COMPREHENSIVE DISTRICT AGRICULTURAL PLAN

Purba Bardhaman
(2017-18 to 2019-20)

Prepared By

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In Collaboration with

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Citation

Ghorai, D., Ziauddin, G., Sarkar, S., Singh, M.S., Chatterjee, J., Ghatak, S., Sinha, G. and Ghosh, P. (Eds.). 2018. ***Comprehensive district agriculture plan, Purba Bardhaman for 2017-18 to 2019-20.***

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C O N T E N T S

ABBREVIATIONS USED

ACAS : ADDITIONAL CENTRAL ASSISTANCE SCHEME
AES : AGRICULTURAL ECOLOGICAL SITUATION
APMC : AGRICULTURE PRODUCE MARKET COMMITTEE
ATMA : AGRICULTURE TECHNOLOGY MANAGEMENT AGENCY
BRGF : BACKWARD REGION GRANT FUND
BSF: BLOCK SEED FARM
C-DAP : COMPREHENSIVE DISTRICT AGRICULTURE PLAN
CIGs : COMMON INTEREST GROUPS
DIC : DISTRICT INDUSTRY CENTRE
FLD : FRONT LINE DEMONSTRATIONS
GP : GRAM PANCHAYET
Ha : HECTARE
ICAR : INDIAN COUNCIL OF AGRICULTURE RESEARCH
ICT : INFORMATION AND COMMUNICATION TECHNOLOGY
INM : INTEGRATED NUTRIENT MANAGMENT
IPM : INTEGRATED PEST MANAGMENT
JLGs : JOINT LIABILITY GROUPS
KVK : KRISHI VIGYAN KENDRA
MI : MINOR IRRIGATION
MT : METRIC TON
NABARD : NATIONAL BANK FOR AGRICULTURE & RURAL DEVELOPMENT
NDC : NATIONAL DEVELOPMENT COUNCIL
NFSM : NATIONAL FOOD SECURITY MISSION
NFDB : NATIONAL FISHERIES DEVELOPMENT BOARD
NGO : NON GOVERNMENT ORGANISATION
NHM : NATIONAL HORTICULTURE MISSION
MGNREGA : MAHATMA GANDHI NATIONAL RURAL EMPLOYMENT GUARNTEE ACT
NRM : NATIONAL RESOURCE MANAGMENT
PACS : PRIMARY AGRICULTURE COOPARATIVE SOCIETY PAPU
PPP : PUBLIC PRIVATE PARTNERSHIP
PRA : PARTICIPATORY RURAL APPRAISAL
PRIs : PANCHAYET RAJ INSTITUTIONS
RKVY : RASHTRIYA KRISHI BIKASH YOJANA
SAP : STATE AGRICULTURE PLAN
SAU : STATE AGRICULTURE UNIVERSITIES
SGSY : SWARNA JYANTI GRAM SWAROJGAR YOGANA
SHG : SELF HELP GROUP

SREP : STRATEGIC RESEARCH AND EXTENSION PLAN
SRR : SEED REPLACEMENT RATIO
SWOT : STRENGHTH, WEAKNESS, OPPERTUNITIES AND THREATS
TSG : TECHNICAL SUPPORT GROUP
TSI : TECHNICAL SUPPORT INSTITUTION

EXECUTIVE SUMMARY

1. EXECUTIVE SUMMARY

India is a country that abounds in promises as well as problems. India is the world's largest producer of many fresh fruits and vegetables, milk, major spices, selective fresh meats, selective fibrous crops such as jute, several staples such as millets and castor oil seed. India is the second largest producer of wheat and rice, the world's major food staples. India is also the world's second or third largest producer of several dry fruits, agriculture-based textile raw materials, roots and tuber crops, pulses, farmed fish, eggs, coconut, sugarcane and numerous vegetables. India ranked within the world's five largest producers of over 80% of agricultural produce items, including many cash crops such as coffee and cotton, in 2010. India is also one of the world's five largest producers of livestock and poultry meat, with one of the fastest growth rates, as of 2011. To add on to these the country has some of the world's most fertile tracts where there is enough promise to be the leaders in production of most of agricultural produces. But then, ours' is a country that harbours about 17.1 % of the world population thriving on 2.6 % of land and about 4 % of world's share of water resources; a country where per capita land availability is declining steadily; a country where land is getting degraded faster by day and a country that has to grow 345 million tonnes of foodgrains by 2030 from the present level of 263 million tonnes in 2013-14, meaning an increase at a rate of more than 5%, to feed projected 1.6 billion mouths.

Therefore it is imperative that a comprehensive plan be developed for agriculture to cope up with the future needs. Such plan can only be comprehensive when and if it caters to the need of each of the country's micro agro climatic zones. The need for integrated local area plans, based on specific endowments and needs of each area, was stressed from the beginning of planned development. It has therefore been decided by the Govt. of India that the 'District Plan Process' should be an integral part of the process of preparation of State's Five Year Plans.

The Department of Agriculture & Cooperation, Ministry of Agriculture, Government of India in accordance with the said decision and in consultation with the Planning Commission, has prepared the guidelines for the Rastriya Krishi Vikas Yojana (RKVY). For the planning process of RKVY, each district is required to formulate a Comprehensive District Agriculture Plan (C-DAP) by including the resources from other existing schemes, District, State, or Central schemes such as BRGF, SGSY, NREGS and Bharat Nirman, etc. The District Agriculture Plans would present the financial requirement and the sources of financing the agriculture development plans in a comprehensive way. The C-DAP includes animal husbandry and fishery, minor irrigation projects, rural development works, agricultural marketing schemes and schemes for water harvesting and conservation, etc. keeping in view the natural resources and technological possibilities in each district. The broad objectives of C-DAP are:

a) To prepare a C-DAP through participatory process involving various organizations and stakeholders.
b) To enable optimum utilization of scarce natural, physical and financial resources.
c) To assess and plan for the infrastructure required to support the agriculture development.
d) To establish linkages with the required institutional support services, like credit, technology transfer, ICT, research, etc.
e) To evolve an action plan for achieving sustainable agricultural growth with food security and cropping system that will improve farmers' income.

In this executive summary the contents of the C-DAP are brought out in brief under the following sub heads,

1.1. A brief introduction to the District, its location, features, etc.
1.2. Main points of SWOT of the District
1.3. Areas/ Sectors which need to be addressed in the district
1.4. Various on- going programmes in the district- a brief contextual gist
1.5. The District Plan at a Glance
1.6. Public Private Partnerships that can be envisaged in the proposed Plan
1.7. Expected outcomes as a result of implementation of the Plan

1.1. A brief introduction to the District, its location, features, etc.

The history of Purba Bardhaman is known from about 5000 BC and belonging to the Mesolithic or Late Stone Age. The name Purba Bardhaman is an anglicized form of the Sanskrit word *Vardhamana*. The first epigraphic reference to the name occurs in a 6th century AD. Copper - plate found in the village of *Mallasarul* in Galsi Police Station. There are two views about the origin of the name Purba Bardhamana. One, it might have been named after the *24th. Jaina Tirthankar* or *Purba Bardhamanaswami*. According to the *Kalpasutra* of the Jains, Mahavira spent some time in *Astikgrama* which was formerly known as Purba Bardhamana. According to the other view, Purba Bardhamana means prosperous growth centre. In the progress of Aryanisation from the upper Ganges valley, the frontier colony was called Purba Bardhamana as a landmark of growth and prosperity.

The district of is surrounded on the north by Birbhum and Murshidabad; on the east by Nadia; on the south by Hooghly, Bankura and Purulia and on the west by Dhanbad (of Jharkhand) Paschim Bardhaman districts. The maximum length from east to west is 145 Km while the maximum breadth from north to south is 112 KM. The district of West Bengal leads the table in the country so far as rice production is concerned and among its' districts Purba Bardhaman is on top which is why the district is known as the 'Rice bowl of India'. The district has 4 administraive and 3 agricultural sub-divisions. There are 23 nos. of agricultural blocks, 23 panchayat samities 215 gram panchayats.

As per the 2011 Census of India data, recast after bifurcation of Bardhaman district in 2017, Purba Bardhaman district had a total population of 4,835,532. There were 2,469,310 (51%) males and 2,366,222 (49%) females. Population below 6 years was 509,855.

As per the 2011 census data, recast after bifurcation of Bardhaman district in 2017, the total number of literates in Purba Bardhaman district was 3,232,452 (74.73% of the population over 6 years) out of which males numbered 1,781,090 (80.60% of the male population over 6 years) and females numbered 1,453,362 (68.66% of the female population over 6 years).

As per the 2011 census data, recast after bifurcation of Bardhaman district, Hindus numbered 3,566,068 and formed 73.75% of the population in Purba Bardhaman district. Muslims numbered 1,251,737 and formed 25.89% of the population. Christians numbered 8,582 and formed 0.18% of the population. Others numbered 9,145 and formed 0.19% of the population.

The district experiences a climate which is transitional between CWg and AW types, where 'C' stands for 'warm temperate rainy climates with mild winter', 'W' for 'dry winter not compensated for by total rain in the rest of the year', 'g ' for 'eastern Ganges type of temperature trend' and 'AW ' for 'tropical savanna climates'. Average temperature in hot season is 30°C while at the cold season is 20°C. Average rainfall is 1496 mm. The cold season starts from about the middle of November and continues till the end of February. March to May is dry summer intervened by tropical cyclones and storms. June to September is wet summer while October and November is autumn.

The river system in Purba Bardhaman includes the Bhagirathi-Hooghly in the east, the Ajoy and its tributaries in the north and the Dwarakeswar, the Damodar and its branches in the south-west. Besides, there are innumerable Khals and old river beds all over the area. The notable rivers and khals are Damodar, Bhagirathi, Barakar, Ajay, Dwarakeswar, Nonia, Singaram, Tamla, Kukua, Kunur, Tumuni, Khari, Banka, Chanda-kanki nala, Behula, Gangur, Brahmani, Khandesvari, Karulia nala, Dwaraka or Babla, Koiya nala, Kandarkahal, Kanadamodar, Kananadi, Ghea, Kakinadi etc.

The district both being an agrarian one, fairly large area in the district (78%) is under agricultural use. Total of 400610 ha area is cultivated of which 97% is net cropped area while 735396 ha is gross cropped thereby making the cropping intensity of the district of 189%. The entire district is endowed with grood irrigation facility with almost 93% of net cropped area under irrigation. Govt canals are the main source of irrigation covering about 65% area. RLI, DTW, STW and other tanks account for about 35%. The forest areas of the district are chiefly situated in the Aushgram PS. In Ausgram P.S. the forest areas are interspersed with paddy fields.

Purba Bardhaman district is mainly comprises of alluvial tectonic elements and riverine features. Towards south, the alluvial plain merges with Damodar-Kasain-Subarnarekha deltaic plains. The gradient is to the east it is northerly towards Ajay and southerly towards Damodar below the latitude. The Ajoy- Damodar inter-stream tract is made up of several stows consisting of vales and low convex spurs which run in almost all directions except north-east and thus lends a very complicated character to local relief.

Two main types of soils, *viz.*, New alluvium and old alluvium, are encountered in the Purba Bardhaman district. Towards the east, alluvial soil attains an enormous thickness in the low level plains. This alluvial soil is formed of alluvium brought down by the Ajay, Damodar, Bhagirathi and numerous other rivers. These soils are sandy, well drained and slightly acidic in nature.

Main crops of the district are autumn rice, winter rice, summer paddy, jute, potato, mustard and sesame, sugarcane and vegetables. Out of the said paddy covers about 87 percent in Kharif and winter paddy 66 percent and potato 13 percent in Rabi season. The animal resources of Purba Bardhaman is very rich and with a large variety. It rears cattle, buffalos, sheep, goats, pigs, fowls and ducks.

