional Training Centre, NABARD, Bolpur also presented him as a successful farmer in a Workshop held at RTC, Bolpur on. Seeing his success, other farmers showed their interest to produce seeds for extra earning.

Crop	Variety	Quantity sold (Kg.)	Amount earned (Rs.)
Paddy	Khitis	700	7000.00
	Niranjana	100	1000.00
Wheat	Sonalika	50	1000.00
Black gram	WBU 108	55	1650.00
Green gram	PDM-84-139	70	2800.00
Mustard	RW-351	60	1500.00
Sesame	B-67	30	750.00
Total		1065	15700.00

F. Nursery and its management:

Rathindra Krishi Vigyan Kendra organizes the long duration skill-oriented entrepreneurship development-training programme for the rural youths. Nursery and its management is an entrepreneurship training programme for rural youths. The Kendra organized a training programme on Nursery and its management in the year 2005. Sri Anil Das son of Sri Hiralal Das, vill- Palashdanga, P.O.- Konarpur, Block- Sainthia, Dist- Birbhum. Before the training, he had no idea about the multiplication as well as production of planting materials. In the year, 2006 he produced 18000 nos planting materials in his nursery. After sale of the planting materials (fruit plants like papaya, limes, lemons etc., forest saplings like sonajhuri, sissoo etc., and vegetables seedlings like brinjal, chlli, cauliflower, cabbage, tomato etc.) he got Rs. 21000.00 as net profit. Again in the year 2007, there was 25000 nos. plants were produced in his nursery and after sale of the planting materials he had obtained Rs.34000.00 as net profit.

Beside these, he trained 4 persons who worked with him in his nursery. Out of these four people, 2 persons were women. These women belonged to two Self Help Groups called Maa Durga Swanirbhar Dal and Maa Sitala Swanirbhar Dal. These SHGs produced 28000 numbers of plants and supplied to their local Panchayats. They earned a good amount of money.

G. Small Scale Vermi-compost Production:

At present, the demand of high quality organic manure like vermicompost is very high. But availability in the market is very less. In this context, Rathindra KVK organised **training programme on preparation and use of vermin-compost** in the year 2006-07. After completion of training programme, Sri Biren Saha, a small farmer of village Raipur, P.O.- Raipur, Birbhum started vermin-composting with two small units each having the size of 2.5 ft X 2.0 ft X 3.0 ft. Initially he invested Rs.- 1000.00/- for installation this unit. Sri Saha used all the homestead organic wastes. After one month he harvested his first product. For the next production he needs only Rs. 100.00 for the cost of cow dung for each unit. Every time he harvested one quintal of vermicompost from each unit. Within one year he produced ten times from both the units. Thus the total production was 20 quintal in a year. The cost and return in one year is given below.

	Total Cost (Rs.)		**Total Return (Rs)**
Installation Cost (One time)	1000.00	Vermicompost 20 q. @ Rs. 400.00/ q.	8000.00
Cost for Worm (One time)	400.00	Worms 5000 nos @ Rs. 50.00/100	2500.00
Total cost for cow dung	2000.00		
Total	**3400.00**	**Total**	**10500.00**
Net return in the initial year: 10500.00 - 3400.00 = 7100.00			

After this success Sri Biren Saha likes to invest more for medium scale production. Seeing his success many farmers started to produce Vermin-compost in small scale with their homestead organic wastes.

H. Fresh Water Giant Prawn in Composite Fish Culture:

A tribal self help group of village Kankutia, Birbhum showed interest in culture of giant prawn along with carp. In this regard a front line demonstration programme was undertaken. This tribal group of 25 members headed by Sri Kanka Soren was motivated by training to undertake this programme. Giant prawn juvenile were introduced along with carps (except bottom dwellers). A number of 1000 prawn juveniles were stocked in the pond area of 0.13 ha. After a period of 6 months the prawns attained an average size of 90 g. The group sold a stock of 65 kg of prawn @ Rs. 300 per Kg with the gross return of Rs.19,500/- only from prawn. Another Rs. 16,000/- was obtained from selling carps. The cost of prawn juvenile and feed was found only Rs. 4,500/-. The result of prawn culture along with composite fish motivated other farmers for prawn culture. The farmers from other villages are now showing interest in prawn culture in the next year.