The district has a fairly good cropping intensity of 173% which can be improved upon further with suitable intervention and extending latest agricultural technologies. The cropping pattern is as follows,

Table I.1. Cropping systems in the district

(1)		**RAINFED AREA (SUMMER – KHARIF – RABI)**
	(a) Upland	Fallow – Paddy/Vegetable – Mustard/Lentil/Wheat
	(b) Medium Land	Fallow – Paddy – Pulse/Oilseed /Wheat
	(c) Low Land	Fallow/Jute – Paddy – Pulse/Oilseed/Wheat
		IRRIGATED AREA
	(a) Upland	Vegetable/Paddy/Jute – Paddy/Maize – Pulse/Oilseed/ Vegetable/Wheat/Potato/Onion
	(b) Medium Land	Paddy/Sesamum/Jute – Paddy – Pulse/Oilseed/Vegetable/Wheat/Potato/Onion
	(c) Low Land	Paddy/Jute – Paddy – Pulse/Oilseed/Vegetable/Wheat/Potato/Onion

1.2. Main points of SWOT analysis of the district

Agriculture

Strength

- Purba Bardhaman is second in agriculture productivity in the state and is called Rice Bowl of India.
- Good irrigation facility through DVC, Mayurakshi.
- Good jute production in Kalna and Katwa sub-divisions
- Very good alluvium soil in the eastern and central part of the district
- Presence of good numbers of rice mills for paddy processing, cold storages and warehouses for adequate storage
- NGOs and Farmers Club sponsored by NABARD are active

Weakness

- Low crop diversification and lack of suitable crop rotation
- Deterioration of soil health
- Land holding is small and fragmented. Most of the farmers are small and medium
- Receding groundwater level due to heavy boring for irrigation
- Shortage of agricultural labour during peak period of transplantation
- Poor farm mechanization
- Only one KVK in the district which is a fairly large one to cover by a single KVK

Opportunity

- Scope for crop diversification and crop rotation
- Stress needed for jute seed production by tip-cutting technology
- Scope for extension of High Yielding Variety and Hybrid variety of paddy
- Scope for strengthening of agricultural extension system
- Scope for investment in marketing and processing infrastructure of agricultural

products
- Use of ICT for better network and dissemination of knowledge
- Approachable distance from Kolkata makes it suitable for good marketing
- Farmers are enthusiastic about Seed Village/Bio Village programme

Threat
- Soil is turning acidic with deficiencies of some major and minor nutrients
- Frequent floods of Mayurakshi, Damodar, Banka, etc.
- Dependency on chemical fertilizer due to non-availability of sufficient organic matter

Horticulture

Strength
- Profuse vegetable production throughout the year
- Rapid area expansion under Guava and Mango
- Good infrastructure of cold storages for storing vegetables
- There are 3 government nurseries at Katwa, Kalna and Ausgram-I and one District Seed Farm for fruit development
- Increasing numbers of entrepreneurs

Weakness
- Poor protected cultivation infrastructure
- Poor availability of good quality planting materials and seeds
- Acute shortage of staff and officer in the district, practically speaking, no staff and only
- Low availability of organic manures
- Inadequate market facilities
- Ill developed micro irrigation

Opportunity
- Cultivation of vegetables (early and off-time) using net-house and polyhouse technology
- Establishment of floriculture and vegetable market complex based on which cultivation of flowers (open field like marigold, tuberose; protected like gerbera, rose) can be done
- Well connected to Kolkata through rail and road linkages
- National Horticultural Board extend subsidy assistance for promotion of Hi-Tech/Commercial Horticulture including nursery

Threat
- Irregular availability of quality seeds and planting materials during sowing time
- Outbreak of pest and diseases
- Inappropriate technology adoption by the farmers and entrepreneurs
- Inadequate government support
- Inadequate consultancy services
- Absence of lower level extension machinery

Animal Husbandry

Strength

- Huge Agricultural activities in the district yields huge amount of Agri. by-products which provides potential source of animal nutrition.
- Large number of people from minority community, SC/ST and backward classes besides others earns their livelihood through animal husbandry activities solely.
- Widespread infrastructure of ARD Department upto G.P. Level and availability of doorstep services from *Pranibandhus*.
- Availability of chicks and Khaki Campbell ducklings from Govt. poultry farms situated in the district namely State poultry farm- Durgapur, State poultry farm- Golapbag and District Composite Farm- Purba Bardhaman Kalna Gate.
- Easy availability of animal feed from Govt. and non-Govt. feed plants including EPIC Feed Plant at Durgapur and fodder from natural grassland and forest fringe areas.
- Presence of so many organized broiler and layer poultry farms as well as organized input and marketing chains.
- The district has huge population to consume all animal products, many markets for animals and its products, functional milk co-operatives under Purba Bardhaman Milk Union and AMUL.
- Presence of functional unit of Mother Dairy, Kolkata,

Weakness

- Intense Agricultural practices leave very small space for fodder cultivation resulting higher feeding cost.
- Rapid urbanization diminishing scope of animal rearing in some area.
- Lack of large organized cattle / goat/ pig farms.
- Breeds maintained by small animal farmers are indigenous and their productivity is very low,
- Breed upgradation / cross breeding, scientific animal husbandry, animal insurance etc. has not yet been so developed,
- Infrastructures of ARD Dept. at different level remaining unmanned as vacancies are not filled regularly.
- High cost of feed ingredients like corns, oil cakes, fish meals etc. as those are procured from other states.
- Lack of infrastructure to control the entry of animal for surrounding states.

Opportunity

- Involvement of SHGs in poultry development schemes is getting momentum. There is enormous scope of making non-functioning / poorly functioning private Milk Co-ops active.
- With increasing number of Rice Bran Oil Industries being set up in the district, De-oiled

Rice Bran , a major source of animal nutrition is getting available at a lower price,

- Large number of SC/ST and backward classes population leaves huge opportunity of pig farming,
- In addition to present infrastructure of ARD Deptt. Including *PRANIBANDHU, PRANIMITRA* (self employed *Kshudra Prani Palan Sahayika*) will be introduced in each G.P. to extend doorstep vaccination facility for small animals,
- Highly fertile land of this area can be used for commercial cultivation of multi-various high quality fodder crops ,
- Organized marketing channels for milk and other animal products are developing in the district
- Modified *"Bishes Go Sampad Bikash Abhijan"* is helping cattle farmers for potential development of high yielding cattle breeds.
- Introduction of Low Input Breed of poultry bird in rural areas boosting the egg as well as meat production.

Threat

- Young people of this area are losing interest in agriculture and animal farming as well.
- Risk of Bird Flu, Swine Fever and Encephalitis are major threats for poultry and pig farming.
- Recently developed tremendous demand of cow meat in Middle East after out break of Mad Cow Disease in beef exporting country like U.K. is a major cause of potentially productive cattle being slaughtered.
- Increasing objections from residents around animal farms in fear of pollution prohibiting willing farmers from erecting new farms and even old farmers are also losing interest.
- Trend of major portion of butchers cum meat sellers not to abide by the Rules and Regulations regarding slaughter imposing the risk of meat borne diseases.
- Imposing ban on **cage system of layer faring** may perturb the private organizations to enter into this industry.

Fishery

Strength

- Sufficient waterbody
- Availability of local fish feed ingredients like Rice Bran
- Subsidy oriented schemes like NFDB,FFDA, RKVY etc
- Availability of quality fish seed from local hatcheries/ fish seed producers

Weakness

- Shortage of staff
- Traditional method of culture
- Insufficient knowledge of the farmer in scientific *pisciculture*
- Utilization of Open cast colliery pits
- Strengthening of Co-Operative Societies
- High silt and regular natural calamities restrict the fish capture from the rivers
- Non availability of good quality fish seed specially for air breathing fishes
- Absence of fish processing and preserving facilities

Opportunity

- Opportunity of training and motivation of fish farmers on scientific *pisciculture*
- Scope of fishery in abandoned open cast mines in western zone of the district
- There is an opportunity of supply of fish seed to private hatcheries
- Ample scope of inland fishery in domestic tanks, reservoirs, canals, railway ditches, etc.
- Scope for promoting *polyculture* and freshwater prawn culture
- Sufficient scope for ornamental fish culture

Threat

- Poaching & Poisoning
- Outbreak of diseases
- Lack of insurance in Aquaculture
- Natural calamity is a major threat to capture fishery
- High siltation in the rivers restricts fish production

Krishi Vigyan Kendra Purba Bardhaman

Strength

- KVK has multi disciplinary experts such as Agriculture, Animal Husbandry and Veterinary Science, Horticulture, Fisheries, Agril. Extension and Home Science.
- Development, validation and dissemination of location specific technology.
- Capacity building of practicing farmers, farm women, rural youth, adolescent girls and extension functionaries.
- Entrepreneurship development through skill based training.
- Certified seed production of paddy on KVK's instructional farm.
- Production of seedlings various horticultural crop such as cabbage, cauliflower, brinjal tomato and chilli.
- Organizes trainings, vocational trainings and skill based trainings in agriculture and allied sectors.
- Works for better and empowerment of farm women.
- Identification and promotion of farmers' technology.
- Mass vaccination of animals to eradicated endemic diseases.
- Fully furnished water and soil testing laboratory
- Demonstration units on KVK instructions form.

Weakness

- Fund is limited to undertake large scale development programme.
- Cannot cater to undertake large development programme.
- Shortage of manpower.

Opportunities

- KVK can contribute to R&D as well as capacity building of the farmers in development of new technology. More over they can impart training on orchard, nursery management.

- Management and rejuvenation of old orchards.
- Capacity developments.
- Seed production.
- Entrepreneurship development.
- More multi disciplinary work can be undertaken by KVK.
- Outreach can be increased with strong linkage with line department.
- A well equipped tissue culture laboratory and home science lab will be benefit.

Threat

- KVK's location in the district is not suitable
- Inadequacy of staff for covering the entire district

1.3: Areas/ Sectors which need to be addressed in the district

There are various issues related to agriculture and allied sectors which need to be addressed properly towards holistic development of agriculture in the district as noted below, sector-wise,

- Soil health maintenance
- Increasing total factor productivity of crops
- Intensification of cropping system
- Increasing water use efficiency of crops
- Climate resilient technologies
- Rainwater harvesting
- Soil reclamation/amelioration
- Irrigation potential (minor and micro)
- Seed replacement for major crops
- Capacity building of stakeholders for improved production techniques
- Knowledge dissemination through ICT and mass media
- Community farming through groups
- Post harvest management and value addition
- Protected cultivation infrastructure
- Site specific nutrient management
- Integrated farming models
- Organic farming and profitable marketing of organic produce
- Farm mechanisation
- Popularisation of small implements for drudgery reduction
- Upscaling of organic compost production
- Breed up gradation and regular AI
- Animal feed and disease management
- Ensured availability and market for fodder
- Entrepreneurship development in goat, pig, broiler farming
- Fisheries in open water bodies and canals
- Aquaculture based integrated farming models
- Hatchery development
- Marketing chain
- Cold chain
- Sewage fed fisheries

1.4. Various on-going schemes in the district – A brief contextual gist

Various programmes are currently under way in the district sponsored by either state or central government for development of agriculture and allied sectors, such as,

- Bringing green revolution to eastern India
- Pradhan Mantri Krishi Sinchayee Yojna
- Sub mission on agricultural Mechanization
- RKVY
- NFSM
- NMOOP
- TRFA (Pulse)
- PKVY
- SAME
- SMAM
- Farmers' Old Age Pension Scheme
- Soil health card

1.5. District plan at a glance

The Comprehensive District Agricultural Plan of Purba Bardhaman is devised with the following growth drivers for augmenting production growth and need based infrastructural support to achieve the target of at least 5% growth in agriculture and allied activities,

Growth drivers

The growth accelerators for agriculture and allied sectors have been decided after situation and trend analysis, and need assessment. Such growth drivers are presented below.

- Soil quality maintenance. Amelioration of problem soil
- Sustainable and judicious management of water resources.
- Popularizing resource conserving technologies.
- Increasing cropping intensity and intercropping.
- Promotion of integrated farming modules
- Development of suitable technologies such as varietal improvement, input management supported by a strong institutional arrangements for the supply of inputs like seed, fertilizers, plant protection chemicals, credit, etc, price support system favourable to farmers and market infrastructure for major crops like paddy, potato, maize, sugarcane, banana, vegetables, and fodder crops.
- Development of minor and micro irrigation
- Strengthening water harvesting structures like open cast pits, farm ponds, canals and check dams.
- Breed development of cattle
- Promotion of rural poultry
- Ensured availability of fodder

- Capacity building of farmers, traders, and other stakeholders on grading, post harvest technologies, value addition and market intelligence.
- Paradigm shift from production oriented farming to market oriented agriculture with the promotion of Agro processing industries.
- Ensured availability of quality fingerling
- Development of canal fisheries and fishery in open water bodies
- Strengthening the extension machinery for effective dissemination of technology.
- Strengthening of rural markets with storage facilities.
- Strengthening of farmers' market with additional storage facilities.
- Establishment of cattle feed units.
- Inland fisheries development in major tanks and reservoirs and
- Development of sericulture.