I. Layer Farming for Self Employment:

Sri Tapan Kumar Ghosh, village Bisnubati, post Sattor, Dist. Birbhum has started his poultry business initially with layer farming. His farm is now rearing 400 noumber of Rhode Island Red and Black Australorp layer breeds with sex ratio10:1.

He was well trained and motivated to start the layer farm. He constructed his own layer shed and regular feeding and medication was done by him with great care. Feed given to the birds was prepared by him by low cost ingredients available in the village. After six months, each bird produced 240 numbers of eggs per year.

The cost and return in one year is given bellow.

Cost	Income
Construction of sheed 400 birds x 3 sq. Ft./ bird = 1200 sq. Ft.(10' x120') = Rs. 12000.00 Day old chicks @ Rs. 12 = Rs. 4800.00	EGG 240 eggs / bird/ year x 336 nos birds x2.5 /egg =RS. 2,01,600.00 (chicks mortality 6%=24 no.s and male 40 no.s)
Feed cost (local ingradients)@ 50gm/day/birdx365 days x Rs.6/kg.feed =Rs. 43,200.00	
Medicines & vaccines = Rs. 1500.00	
Feeder and waterer (40nos &20 no.s) = Rs. 10,000.00	

Miscellaneous (electric bill) = Rs. 5000.00	
Total = Rs.76,300.00	**Total = Rs.2,01,600.00**

Net return in the initial year = Rs. 2,01,600.00 - Rs. 76,300.00 = Rs. 1,25,300.00

After this success of Mr. Ghosh, many farmers showed their interest in layer farming.

J. Fodder Seed Bank and Conservation:

Through agro-ecosystem analysis in the KVK adopted villages i.e. Meherpur, Konarpur, Nimgoria and Digha, it was observed that most of the cattle were suffering from malnutrition and infertile condition. It was found that in these villages most of the fallow lands were left unutilised.

After analysis, the selected farmers were called for training on "fodder cultivation throughout the year" for improving cattle health and fertility status in the Year 2005 - 2006. After the training, OFT on fodder to removed infertility of cattle and FLD on fodder was undertaken these villages.

Fodder that can be grown throughout the year were selected i.e. Jower (MP Chari), Maize (AD Cuba), Dinonath, Stylo, Andropogon, Calopogon, Melinis (Kharif non-leguminous), Cow pea (Kharif leguminous), Oat and Mustard. (Rabi non-leguminous), and cultivated in the fallow land of these villages. After feeding the cattle with green fodder throughout the year, about 50 % infertile cases were remove, milk production increased by 150 % and the all round health of the cattle improved satisfactory. Even conception rate of Black Bengal goat improved much and colour of egg yolk of hen and duck become much reddish.

After getting the results, the farmers now have become more interested in growing fodder in larger areas. They are now careful in storing the fodder seeds and operating fodder bank in the village.

To store the excess fodder training on silage preparation was given to the farmers. At present the farmers are storing the excess fodder by silage method.

OFT programme on "Effect of poultry waste along with silage to increase production of cattle as well as conservation of fodder" was taken.

Therefore it is found that the response of cultivation of green fodder as well as conservation has been increased much in the adopted villages as well as in some of the surrounded villages.

J. Success Story of Marginal Fish Farmer:

Amgoria is a small village about 16 km from Rathindra KVK consisting of 150 houses, mostly of marginal farmers. From this village, Sri Buddhadev Ghosh attended a **Training Programme on Composite Fish Culture and Nursery raising of Carp Fry organized** by **the Rathindra KVK.** On the onset of training, in the year 2003, he confessed that he could not do much about fish culture produced 50-60 kgs of fish per year. Mr. Ghosh has taken several training on fish culture from KVK and did accordingly as he was advised or told to do within three year he has learnt the techniques of fish culture so well that at he is a successful fish culturist, producing 3-4 quintals of fish from a pond size of 1.5 bighas. Every year he prepared a separate nursery pond for fingerling production. From this he earns an extra income of Rs. 2000.00 per rupees per year. Today he is an example to the other farm families. With his income being raised to a sufficient level, this year in 2007 he has replaced his mud hut with a well build brick house. He has done all this from the profit that he received from fish and fingerling production. He attended the training programmes of KVK to share his experiences with the other trainers.