Table I.2. District plan in a nutshell

Sl. No.	Sector	Financial requirements			Total
		2017-18	2018-19	2019-20	
1.	Agriculture	10070.90	15805.80	16079.50	41952.30
2.	Horticulture	678.00	727.2.00	873.00	2278.20
3.	Animal Resource Development	1044.75	736.02	658.30	2439.07
4.	Fisheries	823.16	924.05	974.56	2721.77
5.	Agricultural Marketing	353.00	353.00	353.00	1059.00
6.	Agricultural Cooperation	143.00	1000.00	1000.00	2143.00
GRAND TOTAL		**13112.8**	**19546.1**	**19938.4**	**52593.3**

1.6. Public Private Partnerships that can be envisaged in the proposed Plan

The Public-Private Partnerships are viewed as the governance strategy to minimize transaction costs and co-ordinating and enforcing relations between partners engaged in production of goods and services. They enable an optimal policy approach to promote social and economic development, bringing together efficiency, flexibility and competence of the
private sector with the accountability, long-term perspective and social interest of the public sector. Both the partners have mutual gains from such arrangements. Private benefits from the R&D are usually company gains that stem from cost reduction and improved quality and increased quantity of sales' products. They also relate to strategic goals such as market penetration, improved competitiveness, exploration of new markets or market power. Public benefits include a wide array of positive social, environmental and economic effects influencing livelihoods of ultimate beneficiaries. These could be consumers as also others involved in production, processing and marketing.

Public private partnership in the areas of capacity building, demonstration, farm mechanization, infrastructure development, marketing, food processing, animal resource development and marketing, protected cultivation etc. that can be envisaged in the plan are given below, block wise,

Block name	Type of private enterprise	Type of partnership
Aushgram-I	Primary Agriculture Co-operative Society	Capacity building, demonstration, farm mechanization, marketing, food processing, soil testing-cum-plant protection diagnostic lab.
	Pesticide Companies	Awareness camp for bio-pesticides production and use
	Seed Enterprises	Seed village, seed production
	Implement Enterprises	Farm mechanization
Aushgram-II	Private companies dealing in agriculture, cooperatives, NGOs	Marketing support system development
		Development of oil crusher
		Development of Dal Mill
		Development of mechanical hub
		Development of Agri-clinic
		Development of food processing unit
Bhatar	Large scale private sector	Infrastructure development e.g. sunflower processing unit, rice mill, multipurpose cold storage
	Large scale private sector, SHG, NGO	Farm mechanization
	SHG, NGO, Co-operative society	Demonstration
	Farmers club, SHG, NGO	Marketing
	Private sector, SHG	
Bardhaman Sadar	Primary Agriculture Co-operative Society	Capacity building, demonstration, farm mechanization, marketing, food processing, soil testing-cum-plant protection diagnostic lab, establishment of model village, seed production. (Demonstration- Pulse, Oilseeds)
	Pesticide Companies	Seed treatment campaign, judicious and safe use of pesticide use campaign.
	Machinery Companies	Farm mechanization
	Seed Companies	Seed production, replacement of seed and old varieties.
Galsi-I	SHG, NGO, Co-operative society	Seed production unit
	SHG, NGO	Mushroom
	Capacity building	Vermicompost production, oil extractor unit, Dal processing unit
Galsi-II	Primary Agriculture Co-operative Society	Implement hub, community vermicompost, Dhainche demonstration, soil testing lab.
		Aromatic rice paddy demonstration
		Implement hub, must include potato planter, potato

		harvester, combine paddy harvester, zero tillage paddy transplanter etc.
Jamalpur	PACS, Farmers Club	Mechanical hub
	PPP, Private	Food processing unit
	PPP	Agri-clinic
	Private	Protected cultivation
	Private	Milk processing plant
Kalna-I	Primary Agriculture Co-operative Society	Implement hub, plant disease diagnostic center, soil testing lab.
	Private Company	100% seed treatment campaign
	Private Company	Bio-fertilizer and bio-pesticide trial, water soluble fertilizer application trial
		Aromatic rice D.C., sunflower/ mustard oil extraction mill
Katwa-I	Primary Agriculture Co-operative Society	Implement hub
	Primary Agriculture Co-operative Society/NGO	Soil testing lab
	Primary Agriculture Co-operative Society	Vermicompost demonstration
	Primary Agriculture Co-operative Society/Private Enterprise	Dal mill, seed production unit, aromatic rice/indigenous paddy.
Ketugram-I	Co-operative Society	Farm mechanization – implement hub
	PPP	Marketing for vegetables, oilseed and jute
	SHG	Food processing unit
	PPP	Oil crusher unit
		Capacity building
Khandaghosh	SKUS	Implement hub, model village establishment, soil testing lab.
	NGO	Soil testing lab, plant diagnostic center
	Private company	Implement hub , protected cultivation, seed treatment campaign
	SKUS	Dal mill, seed production unit, crop demonstration
Memari-I	Private, Govt	Infrastructure development
	SHG, Private	Marketing
	SHG, NGO, Private	Food processing
	NGO	Bio cultivation
	Private	Mechanical hub
	Farmers Club	Green house
Memari-II	Primary Agriculture Co-operative Society	Implement hub, Vermicompost production unit, demonstration & training, Dhaincha demonstration, Dal mill.
	Primary Agriculture Co-operative Society	Aromatic rice demonstration.
Mongalkote	Primary Agriculture Co-operative Society/SKUS	Soil, seed testing lab and plant disease diagnostic center
	Private Company	100% seed treatment campaign.

	Public	Training Hall within Block premises
Monteshwar	Primary Agriculture Co-operative Society/NGO	Capacity building, demonstration, implement hub, soil testing lab, establishment of seed production/processing unit
	Private Company	Establishment of hybrid seed production, 100% seed treatment campaign.
	Private Company	Protective cultivation units, green house, bio-fertilizer/bio-pesticide trial, implement hub, aromatic rice seed production and demonstration.
	Primary Agriculture Co-operative Society /Private Company	Establishment of aromatic rice, dal/mustard oil/sunflower/
Purbasthali-II	PACS	Farm mechanization – implement hub
	SHG, PPP	Food processing unit
		Marketing facilities
		Capacity building
		Soil testing lab
Raina-I	Co-operative Society	Implement hub
	Primary Agriculture Co-operative Society/NGO	Soil testing lab
	Primary Agriculture Co-operative Society	Model village establishment
	Co-operative Society	Lentil demonstration, dhaincha demonstration
	Primary Agriculture Co-operative Society	Dal mill
Raina-II	Private	Infrastructural development
	PACS	Mechanical hub
	Private, SHG	Marketing of aromatic rice
	Govt. and private	Farm mechanization
	PACS, SHG	Demonstration

1.7. Expected outcomes as a result of implementation of the Plan

- Above all, achieve the target of 5% growth in foodgrain over the period
- Increased cropping intensity from present level of 189% to 220%.
- More area under major, minor and micro irrigation.
- Ensured availability of quality seed and planting material.
- More diversified cropping system in rice-rice belt of the district
- Increased output per quanta of land and water resources
- Holistic dissemination of improved technology through farmer-farmer dissemination mode.
- Augmented entrepreneurship development through post harvest value addition of agricultural produce through group formation
- Increase in milk production by 8-10% through improved feed, disease, breed management
- Ensured availability of quality fingerlings
- Much diversified fish production system

INTRODUCTION

CHAPTER –I
INTRODUCTION

1. INTRODUCTION

1.1 Background and Planning Process

GLOBAL food demand is expected to be doubled by 2050, while production environment and natural resources are continuously shrinking and deteriorating. Across the larger part of the world, inadequate attention to agriculture has led to steep rise in food prices which shed an estimated 100 million more people into poverty. More than one billion people in the world already are earning less than one dollar a day, and more than 800 million are suffering from hunger. Majority of them live in rural areas, and are largely dependent on agriculture. Food crisis has aggravated further because of climate change and diversion of arable lands to urbanization and industrialization. Climate change is another area that has to be coped up with which are making millions of people, particularly in resource-poor areas, vulnerable, when their livelihood and food security is depending on agriculture. To increase food production, augment income of the poor and to alleviate poverty and malnourishment, heads of the governments during the World Food Summit 2008, had reaffirmed the commitment to address challenges of high food prices, climate change and bio-energy. Role of agricultural research, policy support and institutional innovations were cited for reshaping agriculture to meet future demand for food and to eliminate hunger.

Agriculture contribution in the gross domestic product is declining in India, which in 2008-09 touched at 15.7% from about 30% in 1990-91. During the last two decades, the average annual growth of agriculture sector was less than half (around 3%) of the overall average growth of the economy (6 - 7%). Industrial and service sectors have outpaced performance of agriculture sector during the last two decades. But the proportion of workforce engaged in agriculture did not commensurate with the decline of its share in the gross domestic product. At present also, agriculture sector provides employment to about 52 % of the workforce that used to be about 61% in 1990-91. These starkly different trends reveal that incomes in non-agriculture sector are growing faster than agriculture sector. And a sizable workforce from agriculture is needed to be shifted to non-agriculture sector for income and livelihood opportunities. Hence, in the country the research and development focus needs to be reoriented in a way to develop and promote those technologies that raise agricultural income and ensure employment opportunities in the agri-supply chain to a vast majority of the workforce.

Concerned over this pace of growth in agriculture and allied sectors, the National development Council (NDC), in its meeting held on 29th May 2007 resolved that a special Additional Central Assistance Scheme. i.e. National Agriculture Development Programme/Rastriya Krishi Vikas Yojna (RKVY) be launched.

- To incentivize the States for increasing public investment in Agriculture and allied sectors.
- To ensure that agricultural plans of Districts/States are prepared and are based on agro-climatic conditions, availability of technology and natural resources.
- To reduce the yield gap in important crops and increase production and productivity in agriculture and allied sectors through focused and holistic initiatives.
- To ensure the local needs/crops/priorities are better reflected in the agricultural plans of the District/States.

• To provide flexibility and autonomy to States in planning and implementation of agriculture and allied sector schemes.
• To maximize income of farmers in agriculture and allied sectors.

As per the NDC resolution Government of India introduced a New Additional Central Assistance Scheme to incentives States to draw up plans for their agriculture sector more comprehensively, taking agro-climatic conditions, natural resource issues and technology into account, and integrating live stock , poultry and fisheries etc. This involves a new scheme for Additional Central Assistance (ACA) to State Plans, administered by the Union Ministry of Agriculture over and above in existing centrally sponsored schemes to supplement the state specific strategies. In order to rejuvenate the agriculture during XIIth plan a growth rate of 4 percent per annum has to be achieved (as per NDC commitment) by reorienting development strategies that meet the needs of the farmers. The agriculture growth being essential element of the strategy of making growth more inclusive, the NDC advised the State Governments on preparation of Comprehensive District Agriculture Plans (C-DAP) which includes allied agriculture sectors with full and efficient utilization of available resources.

The concept of integrated local area plans (to raise living standard in rural area and over come food shortage) based on specific endowments and needs of each area mooted in 1st Five Year plan in 1951, could not be materialized in true sense as only sporadic efforts and isolated cases of such planning were practically attempted. For success of local area or District level plans the underlying constraints needed to be identified and required infrastructural investment, extension (and research system) revamping and market reach with the systems conduct and performance have to be synchronized through a holistic policy approach.

1.2. Methodology

The methodology of C-DAP has focused on understanding the latent potential of the district for development and identifying initiatives required. These potentials are treated as goals to be achieved with the available and additional resources. In order to prepare the plan, the district statistical compilation is very useful to chalk the plan taking care of all details thereby leading to the understanding of the development perspective of the district. Considering these the district vision was developed and the SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis was carried out blockwise for micro level planning. Krishi Vigyan Kendra Purba Bardhaman was entrusted to formulate the CDAP for 2017-18 to 2019-20. The strong point for KVK to formulate the plan was present of subject matter specialists of agriculture and allied aspects under one roof which is requisite for developing a comprehensive plan. The Agricultural Technology Management Agency (ATMA) at the district level amply facilitated the process of data collection and compilation for timely submission of the plan

Data collection and consultation:

For paucity of time, primary data from the Gram Panchayat level could not be collected comprehensively. Instead secondary level data were collected from the block level to make the plan comprehensive. All line department officials of department of agriculture at the block level

DISTRICT PROFILE

CHAPTER –I I
GENERAL DESCRIPTION OF THE DISTRICT

2. GENERAL DESCRIPTION OF THE DISTRICT

2.1. Introduction

The history of Purba Bardhaman is known from about 5000 BC and belonging to the Mesolithic or Late Stone Age. The name Purba Bardhaman is an anglicized form of the Sanskrit word *Vardhamana*. The first epigraphic reference to the name occurs in a 6th century AD copper plate found in the village of *Mallasarul* in Galsi Police Station. There are two views about the origin of the name Purba Bardhamana. One, it might have been named after the *24th Jaina Tirthankar* or *Purba Bardhamanaswami*. According to the *Kalpasutra* of the Jains, Mahavira spent sometime in *Astikgrama* which was formerly known as Purba Bardhamana. According to the other view, Purba Bardhamana means prosperous growth centre. In the progress of Aryanisation from the upper Ganges valley, the frontier colony was called Purba Bardhamana as a landmark of growth and prosperity.

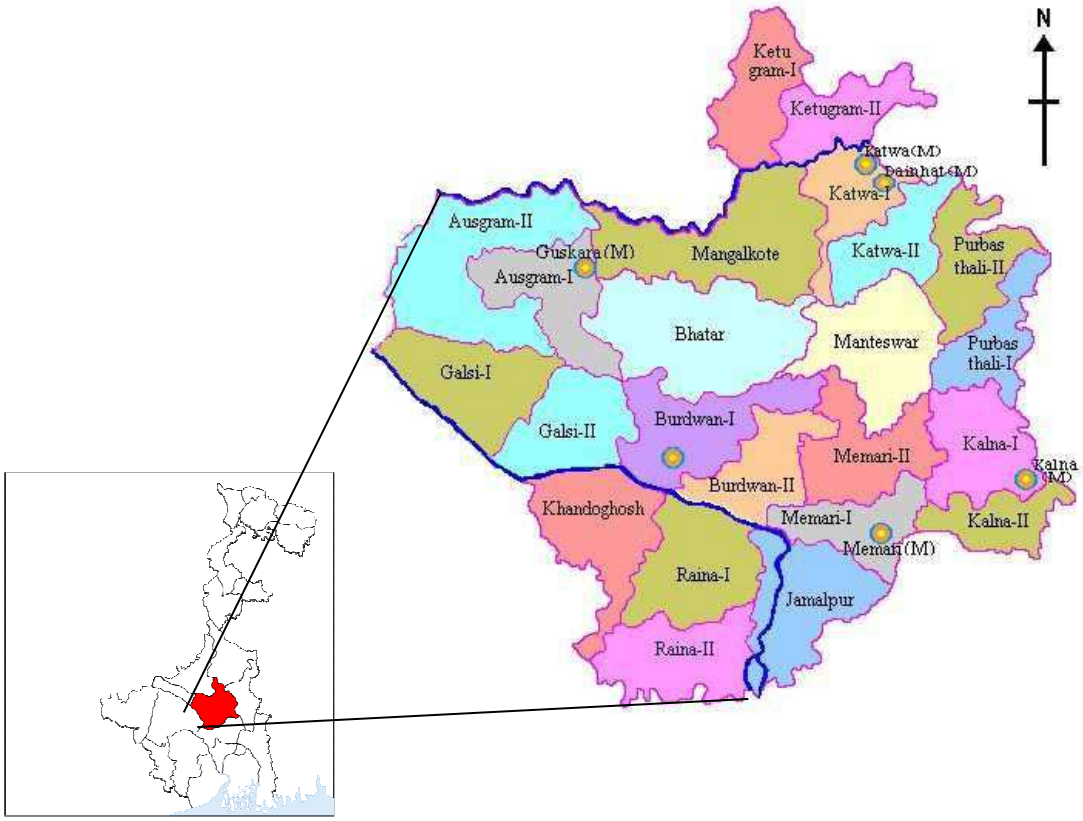


Fig. 2.1. Administrative map of the district and map of the state showing location of Purba Bardhaman

2.2. District at a Glance

2.2.1. Location and geographical units

Location

Bardhhaman district is bounded on the north by Birbhum and Murshidabad, on the east by Nadia, on the south by Hooghly, Bankura and Purulia and on the west by Paschim Bardhaman districts.

The river Ajay separates Birbhum to the north with exception of a portion of Katwa subdivision; the Damodar forms a southern boundary with Purulia and Bankura, while Bhagirathi forms the main eastern boundary with a few exceptions. The maximum length from east to west is 140 Km while the maximum breadth from north to south is 112 KM. In shape the district resembles a hammer.

Present Purba Bardhaman is an agrarian district with Katwa, Kalna and Brdhaman Sadar subdivisions. Cottage industry, small scale industries and handloom have important presence in the district.

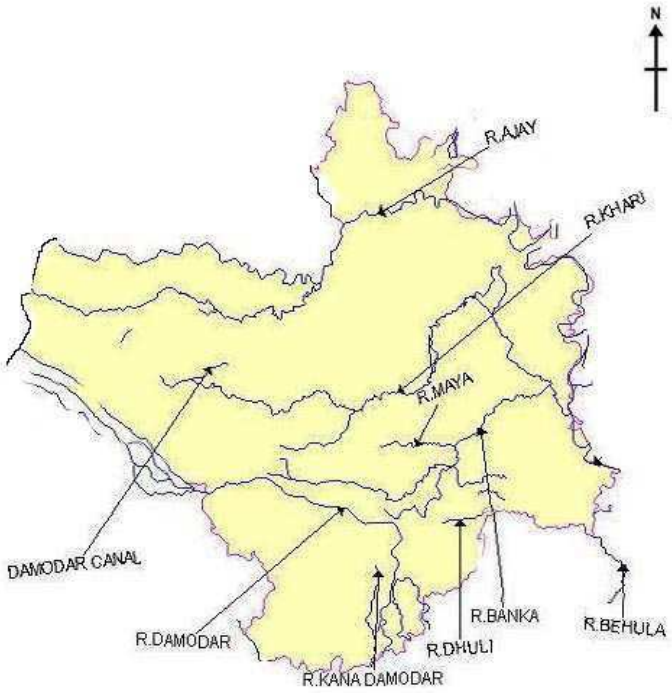
Table 2.1. Geographical units

Sub-Division	Police Station	C.D.Block / M.C. / M	Panchayat			Mouzas	Inhabited Villages	House-holds	Town			
			Samity	Gram	Gram Sansad				Municipal Corporation		Municipality	
						(2001)	(2001)	(2001)	No.	Ward	No.	Ward
Purba Bardhaman (N) Sub-Div.	**6**	**6/0/2**	**6**	**55**	**626**	**516**	**498**	**258186**	**-**	**-**	**2**	**50**
	Purba Bardhaman	Purba Bardhaman - I	1	9	118	80	78	36148	-	-	-	-
		Purba Bardhaman - II	1	9	89	89	84	29443	-	-	-	-
		Purba Bardhaman (M)	-	-	-	-	-	59517	-	-	1	35
	Kanksa											
	Ausgram	Ausgram - I	1	7	62	61	58	22265	-	-	-	-
		Guskara (M)	-	-	-	-	-	6589	-	-	1	15
	Ausgram-P Budbud	Ausgram - II	1	7	94	106	101	28569	-	-	-	-
	Bhatar	Bhatar	1	14	166	107	104	47551	-	-	-	-
	Galsi	Galsi - II	1	9	97	73	73	28104	-	-	-	-
Purba Bardhaman (S) Sub-Div.	**5**	**6/0/1**	**6**	**58**	**707**	**643**	**626**	**219220**	**-**	**-**	**1**	**16**
	Memari	Memari - I	1	10	126	113	112	40690	-	-	-	-
		Memari - II	1	9	100	89	88	28333	-	-	-	-
		Memari (M)	-	-	-	-	-	7520	-	-	1	16
	Jamalpur	Jamalpur	1	13	161	123	121	50381	-	-	-	-
	Raina	Raina - I	1	8	106	113	111	32007	-	-	-	-
	Madhabdihi	Raina - II	1	8	95	94	87	26690	-	-	-	-
	Khandaghosh	Khandaghosh	1	10	119	111	107	33599	-	-	-	-
Katwa Sub-Div.	**3**	**5/0/2**	**5**	**46**	**492**	**388**	**370**	**169072**	**-**	**-**	**2**	**33**
	Mongalkote	Mongalkote	1	15	156	132	129	46245	-	-	-	-
	Ketugram	Ketugram - I	1	8	93	66	62	27842	-	-	-	-
		Ketugram - II	1	7	66	56	55	21123	-	-	-	-
	Katwa	Katwa - I	1	9	93	66	63	29483	-	-	-	-
		Katwa - II	1	7	84	68	61	24591	-	-	-	-
		Katwa (M)	-	-	-	-	-	15262	-	-	1	19
		Dainhat (M)	-	-	-	-	-	4526	-	-	1	14
Kalna Sub-Div.	**3**	**5/0/1**	**5**	**47**	**584**	**543**	**528**	**202170**	**-**	**-**	**1**	**18**
	Purbasthali	Purbasthali - I	1	7	116	97	93	38186	-	-	-	-
		Purbasthali - II	1	10	116	89	87	39727	-	-	-	-
	Kalna	Kalna - I	1	9	123	100	99	40105	-	-	-	-
		Kalna - II	1	8	93	113	113	31781	-	-	-	-
		Kalna (M)	-	-	-	-	-	10895	-	-	1	18
	Monteswar	Monteswar	1	13	136	144	136	41476	-	-	-	-
4	**22**	**22/0/6**	**22**	**206**	**2409**	**2090**	**2022**	**848648**	**0**	**0**	**6**	**117**

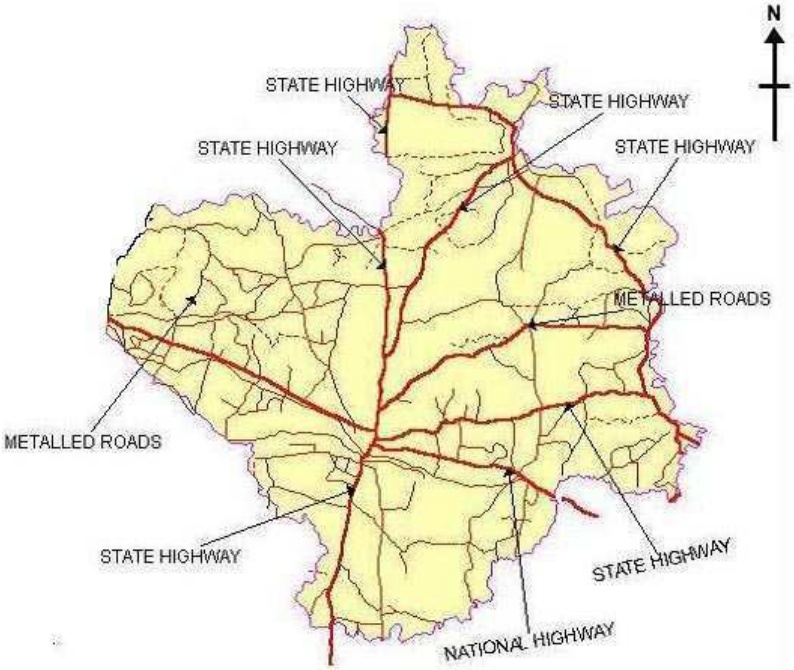
Geographical units

Sub divisions

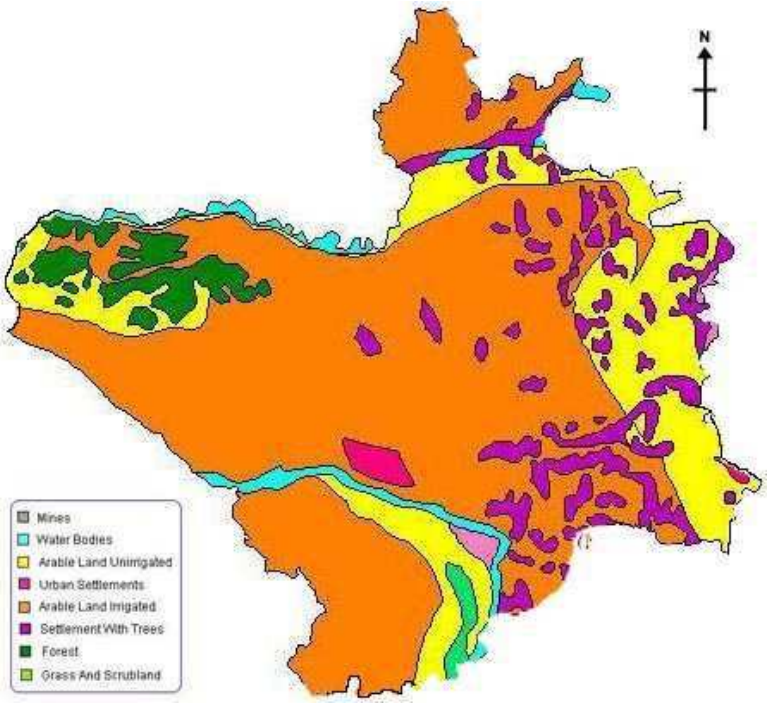
Rivers



Roads



Geographical units



2.2.2. Demographic Profile

As per the 2011 Census of India data, recast after bifurcation of Bardhaman district in 2017, Purba Bardhaman district had a total population of 4,835,532. There were 2,469,310 (51%) males and 2,366,222 (49%) females. Population below 6 years was 509,855.

As per the 2011 census data, recast after bifurcation of Bardhaman district in 2017, the total number of literates in Purba Bardhaman district was 3,232,452 (74.73% of the population over 6 years) out of which males numbered 1,781,090 (80.60% of the male population over 6 years) and females numbered 1,453,362 (68.66% of the female population over 6 years).