M. Success Story of Large Scale Fish Farmer:

Sri Arun Sen, a farmer from Senkapur Villge of Birbhum district about 10 km from Rathindra KVK is now a resourceful fish farmer. In the year 2001, he owned 3 ponds to start his fish culture and business. Within 3-4 years of regular contact with Rathindra KVK and following the techniques of fish culture he has rapidly developed his fish farming business. He regularly attents the training programme of Rathindra KVK, discussing about improving his farming in a better way. At present Sri Sen has a water area of 14 hectares under his control. He is a living example of the village Senkapur. At present Sri Sen and his two sons are seriously engaged in fish farming, learning aside his other works of Agriculture. From the fingerling production he gets a annual profit of Rs. 50,000.00 and from composites fish culture his profit is about 80,000.00 – 90,000.00 per year. Sri Sen has proved that strong determination and knowledge of a particular technique can lead a man to a height of success.

N. Success Story of Fish Farmers' Club constituted by the members of the Schedule Caste Community:

It was in the year 1996, when the village Srichandrapur, Sattar, Birbhum about 5 km from Rathindra KVK decided to do something to raise their family income. They had a single water resource of 0.26 ha. and thought of doing fish culture. But they suffered a heavy loss as they did not have proper scientific ideas to cure fish diseases. Even they did not know how to keep the water condition optimum for fish production. With the help of Rathindra KVK a group of 25 Schedule caste boys attended a fish management-training course in their own village club. After getting the details of scientific pisciculture they started step by step in improving the condition of the pond. In the next year the production of fish reached a satisfactory level. Under the guidance of two well trained boys named Dilip Das and Paresh Das the fish farmers club did rapid work to improve the condition of the pond. During the year 2002-03 they got the maximum yield of fish above 12 quintals from the same pond. During the year 2004 they look lease of 2 ponds of about 26 ha each and during this year even they got maximum fish production. During the course of these year they kept a regular contact with Rathindra KVK Scientists and attended regular trainings on Fish culture. At the end of 2004 they started the nursery raising programme for producing fish fingerlings

This they did to grow the carp, spawn to fingerling stage and stocking them in the other ponds at minimum cost. By this they saved a large sum of money which they spend in buying fish fingerlings for stocking. Production of three stocks of fingerlings was sufficient to stock in the large ponds. At present the farmers are quite confident of producing fish. They have produced their own drag nets and other necessary equipment for fish harvesting and are now not dependent on other for hiring nets and men to catch fish.

O. Success Story of a Resource Poor Fish farmer:

Gopal Bagdi, a resource poor fish farmer, started his life by selling and catching fish from other farmer's ponds. He made a contact with KVK in the year 1996. With proper guidance and trainings on profitable pisci-culture he took lease of a pond in the same year and started his own fish culture. With his own experience and with the scientific guidance from Rathindra KVK regarding the improving of water condition, pH observation, plankton – boosting, he got a bumper crop of fish in the year 1998. From then onwards he and his two sons, regularly attended the fishery training courses at Rathindra KVK and

started scientific fish culture and production of fish fry and fingerlings. He even started a retail counter for fish sale at Sriniketan fish market. With the sale of fish fry and fingerlings he gets a profit of 25,000-30,000 every year. As he knows the technique of netting he does not have to hire men and net for catching fish. This helps him to save a lot of money. By the year 2004, he took lease of several ponds in the surrounding villages. Now he knows the technique of boosting up fish production. With his two sons at his side, he is now a successful fish farmer with a bank balance of Rs. 5 lakhs and a two stored building with motor cycle, colour TV and refrigerator.