As per the 2011 census data, recast after bifurcation of Bardhaman district, Hindus numbered 3,566,068 and formed 73.75% of the population in Purba Bardhaman district. Muslims numbered 1,251,737 and formed 25.89% of the population. Christians numbered 8,582 and formed 0.18% of the population. Others numbered 9,145 and formed 0.19% of the population.

Table 2.2. Block wise population and household

Block	No of House Hold	Total Population	Total Male Population	Total Female Population
Area not under any Sub-district	484029	2276742	1176388	1100354
Ausgram - I	29197	119363	60521	58842
Ausgram - II	37011	150896	77184	73712
Barabani	25120	123598	63950	59648
Bhatar	60080	263064	134096	128968
Purba Bardhaman - I	49695	215943	109841	106102
Purba Bardhaman - II	36438	152939	77276	75663
Faridpur Durgapur	25591	115924	60478	55446
Galsi - I	44656	187588	96755	90833
Galsi - II	35615	147177	74751	72426
Jamalpur	62889	266338	134529	131809
Jamuria	26102	123176	64578	58598
Kalna - I	49302	206945	105696	101249
Kalna - II	39427	167335	84680	82655
Kanksa	40438	178125	91350	86775
Katwa - I	39425	173087	89087	84000
Katwa - II	31714	136708	70588	66120
Ketugram - I	37123	165408	84966	80442
Ketugram - II	27501	118567	61413	57154
Khandaghosh	42911	189336	97092	92244
Mangolkote	61309	263240	134693	128547
Manteswar	54082	237398	120940	116458
Memari - I	51148	218425	110712	107713
Memari - II	35059	150252	76500	73752
Ondal	39704	186915	98149	88766
Pandabeswar	34248	161891	84651	77240
Purbasthali - I	48952	206977	107022	99955

Purbasthali - II	50566	212355	109442	102913
Raina - I	40787	180952	92392	88560
Raina - II	33973	151401	77538	73863
Raniganj	21653	106441	55835	50606
Salanpur	35182	163057	83796	79261

Table 2.3. Caste-wise Population (Total Population)

Block	SC Population	SC Male	SC Female	ST Population	ST Male	ST Female
Area not under any Sub-district	372073	190360	181713	69221	34758	34463
Ausgram - I	42659	21595	21064	15577	7696	7881
Ausgram - II	57141	29275	27866	21759	11002	10757
Barabani	35629	18270	17359	17574	8671	8903
Bhatar	85325	43370	41955	25626	12728	12898
Purba Bardhaman - I	65028	32895	32133	12127	5942	6185
Purba Bardhaman - II	59322	29785	29537	18242	9020	9222
Faridpur Durgapur	36641	19005	17636	8073	4037	4036
Galsi - I	67044	34233	32811	7652	3752	3900
Galsi - II	58342	29466	28876	10059	4921	5138
Jamalpur	96097	48254	47843	40432	19915	20517
Jamuria	37793	19391	18402	10272	5264	5008
Kalna - I	59242	30393	28849	20962	10404	10558
Kalna - II	61255	31174	30081	28930	14261	14669
Kanksa	62329	31830	30499	18239	9110	9129
Katwa - I	54731	28020	26711	2506	1262	1244
Katwa - II	40303	20698	19605	1963	952	1011
Ketugram - I	42660	21914	20746	1025	513	512
Ketugram - II	43442	22323	21119	692	362	330
Khandaghosh	73478	37493	35985	4345	2166	2179
Mangolkote	81950	41744	40206	7462	3700	3762
Manteswar	56862	28724	28138	6958	3363	3595
Memari - I	79976	40499	39477	34467	17217	17250
Memari - II	35933	18084	17849	27676	13877	13799
Ondal	52518	27145	25373	7628	3827	3801
Pandabeswar	49189	25314	23875	10821	5441	5380
Purbasthali - I	52705	27423	25282	7608	3795	3813
Purbasthali - II	55456	28833	26623	7920	3953	3967
Raina - I	62151	31350	30801	10503	5179	5324
Raina - II	61660	31268	30392	6062	3014	3048
Raniganj	37491	19387	18104	9982	5039	4943
Salanpur	39294	20069	19225	17084	8440	8644

Table 2.4. Caste-wise Population (Rural Population)

Block	SC Population	SC Male	SC Female	ST Population	ST Male	ST Female
Area not under any Sub-district	0	0	0	0	0	0
Ausgram - I	42659	21595	21064	15577	7696	7881
Ausgram - II	57141	29275	27866	21759	11002	10757
Barabani	23889	12274	11615	13774	6811	6963
Bhatar	85325	43370	41955	25626	12728	12898
Purba Bardhaman - I	54529	27590	26939	10483	5136	5347
Purba Bardhaman - II	57425	28806	28619	17921	8872	9049
Faridpur Durgapur	27799	14348	13451	6322	3134	3188
Galsi - I	61751	31536	30215	7374	3614	3760
Galsi - II	58342	29466	28876	10059	4921	5138
Jamalpur	96097	48254	47843	40432	19915	20517
Jamuria	23239	11907	11332	6476	3359	3117
Kalna - I	53709	27550	26159	20527	10185	10342
Kalna - II	53714	27266	26448	28891	14240	14651
Kanksa	42853	21971	20882	13605	6832	6773
Katwa - I	53193	27222	25971	2504	1261	1243
Katwa - II	40303	20698	19605	1963	952	1011
Ketugram - I	42660	21914	20746	1025	513	512
Ketugram - II	43442	22323	21119	692	362	330
Khandaghosh	73478	37493	35985	4345	2166	2179
Mangolkote	81950	41744	40206	7462	3700	3762
Manteswar	56862	28724	28138	6958	3363	3595
Memari - I	79041	40030	39011	34056	17000	17056
Memari - II	35933	18084	17849	27676	13877	13799
Ondal	10773	5657	5116	1675	856	819
Pandabeswar	6759	3398	3361	4167	2054	2113
Purbasthali - I	46648	24264	22384	7073	3530	3543
Purbasthali - II	55456	28833	26623	7920	3953	3967
Raina - I	58772	29637	29135	10204	5024	5180
Raina - II	61660	31268	30392	6062	3014	3048
Raniganj	9270	4742	4528	3398	1722	1676
Salanpur	29461	14999	14462	13256	6557	6699

Table 2.5. Caste-wise Population (Urban Population)

Block	SC Population	SC Male	SC Female	ST Population	ST Male	ST Female
Area not under any Sub-district	372073	190360	181713	69221	34758	34463
Ausgram - I	0	0	0	0	0	0
Ausgram - II	0	0	0	0	0	0
Barabani	11740	5996	5744	3800	1860	1940
Bhatar	0	0	0	0	0	0
Purba Bardhaman - I	10499	5305	5194	1644	806	838
Purba Bardhaman - II	1897	979	918	321	148	173
Faridpur Durgapur	8842	4657	4185	1751	903	848
Galsi - I	5293	2697	2596	278	138	140
Galsi - II	0	0	0	0	0	0
Jamalpur	0	0	0	0	0	0
Jamuria	14554	7484	7070	3796	1905	1891
Kalna - I	5533	2843	2690	435	219	216
Kalna - II	7541	3908	3633	39	21	18
Kanksa	19476	9859	9617	4634	2278	2356
Katwa - I	1538	798	740	2	1	1
Katwa - II	0	0	0	0	0	0
Ketugram - I	0	0	0	0	0	0
Ketugram - II	0	0	0	0	0	0
Khandaghosh	0	0	0	0	0	0
Mangolkote	0	0	0	0	0	0
Manteswar	0	0	0	0	0	0
Memari - I	935	469	466	411	217	194
Memari - II	0	0	0	0	0	0
Ondal	41745	21488	20257	5953	2971	2982
Pandabeswar	42430	21916	20514	6654	3387	3267
Purbasthali - I	6057	3159	2898	535	265	270
Purbasthali - II	0	0	0	0	0	0
Raina - I	3379	1713	1666	299	155	144
Raina - II	0	0	0	0	0	0
Raniganj	28221	14645	13576	6584	3317	3267
Salanpur	9833	5070	4763	3828	1883	1945

Table 2.6. Child Population (Total)

Block	Population under age of 6 yrs	Male population under 6 yrs	Female population under 6 yrs
Area not under any Sub-district	232323	120198	112125
Ausgram - I	13581	6871	6710
Ausgram - II	17204	8649	8555
Barabani	16192	8361	7831
Bhatar	28732	14711	14021
Purba Bardhaman - I	23365	11798	11567
Purba Bardhaman - II	15593	7872	7721
Faridpur Durgapur	13309	6913	6396
Galsi - I	19421	9922	9499
Galsi - II	15594	7986	7608
Jamalpur	27737	13991	13746
Jamuria	15141	7904	7237
Kalna - I	20853	10546	10307
Kalna - II	16567	8461	8106
Kanksa	20210	10301	9909
Katwa - I	20011	10173	9838
Katwa - II	15183	7883	7300
Ketugram - I	21009	10745	10264
Ketugram - II	13443	6880	6563
Khandaghosh	21168	10800	10368
Mangolkote	31133	15679	15454
Manteswar	26815	13625	13190
Memari - I	22294	11297	10997
Memari - II	15567	7930	7637
Ondal	20893	10855	10038
Pandabeswar	19709	10095	9614
Purbasthali - I	21828	11132	10696
Purbasthali - II	23091	11721	11370
Raina - I	18734	9610	9124
Raina - II	15330	7897	7433
Raniganj	12885	6699	6186
Salanpur	17118	8880	8238

Table 2.7. Cultivators (Total Population)

Block	Main Cultivator Population	Main Cultivator Males	Main Cultivator Female
Area not under any Sub-district	7776	6913	863
Ausgram - I	7020	6765	255
Ausgram - II	9112	8634	478
Barabani	2837	2685	152
Bhatar	18916	17819	1097
Purba Bardhaman - I	9092	8588	504
Purba Bardhaman - II	6361	6091	270
Faridpur Durgapur	3362	3205	157
Galsi - I	10495	10168	327
Galsi - II	8631	8381	250
Jamalpur	19163	18262	901
Jamuria	3989	3740	249
Kalna - I	11806	11334	472
Kalna - II	11544	10860	684
Kanksa	5394	5032	362
Katwa - I	11431	11203	228
Katwa - II	10979	10657	322
Ketugram - I	11078	10833	245
Ketugram - II	10721	10500	221
Khandaghosh	12605	12134	471
Mangolkote	20408	19841	567
Manteswar	15983	15528	455
Memari - I	10016	9637	379
Memari - II	9699	9364	335
Ondal	855	761	94
Pandabeswar	930	825	105
Purbasthali - I	9047	8841	206
Purbasthali - II	13610	12800	810
Raina - I	11267	10951	316
Raina - II	11309	11008	301
Raniganj	387	339	48
Salanpur	1370	1161	209

Table 2.8. Working Population (Total Population)

Block	Total Working population	Total Male Working population	Total Female Working Population	Total Main Workers	Male Main Workers	Female Main Workers
Area not under any Sub-district	770592	634529	136063	619126	534654	84472
Ausgram - I	55077	37286	17791	28051	23333	4718
Ausgram - II	68984	46956	22028	39283	31697	7586
Barabani	41506	34287	7219	27867	24531	3336
Bhatar	112207	83074	29133	84826	68718	16108
Purba Bardhaman - I	86966	66330	20636	63235	52108	11127
Purba Bardhaman - II	64356	46702	17654	45214	36247	8967
Faridpur Durgapur	40122	32902	7220	25911	23034	2877
Galsi - I	81142	59949	21193	47439	40756	6683
Galsi - II	65498	46521	18977	40260	32555	7705
Jamalpur	118096	84101	33995	88354	69034	19320
Jamuria	41120	34231	6889	27671	24564	3107
Kalna - I	85672	65022	20650	63653	52399	11254
Kalna - II	72147	52240	19907	55891	43239	12652
Kanksa	75480	53636	21844	47064	38486	8578
Katwa - I	61488	54040	7448	51347	46768	4579
Katwa - II	49409	43672	5737	42648	39151	3497
Ketugram - I	56415	49578	6837	41160	37857	3303
Ketugram - II	43158	37027	6131	34390	31621	2769
Khandaghosh	76622	59678	16944	55600	46816	8784
Mangolkote	98789	81539	17250	73138	64461	8677
Manteswar	86093	72096	13997	67816	59336	8480
Memari - I	99772	68512	31260	74675	55052	19623
Memari - II	64486	47046	17440	46133	36471	9662
Ondal	59131	50156	8975	43673	39049	4624
Pandabeswar	49850	41583	8267	35730	31644	4086
Purbasthali - I	84124	66169	17955	70018	58331	11687
Purbasthali - II	87017	67145	19872	67831	57308	10523
Raina - I	71602	57339	14263	50284	44140	6144
Raina - II	59911	48043	11868	44143	38561	5582
Raniganj	33361	28392	4969	25033	22314	2719
Salanpur	51058	43302	7756	39278	34446	4832

Table 2.9. Non-Working Population (Total Population)

Block	Non Working population	Non Working Males	Non Working Females
Area not under any Sub-district	1506150	541859	964291
Ausgram - I	64286	23235	41051
Ausgram - II	81912	30228	51684
Barabani	82092	29663	52429
Bhatar	150857	51022	99835
Purba Bardhaman - I	128977	43511	85466
Purba Bardhaman - II	88583	30574	58009
Faridpur Durgapur	75802	27576	48226
Galsi - I	106446	36806	69640
Galsi - II	81679	28230	53449
Jamalpur	148242	50428	97814
Jamuria	82056	30347	51709
Kalna - I	121273	40674	80599
Kalna - II	95188	32440	62748
Kanksa	102645	37714	64931
Katwa - I	111599	35047	76552
Katwa - II	87299	26916	60383
Ketugram - I	108993	35388	73605
Ketugram - II	75409	24386	51023
Khandaghosh	112714	37414	75300
Mangolkote	164451	53154	111297
Manteswar	151305	48844	102461
Memari - I	118653	42200	76453
Memari - II	85766	29454	56312
Ondal	127784	47993	79791
Pandabeswar	112041	43068	68973
Purbasthali - I	122853	40853	82000
Purbasthali - II	125338	42297	83041
Raina - I	109350	35053	74297
Raina - II	91490	29495	61995
Raniganj	73080	27443	45637
Salanpur	111999	40494	71505

2.2.3. Topography and Agro Climatic Characteristics

Topography:

Purba Bardhaman district is mainly comprises of alluvial tectonic elements and riverine features. Towards south, the alluvial plain merges with Damodar-Kasain-Subarnarekha deltaic plains. The gradient is to the east it is northerly towards Ajay and southerly towards Damodar below the latitude. The Ajoy- Damodar inter-stream tract is made up of several stows consisting of vales and low convex spurs which run in almost all directions except north-east and thus lends a very complicated character to local relief.

Two main types of soils, *viz.,* New alluvium and old alluvium, are encountered in the Purba Bardhaman district. Towards the east, alluvial soil attains an enormous thickness in the low level plains. This alluvial soil is formed of alluvium brought down by the Ajay, Damodar, Bhagirathi and numerous other rivers. These soils are sandy, well drained and slightly acidic in nature.

Main crops of the district are autumn rice, winter rice, summer paddy, jute, potato, mustard and sesame, sugarcane and vegetables. Out of the said paddy covers about 87 percent in Kharif and winter paddy 66 percent and potato 13 percent in Rabi season. The animal resources of Purba Bardhaman is very rich and with a large variety. It rears cattle, buffalos, sheep, goats, pigs, fowls and ducks.

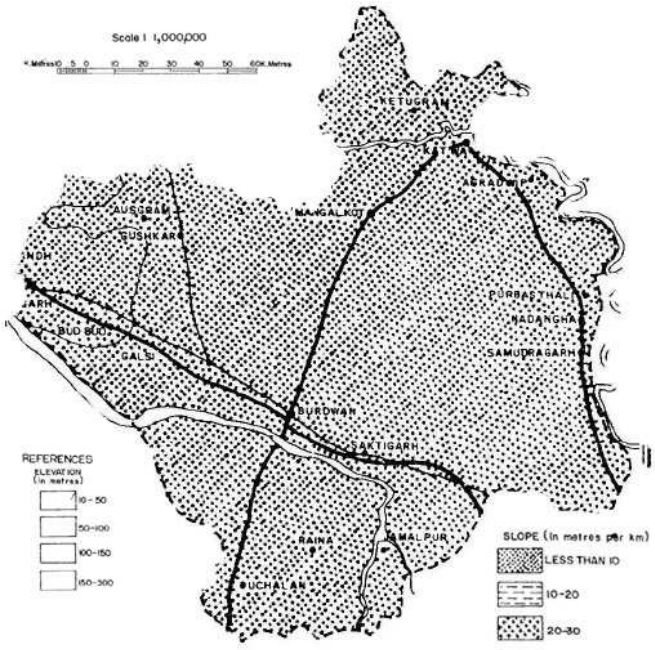


Fig. 2.2. Topographical map of Purba Bardhaman

Agro- climatic condition

The district experiences a climate which is transitional between CWg and AW types, where 'C' stands for 'warm temperate rainy climates with mild winter', 'W' for 'dry winter not compensated for by total rain in the rest of the year', 'g ' for 'eastern Ganges type of temperature trend' and 'AW ' for 'tropical savanna climates'. Average temperature in hot season is 30 C while at the cold season is 20 C. Average rainfall is 1496 mm. The cold season starts from about the middle of November and continues till the end of February. March to May is dry summer intervened by tropical cyclones and storms. June to September is wet summer while October and November is autumn.

Main crops of the district are autumn rice, winter rice, summer paddy, jute, potato, mustard and sesame, sugarcane and vegetables out of the said paddy covers about 87 percent in Kharif and winter paddy 66 percent and potato 13 percent in Rabi season. The animal resources of Purba Bardhaman is very rich and with a large variety. It rears cattle, buffalos, sheep, goats, pigs, fowls and ducks. Animal husbandry has good prospects specially in the western lateritic part of the district.

Table 2.10. Average Maximum & Minimum Temperature (Station: District Seed Farm, Purba Bardhaman.)

Month	Average Temperature 2010 (° C)		Average Temperature 2011 (° C)		Average Temperature 2012 (° C)	
	Max	Min	Max	Min	Max	Min
Jan.	23.6	9.5	24.0	10.0	23.7	12.6
Feb.	28.5	15.4	28.3	15.4	28.3	14.3
March	35.0	21.5	32.8	20.4	33.2	19.3
April	38.5	21.7	34.0	22.8	35.0	23.3
May	35.0	25.4	34.0	24.4	37.2	25.1
June	34.7	26.0	33.6	25.8	36.4	27.0
July	32.8	26.1	32.4	26.1	32.6	25.7
August	32.7	26.1	31.5	25.8	31.9	25.7
Sept.	32.0	24.9	31.3	25.3	31.6	25.1
Oct.	31.2	23.0	31.8	22.6	30.6	21.9
Nov.	30.0	18.8	29.3	16.7	26.4	16.5
Dec.	25.0	12.2	25.0	12.3	23.9	12.0

Table 2.11. Average Precipitation (Station: District Seed Farm, Purba Bardhaman.)

Month	Expected Normal Rainfall	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Avg. of last 10 yrs.
Jan.	15.00	0.25	7.98	23.25	0.00	0.00	29.4	0.04	0.00	0.50	34.20	9.56
Feb.	31.00	29.90	0.00	14.10	0.00	43.7	15.0	2.60	8.90	0.70	6.90	12.20
March	31.00	46.35	21.17	76.93	3.90	37.30	18.30	32.20	4.00	32.50	1.80	27.45
April	41.00	40.00	90.93	13.55	55.80	35.25	37.92	1.50	24.50	77.10	42.90	41.95
May	111.00	80.43	84.85	65.65	84.37	114.90	128.30	241.20	92.30	110.50	67.30	107.00
June	250.00	206.20	206.00	150.80	168.35	211.57	342.60	67.70	235.20	324.80	109.80	202.30
July	346.00	204.80	144.70	252.18	503.27	466.19	401.59	211.00	192.10	213.60	297.60	288.70
August	332.00	130.15	229.80	153.90	301.68	291.41	264.30	355.40	121.10	321.00	219.00	238.77
Sept.	215.00	113.77	246.38	134.42	268.72	458.59	250.0	246.70	180.10	216.40	141.50	225.66
Oct.	102.00	257.00	113.87	287.87	18.33	58.46	60.60	89.60	45.00	27.20	62.20	102.01
Nov.	21.00	1.08	0.00	0.00	8.75	32.50	0.00	4.90	5.00	0.20	35.00	8.72
Dec.	5.00	10.87	1.42	8.78	0.00	0.00	0.00	0.00	38.40	0.00	7.60	6.70
Total	**1500.0**	**1120.8**	**1147.1**	**1181.45**	**1413.17**	**1749.84**	**1547.97**	**1252.84**	**946.60**	**1325.00**	**1025.80**	**1270.96**

2.2.4. Land Use pattern and Land holdings

The district both being an agrarian one, fairly large area in the district (78%) is under agricultural use. Total of 400610 ha area is cultivated of which 97% is net cropped area while 735396 ha is gross cropped thereby making the cropping intensity of the district of 189%.

2.5. Irrigation and Ground water

The entire district is endowed with grood irrigation facility with almost 93% of net cropped area under irrigation. Govt canals are the main source of irrigation covering about 65% area. RLI, DTW, STW and other tanks account for about 35%. The forest areas of the district are chiefly situated in the Aushgram PS. In Ausgram P.S. the forest areas are interspersed with paddy fields.

Table 2.12. Block wise cooperative societies in the district

Name of Block	No. of Co-operative Societies	No. of Members	Working Capital ('000 Rs.)
Salanpur	40	18475	212511
Barabani	21	1799	6837
Raniganj	42	11321	237971
Jamuria	23	8245	35389
Galsi-I	80	17185	54723
Andal *	90	25769	137710
Faridpur-Durgapur	469	54800	1068475
Pandabeswar	..	..	..
Kanksa	57	9280	19315
Purba Bardhaman-I	71	12779	40518

Purba Bardhaman-II	67	18017	65786
Ausgram-I	63	14356	72914
Ausgram-II	48	15104	36991
Bhatar	65	20957	143531
Galsi-II	57	14501	48226
Memari-I	50	33548	300124
Memari-II	57	26324	475695
Jamalpur	71	30208	196775
Raina-I	76	22245	107834
Raina-II	52	22543	139876
Khandaghosh	64	18976	101434
Mongalkote	75	34468	556233
Ketugram-I	68	27452	441489
Ketugram-II	35	30458	490651
Katwa-I	97	29358	472661
Katwa-II	60	28491	456381
Purbasthali-I	44	27473	441832
Purbasthali-II	35	25557	410497
Kalna-I	70	35487	572898
Kalna-II	49	33402	444299
Monteswar	80	36408	587846

Table 2.13. Block wise commercial and gramin banks in the district

Name of Block	Number of Bank offices		Population served per Bank office(Commercial & Gramin) (No. in thousand)
	Commercial Bank	Gramin Bank	
Salanpur	7	2	17
Barabani	5	2	16
Raniganj	12	2	7
Jamuria	10	1	10
Galsi-I	7	4	16
Andal	8	-	21
Faridpur-Durgapur	5	2	15
Pandabeswar	9	-	16
Kanksa	9	3	13
Purba Bardhaman-I	12	2	13
Purba Bardhaman-II	9	2	13
Ausgram-I	6	2	13
Ausgram-II	6	4	14
Bhatar	11	5	15
Galsi-II	6	3	15
Memari-I	12	2	14
Memari-II	7	2	15
Jamalpur	7	5	20
Raina-I	7	1	20

Raina-II	6	3	15
Khandaghosh	9	3	14
Mongalkote	9	4	18
Ketugram-I	4	3	21
Ketugram-II	5	1	18
Katwa-I	7	3	15
Katwa-II	4	3	17
Purbasthali-I	6	2	23
Purbasthali-II	6	2	24
Kalna-I	6	2	24
Kalna-II	7	1	19
Monteswar	8	3	19

2.3. Development Vision and Strategy

2.3.1. Vision of CDAP

Doubling farmers' income by 2022

Indian Agriculture plays a vital role in the country's economy. Farming is the most important enterprise in our country and farmers are an integral part of our country. Over 58% of rural households depend on agriculture as their principal means of livelihood in India. So far the strategy for development of agriculture sector in India has focused primarily on raising agricultural output and improving food security. Agriculture, along with livestock, fisheries and forestry, is one of the largest contributors to the Gross Domestic Product (GDP). As per the 2nd advance estimates by the Central Statistics Office (CSO), the share of agriculture and allied sectors (including agriculture, livestock, forestry and fishery) was 17.3 per cent of the Gross Value Added (GVA) during 2016-17 at 2011-12 prices. During the period of last 50 years from 1965 to 2015, since the adoption of green revolution, India's food production multiplied 3.7 times while the population multiplied by 2.55 times. During the green revolution the population was about 400- 500 million; now it is 1,300 million and it is predicted to be 3 billion by 2030. The net result has been a 45% increase in per person food production, which has made India not only food self-sufficient at aggregate level, but also an exporting country (NITI Policy Paper No. 1/ 2017 of National Institution for Transforming India (NITI), GoI, New Delhi). While the country achieved commendable position in food production, farming itself turned non-profitable overtime due to rising costs and uneconomical holdings. Farmers' income remains low in relation to income of those working in the non-farm sector. Low level of absolute income as well as deteriorating disparity between income of a farmer and non-agricultural worker constitute an important reason for the emergence of agrarian distress and farmers' unrest in the country. The low and highly fluctuating farm income is causing detrimental effect on the interest in farming community and is also forcing more and more cultivators, particularly young generation, to leave farming. This can cause serious adverse effect on the future of agriculture in the country. In this background, the goal set to double farmers' income by 2022 is central to promote farmer's welfare,

reduce agrarian crisis and bring parity between income of farmers and those working in non-agricultural professions. Hence, the paradigm has changed from food security to income security for the farmers.