P. Success Story of a Young Fish farmer:

Sri Nayan Ghosh, a young lad of 22 years attended a training programme on fish diseases at KVK in the year 2002. He came from a village called Baduria, Birbhum. He did not have much knowledge of fish culture at the beginning. He was especially interested in carp spawn culture with an intention to raise his income by selling carp fingerlings. He tried this but underwent heavy loss several years. In the next year he attended the training on Nursery pond management for production of healthy fish fingerlings. After the training he prepared a nursery pond following the technical guidance and advice of Rathindra KVK. In the same year during the monsoon he harvested a good crop of carp fingerlings (5 qntls.). Leaving aside his expenditure, he got a net return of Rs. 22,000.00 by selling fish fingerlings only. Now, he has procured two large ponds of 1acre each and is busy in producing table fish round the year. He even procured his own drag nets for catching fish. His yearly income from selling fingerlings and table table size fish amounts to Rs. 45,000.00 leaving his expenditure.

Chapter – XI

Vision

As agricultural research and extension in India transforms itself into a more diversified farming systems approach from its present simplistic accent on yield enhancement by increasing some limited inputs, farmers will be required to adopt a wider range of inputs and practices and develop skills in their more efficient use. So, the task of KVKs will become more challenging in the wake of post WTO era, which demands a system of market led research and extension with specific focus on diversification, post harvest management and export orientation. This will present a more complex role, but simultaneously requiring a flexible approach allowing specific information to be customized for different farmer-groups. A strategy of institutional innovations in extension will be evolved which optimizes the strengths of the public-private sectors to service the needs of the farming community. Some of the potential ways forward for strengthening KVK research and extension provision in India could be summarized under the following four points:

1. Promote pluralism and partnerships: Considering the poor reach of KVK activities currently and the limited investments in research and extension, India needs more public, private and NGO research and extension and better co-ordination among them. Some of the public funding should be used to expand pluralistic research and extension arrangements by way of contracting and developing joint programmes. The KVKs should take a lead in connecting these different research input and extension providers and enabling effective communication that can foster partnerships. Identifying potential partners and developing working relationships among the different agencies should be the main task of the KVK managers at the district level. Development of research and extension policies and operational guidelines to promote pluralism and partnerships at the District level would go a long way in reforming extension and enable public-private partnerships (PPPs).

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2. Increased funding, support to convergence and inculcating co-ordination: Research and Extension needs more resources from public (central as well as state) and private sector. It also needs funding support from NGOs and producers and producer groups. KVK is emerging as a platform for bringing convergence among different programmes, co-ordination among different actors and funding support by different agencies. If at least 10 per cent of the resources under different agriculture and related schemes of the Govt. of India should be spent on research and extension through KVK, this would go a long way in enhancing research and extension support and ensuring sustainability of KVK in the long run. KVK and the private sector should come together to design specific research and extension interventions in a project mode to provide integrated technical support to producers. There is a need to develop an overarching policy framework that defines the role of the private sector in the agricultural sector at the macro level.

3. Focussing Research Agendas on the Small Farming Needs: Finding better ways of reaching the small and marginal farmers and tenant farmers especially those in the rain fed and difficult regions and providing them with integrated technical support would continue to remain as a major challenge for extension. Extension needs much stronger research support to develop and promote context specific, disaggregated technological solutions in these regions having huge variation in natural resource base, farming systems and socio-economic conditions (WGAE, 2011). More number of meetings and interactions among research and extension personnel alone are not going to address this problem. Regional research stations (ICAR and SAUs) and the KVKs should take a lead in providing research support to extension by way of more decentralized adaptive research and trainings. Farmers' knowledge and practices also needs to be integrated while designing appropriate technological solutions. Reforms should also focus on addressing the issues that currently constrain provision of this research support.

4. Integrated Agricultural Development Management: To remain relevant and to deal with the contemporary changes in agriculture and the wider support needs of farmers (organisational, marketing, technological, financial and entrepreneurial) research and extension activities of the KVKs have to broaden its mandate and should have a much wider range of expertise. The debate should move beyond technology dissemination and research-extension linkages to ways of promoting innovation and enhancing capacity for innovation. KVK research and extension needs professional support, for embracing new frameworks and approaches such as innovation systems and innovation management. It needs professional assistance to experiment and evaluate new policies and extension delivery models appropriate to each district or block.

All the KVKs should have to develop a Human Resource Management Plan at the District level to figure out capacity gaps, bringing new expertise and enhancing capacities of existing human resources. The potential of ICTs also needs to be explored to enhance coverage and effectiveness. Research and extension need new manuals and guidelines on operationalising many of these new approaches. A new culture focusing on experimentation, learning and change needs to be inculcated in the KVK organization so that it continues to modify, improve or fine tune its approaches and strategies based on continuous learning. Perhaps introducing this learning-derived institutional change is going to be the most difficult aspect of the Integrated Agricultural Development Management Process.

Nowadays the KVKs are presently being seen as One Stop Agricultural Problem Solving Counter for a District but they have not been strengthened with needed level of manpower for multi tasking. Here one should mention that the KVKs have technology, Agricultural Technology Management Agencies (ATMAs) have pro farmer fund. While former has problem in pushing the technology with limited financial support service back up, the later buys/borrows technology and the associated inputs. The ICAR may consider mobilizing at least 25 percent of ATMA fund for KVKs so that they can provide minimum supportive inputs, together with technology to the farmers and open the door of competition between the two major players. This competition will only help the farmers.

Rathindra KVK proposes to undertake the following activities to make this KVK more farmers' friendly:

 Development of Ground water re-charging model in collaboration with state and central Ground Water Board is urgently needed in a semi-arid district like Birbhum. Similarly, rain and roof water harvesting models are needed.

 Strengthening of agricultural Market Intelligence gathering skills of the Scientists of Rathindra KVK is needed for applying such skills in shaping the agriculture of the district so that farmer economy centric rather than production centric agriculture is pursued.

 With the agricultural production likely to touch a record 250 million tonnes, suitable agri-business models based on secondary agriculture is the need of the hour. KVKs need to preposition themselves accordingly and work on developing such models focussing on crops/ commodities with marketable surplus in the district. They need to be given enough support to hire experts in the area for developing such models.

 With increased level of urbanization taking placein the Birbhum District especially in and around towns like Suri, Bolpur, Rampurhat, sainthia, Dubrajpur, Rathindra KVK is needed also to be prepared in the area of peri-urban and urban agriculture and allied services.

 Agricultural diversification being surfacing as a viable alternative to land use policy as well as capturing the changed food habit market and agricultural economy in the country, appropriate block/ taluk specific diversification pointers in Birbhum district needs to be worked out by the Rathindra KVK based on its study on resource suitability and profitability corner of the district. Work on widening the scope of speciality agriculture of a district and complementing and supplementing the weaknesses of another district/ state within the Zone through complementary agriculture is also recommended.

 Modules on climate neutral agriculture developed elsewhere need to be validated by the Rathindra KVK on farm for the dissemination of the effective module for the district.

 Preparation of yearly calendar on cropping sequence for the Birbhum district is urgently required so that land, water and other resources could be used optimally for production optimization.

 The Rathindra KVK needs to develop suitable Bio-Input production modules for their mass production by the farmer and other bodies.

 On the Intellectual Property front,Rathindra KVK can play a major role for the country in facilitating registration of extinct and farmer's varieties as well as innovative processes developed from time to time in crop and livestock.

- In the line of the success recorded under **"One Scientist - one Technology - One Village"** module of technology transfer in various parts of our country, Rathindra KVK needs to work on developing a module on **"One KVK - Multi Stakeholders - Post Harvest Handling and Marketing of the Produces"** as well as the old **"One Scientist - one Technology - One Village"** approach with needed level of value addition. This will also lead to secondary agriculture front and agri-business.