The per capita income of the people involved in agriculture is almost one third of an average Indian. Further, within the agriculture sector, the inequitable distribution of landholdings (85 per cent of small/ marginal farmers cultivating in 45 per cent of area) makes the small and marginal farms the poverty hotspot of the country. Hence, every effort to inclusive growth has to address the income enhancement in agriculture and those weak, within the sector. The Government of India (GoI) announcement of doubling farmers' income by 2022, having a direct impact on almost half of the population, comes as an endorsement of the above strategy, aiming for a sense of income security to farmers in a time bound manner to reduce agrarian distress and promote farmers' welfare.

The subject has attracted of lot of attention, generating thoughts and debates on policy, strategy and implementation to achieve the goal. There are hardly any data sources that can give income estimates for farmers. The major source of information on income of farmers based on large sample survey is Situation Assessment Survey (SAS) by National Sample Survey Office (NSSO) conducted during 2002-03 for the first time and repeated during 2012-13. Total income per an average agricultural household grew annually at 11.75 per cent from to Rs.77,112 during 2012-13 from Rs.25,380 during 2002-03. That is, it doubled in about 6 years. However, when measured in real terms (after neutralising the effect of inflation), the income growth was 5.24 per cent and doubling of income would take 14 years at this rate. Large farmers took less number of years to double their incomes compared to lower marginal farmers. And, one must note that 85% of the operational holdings in the country are marginal and small. The growth rates in income of farm households across major States of the country varied from 6.71 per cent in West Bengal to 17.48 per cent in Haryana. Income doubling time is 8 to 11 years for States like West Bengal, Assam, Bihar and Jharkhand.

Some economists suggested that if anything is to be doubled by the year 2022- 23, it will require an annual growth rate of 10.41 per cent. During the past 22 years, between 1993- 94 and 2015- 16, farmers' income in nominal terms increased 9.18 times. Farm income increased at different rates in different periods depending upon the growth rate in output, increase in wage bill, and changes in prices received by the farmers relative to the changes in consumer price index for agricultural labour. According to NITI Policy Paper No. 1/ 2017 of National Institution for Transforming India (NITI), GoI, New Delhi, it is documented that if inflation in agricultural prices is high, farmers' income in nominal terms will double in a much shorter period. In the last 30 years, farmers' income at nominal prices almost doubled in five years twice, one during 1987- 88 to 1992- 93 and then during 2004- 05 to 2009- 10. Inflation in agricultural prices also leads to increase in real farm income if agricultural prices received by the farmers increase at a faster rate relative to the prices paid by the farmers, i.e. when terms of trade for agricultural improves. In a situation where non-agricultural prices do not rise, or rise at a very small rate, the growth in farmers' income at real prices to be almost the same as

in nominal prices. Anyway, the government's intension seems to be to double the income of the farmers from farming in real terms.

Doubling real income of the farmers till 2022- 23 over the base year of 2015- 16, requires annual growth of 10.41 per cent in farmers' income. This implies that the on-going and previously achieved rate of growth in farm income has to be sharply accelerated. Therefore, strong measures will be needed to harness all possible sources of growth in farmers' income within as well as outside agriculture sector. According to NITI Policy Paper No. 1/ 2017 of National Institution for Transforming India (NITI), GoI, New Delhi, the major sources need to be increased by 2022 within agriculture sector are:

(i) increase in productivity of crops by 4.1 per cent each year,
(ii) increase in productivity of livestock by 6.0 per cent each year,
(iii) improvement in efficiency of input use, or saving in cost of production by 3.0 per cent each year,
(iv) increase in cropping intensity by 1.3 per cent each year,
(v) diversification towards high value crops by 5.17 per cent each year.

The increase of sources outside agriculture includes:

(i) shifting of cultivators from farm to non- farm occupations by 2.4 per cent each year,
(ii) improvement in terms of trade for farmers or better price realisation by 17.0 per cent each year.

Doubling farmers' income by 2022 is quite challenging, but it is needed and is attainable. The whole programme may be undertaken focusing **three broad strategies**:

(i) Strategy I: Development initiatives including infrastructure,
(ii) Strategy II: Technology generation and dissemination,
(iii) Strategy III: Policies and reforms in agriculture.

2.3.2. Discussion on strategies to fulfill the vision

2.3.2.1. Strategy I: Development initiatives including infrastructure

2.3.2.1.1 Irrigation facilities

- Purba Bardhaman has a geographical area of about 542100 ha out of which 74% is cultivable area. Net cropped area of the district is about 3,9 lakh ha which is 97% of cultivable area. About 3.6 lakh ha is under assured irrigation which is abut 93% of net cropped area.

The main source of irrigation is govt. canals covering 2.32 lakh ha with RLI, DTW, STW and tanks cumulatively accounting for 1.28 lakh ha.

With the objective of providing water to every field, Pradhan Mantri Krishi Sinchai Yojana (PMKSY) has been launched on July 1, 2015 to provide end to end solution in irrigation supply chain, water resources, network distribution as well as farm level application. PMKSY, not only focusses on resource building for assured irrigation,

but also on the water conservation through rain water harvesting for protected irrigation.

• In view of the climate change driven erraticness in precipitation, groundwater availability will be a major concern in the coming years. Simulataneous emphasis on irrigation with surface water should be strengthened upon. Water harvesting structures (10 % of a farming unit), farm pond may be done utilizing fund from MNREGA and RKVY. In areas, where there is no electricity, solar energy operated pump may be explored.

• Although the district is endowed with good irrigation facility, crop water use efficiency and water budgeting for crops remains a major issue to be addressed. Emphasis is to be given on increasing water use efciency of crops like, potato, oilseeds and pulses through micro irrigation. The modern irrigation systems, drip and sprinkler can act as a mitigation measure. The component of 'More Crop Per Drop' in Pradhan Mantri Krishi Sinchai Yojana (PMKSY) should be astutely emphasized among farming community for efficient water use.

• The largest share of energy is utilized for pumping of irrigation water. Micro/ precision irrigation system could be installed with solar energy system to utilize available ground water/ surface water to the maximum possible extent for increase in horizontal coverage as well as cropping intensity.

2.3.2.1.2. Farm mechanization

• Due to continuing fragmentation, the average size of operational holdings is shrinking in the district and the percentage of marginal, small and semi-medium operational holdings is increasing. This is making individual ownership of agricultural machinery progressively more difficult. Hence, cooperative farming modalities should be chalked out to use heavy machineries like, laser guided land leveler and others. Similarly emphasis is to be placed on use of small implements to reduce cost of cultivation as much as possible. The scope for mechanization exits in cultivation of almost all the major crops grown grown in the district, viz. paddy, mustard, groundnut, potato, jute etc. There is also scope of mechanization of horticultural crops mainly for crop protection and harvesting operations.

• The exiting level of available farm power is about 1.25 KW/ ha which is inadequate to enhance the cropping intensity and output of the farm sector. This level needs to be raised to 3.0 KW/ ha by 2022.

• There is a need of establishment of more and more custom hiring centres for making available of laser land leveler, tractors, potato transplanter, power tillers, rice transplanter, reapers, threshers, sprayers, power sprayers, power weeder, grass cutters, fruit pluckers, mini trucks to the farmers on a cooperative mode. Rs 25,000/ ha may be saved annually from the custom hiring centres. Mechanization options that allow direct sowing, minimum/reduced tillage, land levelling, retention of crop residues will result

in sustainable economic growth. The outstanding success of no-till and conservation agriculture practices is a good example of the approach to be taken.

• Ergonomic tools and women-friendly tools in farming operations that could significantly enhance human labour productivity should be introduced through some programs.

• Govt. subsidy may be offered to the interested farmers for purchasing farm implements.

• Training needs to be imparted to the farmers on use of farm machineries along with maintenance and their repair.

• Mini Rice Mill with a capacity of 500 -1000 kg/hr may be installed at the gram panchayat level and facility of milling to be made available to the farmers.

• Oil and dal mill may be established at the gram panchayat level so that farmers will be interested to grow Toria /Mustard, Lentil and Arhar in a large.

• There is an emerging nuiscence of buring rice crop residue in the district. This not pnly hurts the human environment but the soil environment as well. If this continues, sustainability of production would be a major concern in the district, like is Punjab and Haryana. Machines like redsidue binder should be an essential implement I the custom hiring centres to overcome this problem.

2.3.2.1.3. Fertilizers

• Restoration of soil fertility is the need of the hour all over the world, especially in the context of food security. The consumption of fertilizers in the district has been rising over the years. The importance of organic manure and bio-fertilizers has increased to enhance organic carbon content and microbial activities in the soil so that it becomes more responsive to crop production practices. Organic inputs not only reduce cost of production, but also help in healthy food production being environment friendly. Emphasis is to be given on production of organic ammendments and necessary incentivizing measures should be adopted.

• Soil testing infrastructure facilities at district and block level for comprehensive soil analysis need to be strengthened and soil health card based Site Specific Integrated Nutrient Management may be introduced.

2.3.2.1.4. Feeds and fodders

• Good quality feed ingredients like maize, soybean oilcakes to the animals for exploiting the potential of the breed is the need of the hour.

• Availability of feed at affordable rate is a serious constraint in livestock and fish

farming. Govt. may take initiative to establish cattle, pig, poultry, fish and shrimp feed manufacturing units and thus produce and make available of animal feed at reasonable rate for the farmers. This can be done either through private sector investment or PPP mode with government providing basic infrastructure.

• A small demonstration unit should be established in each block of the district for production and conservation of fodders through silage/ hay.

• Emphasis is to be given on capacity building of farmers on production of fodder and improved concentrate feed made from locally available sources.

2.3.2.1.5. Hatcheries and other infrastructures

• The district of Purba Bardhaman has large scope for inland fisheriesin tanks, reservoirs or canals. There is a good scope of setting up more number of hatcheries in for seed production and meeting the demand.

• Low cost portable carp hatchery like CIFA model or 'Chandra Hatchery' should be made popularized among farmers for meeting site specific demand.

• Private-Public partnership should be encouraged for production of concentrated fish feed.

2.3.2.1.6. Strengthening network of diagnosis, treatment and control of diseases in livestock, poultry birds and fishes

• Prophylaxis health coverage and regular deworming are to be strengthened for maintaining animal health.

• Establishment of additional Pathological Laboratories at Sub-Divisional level may be helpful for disease diagnosis in livestock and poultry birds.

• There is a need of up-gradation of existing Animal Health Centres to deliver updated treatment facilities.

• Mobile veterinary clinics and services should be implemented in the block level.

2.3.2.1.7. Storage facilities

• The district is one of the leading in potato production. Yet there is not sufficient infrastructure for storage of potato thereby compelling farmers going for distress sale. Private-Public partnership should be encouraged for establishing storage infrastructures for perishable commodities like potato. Also the district is coming up in a big way regarding onion production. Hence, proper storage infrastructure for onion storge may be ensured.

• Government should ensure better post harvest management to the farmers. To avoid

undesirable spoilage of a significant loss of perishable horticultural crops and also for greater realization of prize of the commodities produced by the farmers, it is necessary to create facilities for better post harvest care and management which include creation of on farm handling unit, collection centres, cool chamber, bulb stores, provision of motorized, vending card, organizing aggregators etc.

• There is enough investment opportunity for setting up ice plants, cold storages, insulated vans for dedicated chain of retail market for fish trading. It is necessary to establish multipurpose cold storage facilities for fish preservation either through private sector investment or PPP mode with government providing basic infrastructure.

• Considering the acute energy crisis and the non-availability of abundant cool storage facility, low cost/ low energy environment friendly commercial size (6-8 ton capacity) cool chambers may be promoted. Just like the Pusa Zero Energy Cool Chamber; this chamber can also reduce the temperature and maintain high humidity throughout the year and can increase the shelf life and retain quality. The commercial size cool chamber has already been found to be useful for the storage of citrus, banana, potato, tomato etc. and during the rainy season onion can be stored if water supply is stopped in the big cool chamber.

2.3.2.1.8. Food processing units

• Most of the food grains are being processed and has enormous potential to improve their processing efficiency. At present, rice milling installed capacity is inadequate. Maize processing is insignificant despite high demand for starch, corn oil, corn flacks and poultry feed. Existing fruits and vegetable processing units are engaged in the manufacturing of fruit juices, fruit pulps, squashes, jam/jelly, fruit beverages, pickles, tomato sauces/puree/paste, etc. However, most of the agro-processing units are unorganized. It is essential to develop necessary infrastructure in this sector including setting up of R&D laboratories. Grant is needed for setting up/expansion/modernization of existing food processing industries for development new products.

• Minimum 10% of the funds for any such scheme should be earmarked for food processing sector. There should be block level infrastructure for the establishment of primary food processing center in the district.

• Value addition to the farm produces could be the boon for the additional income of the farmers. Enhancing income of farmers through value addition, product diversification and entrepreneurship development must be the thrust areas. Block level clusters may be formed keeping in view the available major farm products for establishment of primary/secondary food processing units or value addition units, like muri mill, value addition of fruits. The groups/clusters shuld be suitably incentivized for the purpose. Processing and value-addition through development of products like flakes, granules, powder, chips, french fry from potato; sauce, ketchup, paste, puree from tomato; pickles from mixed vegetables, dehydration of cabbage, cauliflower, onion *etc.* for meeting demands in domestic and export markets thus saving from gluts and generate more employment opportunities among rural women and youth.

• The district is endowed with good dairy resources. But the productivity is much belo par. To accentuate development of this sector, apart from measures like improved breed and feed management, necessary value addition units for producing milk products should be established in PPP mode.

• The problem for fishery sector again is the lack of organized infrastructure in terms of automated and hygienic processing units. With its tropical climate and proximity to ports, the district has the potential to develop into a significant producers of processed fish, value added fish and meat products in the state. Excellent investment opportunities are there for setting up large scale fish and meat processing units and by products.

2.3.2.1.9. ICT based agri-extension portal

• The use of Information and Communication Technologies (ICTs) for agricultural extension is one way of addressing the information needs of farmers. ICTs can directly support farmers' access to timely and relevant information, as well as empower the farming community itself. The public, private, and non-governmental organization (NGO) extension services will be able to increase their effectiveness by using these ICT tools.

• ICT based agri-extension portal, a dynamic platform is to be used massively to disseminate crop, livestock and fishery related solution to the farmers at farm-gate level. The 'Matir Katha' app in this respect is very useful to the farmers. Likewise similar app based information portal may be developed for knowledge enhancement of farmers.

• A comprehensive database of famres in village level should be built with all possible information for micro level planning and development..

• Marketing forms a key issue in any agrarian development. Market intelligence will provide information on what to grow, where to grow, how to grow, when to grow, where to sell, at what price to sell etc. The farmers are to be provided with the latest market updated for their products with the use of the modern ICT tools.

• An *e-pashudhan haat* portal has also been launched by the Central Govt. since November, 2016 to link the breeders of indigenous breeds and farmers, under which so far 43 million semen doses have been sold. Over 17000 full details of cow and buffalo are also made available on this portal, so that an interested farmer could purchase them transparently. Efforts is to be given on registering successful animal growers on this portal in the district level.

• The Call Centre are to be strengthened and reorganised with the help of technical staff so that the queries can be answered in the specific manner on the best packages of practices, post-harvest technology, general agricultural news, crop insurance schemes and information on Government's agricultural development programmes.

2.3.2.2. Strategy II: Technology generation and dissemination

2.3.2.2.1. Availability of quality certified seeds/ planting materials

• Being an agrarian district with relatively high level of cropping intensity and

diversified crop production, the production and productivity has a direct correlation to the availability of quality seed which forms the critical production input. It is well documented that improved seed quality alone can increase 20% crop yield. The most important component in increasing crop production and productivity resulting in increase in farmers' income is 'quality seed'.

• Production of certified seeds should be de-centralized. Emphasis needs to given on decentralized production through ***"seed village concept"*** with active involvement of progressive farmers, farmers' clubs, PACs/ societies. Active involvement of district KVK both in production as well as extending technical support to farmers/ other agencies should be ensured.

• The State is emphasizing for self sufficiency in quality seed production. Production of certified seed should be continued in the Government Farms as well as in farmer's field with proper seed testing, seed processing, and storage facilities. Seed certification wing has to be strengthened by means of laboratory support and HR support. Accredited seed testing laboratories should come up in both private sector and/ or PPP mode to cope up with the tight time schedule and demand for quality.

• It is essential to put a system of recognition of nurseries in place to facilitate, promote and monitor production and trade of quality planting materials of conventional vegetable crops/ fruit plants. Thus it is necessary to strengthen the infrastructure facilities of public sector stakeholders like KVKs etc. to ensure the availability of quality planting materials among the vegetable growers.

• There is a need for standardization of location specific potato seed production technologies in the district to ensure timely availability of quality seed on long term basis.

• Training needs to be imparted to generate awareness among the farmers about the benefit in the use of quality seed/ planting materials.

2.3.2.2.2. Soil health and nutrient management

• Soil deterioration is a major challenge in the district for sustaibnable productivity. There is large scale variation in major nutrients in difffrent part of the district with some essential micro nutrients content in soil is on the wane. Restoration of soil fertility is the need of the hour all over the world, especially in the context of food security.

• Soil testing and issue of 'Soil Health Card' to all farmers has to be done to take stock of the soil health status at a regular interval. Scheme like 'Swasth Dhara- Khet Hara' has been launched to maintain the soil health fertility where in Soil Health Cards are being issued to the farmers.

• Based upon soil test results (pH of soil) necessary liming programme should be taken. Basic slag can be an alternative cheap source of liming material produced by the steel plants. Suitable infrastructres should be made in the district for transport of this idutrial waste and grinding them into proper size fraction for end use of farmers.

• Site Specific Integraed Nutrient Management (SSINM) practices in rice, pulse, oilseeds production needs to be popularized.

• Use of organic manure in the soil would be the effective step in maintaining the health

of the soil. Composting, vermicomposting, use of Farm Yard Manure, use of green manure crops, green leaf manuring etc., would be promoted as part of it. The availability of these types of natural organic manures is to be assured by employing effective mechanisms and logistic networks so that the organic content of the soil is increased to the level ideal for shifting towards 'Organic Farming' without affecting the returns. Suitable incentive/subsidy schemes should be in place for encouraging farmers to produce organic ammendments.

2.3.2.2.3. Technologies for conservation and management of natural resources

• Effective use of land and water is fundamental to growth and sustainable development. Soil and water conservation, agriculture development and allied activities like animal husbandry, pisciculture, etc, will be carried out in an integrated manner with a full involvement and participation of the farmers. The programmes should aim at improving water, soil, biomass and other natural resources which would help the rural livelihoods and institutionalizing and scaling up participatory approaches and processes in natural resource management with a focus on livelihoods.

• It is important to preserve and promote traditional varieties of crops.

• Intervention is needed for increasing productivity of land by mixed cropping, cover cropping, crop rotation, conservation tillage and leveling.

• Different types of plant protection chemicals are being used by the farming community in the district. These plant protection chemicals severely affect the bio resources available in soil and water. Pesticide residues are being found increasingly in our farm produces posing a threat to human health. Use of chemical pesticide needs to be declined. Use of bio-pesticide and botanical pesticide is being emphasized.

• Awareness, training and capacity building of the farmers are to be organized on use and management of natural resources.

2.3.2.2.4. Integrated Farming System (IFS) approach

• For the small and marginal farmers of the State, IFS approach involving integration of crops + cattle + fish + duck for lowland situation may be promoted to augment the farmers' income.

•IFS model needs to be promoted involving synergic blending of crops, horticulture, dairy, fisheries, poultry, etc. which is a viable option to provide regular income and at site employment to small land holder, decreasing cultivation cost through multiple use of resources.

• Integrated fish farming especially poultry/duck/pig/dairy/paddy-cum-pisciculture with horticulture and seasonal vegetables on the embankments may be encouraged. This will encourage organic fish farming and simultaneously utilize a number of organic wastes including domestic sewage thus enabling eco-restoration.

• In-situ crop residue incorporation should be encouraged.

2.3.2.2.5. Utilization of rice fallow area

• Although the irrigation facility in the district is excellent, large area amounting to 2.32

lakh ha is irrigated by means of canals. Climate change, slowly but surely, is altering the precipitation regime thereby making non-availbility of sufficient water in the reservoirs. As such ensuring release of water in the boro season is often becoming irregular and large area in the district remains fallow after *Kharif* rice. So, there is a fairly good scope to utilize reice-fallow area for pulse production in West Bengal.

• A very/ super early pulse crop (lentil/ green gram) should be sandwiched between early/ medium kharif paddy and boro paddy in the cropping sequence.

• Location specific 2nd crop (pulse/ oilseed/ maize) should be selected in the rice fallow area so as to cover entire rice fallow in the district. It may be grown as paira crop or as sole crop sown by zero/ minimal tillage method.

• Where late kharif paddy is in practice or where high residual moisture is retained up to the end of November, sunflower/ summer green gram can be a good alternative to cover the fallow.

2.3.2.2.6. Crop diversification and cultivation of high-value crops

• Adaptation of rice based profitable crop sequence; preferably including one leguminous pulse crop can be an additional source of income. Cereal or other crops in the prevailing rice- wheat cropping systems may be replaced with high yielding varieties of pulses. Short duration varieties of pulses as catch crop may be included. Cultivation of pulses in the irrigated area in rabi season may be increased. The cropping intensity by incorporating short duration forage crops in rice based cropping sequence (e.g. Rice- Grass pea- Vegetables) may be improved. Pigeonpea may be cultivated on bunds.

• Crop diversification such as pulses, oilseeds, vegetables, tuber crops may be brought under massive programme.

• Inter-cropping with the growing of two or more crops simultaneously in the same field may be encouraged. Generally, individual crop yield slightly less when intercropped, but total productivity is higher than in monoculture. Enhancement of cropping intensity uniformly from 184 % to 200 -250 % in all sorts of land and training to the farmers for accepting the need of intercropping in various area should be organized. Fruits, vegetables and even spices can give relatively higher profit than cereals and pulses. To increase additional production of vegetables and to make vegetables available round the year there is a need to encourage cultivation of high value/ off season vegetables in protected structure. Cultivation of strawberries and capsicum should be undertaken as high value crops.

• Short or medium range programme on vegetable based cropping systems; ploy house or low plastic tunnel cultivation of high value vegetables like coriander leaf (early autumn), coloured capsicum, cherry tomato, okra, gherkin, broccoli, red cabbage, savoy cabbage, lettuce, celery etc. (autumn-winter) will bring perceptible change/ improvement in production of different vegetables. Advanced concept of protected cultivation of high value and high quality vegetables need to be promoted on a large scale.

• Flowers which can fetch good ensured market value should be targeted. Rose, gladiolus, jasmine, marigold and tuberose are the important flowers. Export market of

these crops should be explored. Quality certification is to be imposed and ensured. Accessing quality seeds and plant materials, adopting improved management practices and strengthening supply chains through appropriate institutional arrangements are the key challenges in exploring the potential of horticultural commodities.

• Production of high-value commodities can suit the needs and resource endowments of the farmers having small land holdings. These commodities can give higher, regular and quick returns to the smallholder farmers. Introduction of some new vegetable crops such as baby corn, sweet corn, cherry tomato, lettuce, celery, leek, teasle gourd, etc. have the potential to widen the demand of vegetables and increase income of the farmers.

• Diversification towards dairy is one of the most promising options to enhance farmers' income. About 70% of marketed milk is contributed by the households having one or two milch animals. In this context, the role of Co-operative Milk Producers Federation is important in transforming agriculture towards dairy sector. The members of the Dairy Co-operative are always able to fetch better profit as compared to their counter parts not associated with Co-operatives.

• Diversification of freshwater aquaculture involving high value species such as Magur, Koi, Pabda, Tangra, Pangasius etc, may be undertaken.

• Feed is the most important single item that accounts for more than 70% to 75% of the recurring cost of a farm. Production of main ingredients for feed, particularly maize, is insignificant in West Bengal. Another important ingredient is soya bean which is not grown in the State. Farmers, especially in North Bengal, may be encouraged to grow maize in more land to meet the demand.

2.3.2.2.7.Application of climate resilient technologies to address climate change challenges

• Resource Conservation Technologies (RCTs) need to be promoted for farming such as "no tillage" as it saves water, labour and energy, helps early sowing, improves soil organic C, reduces soil compaction, increases fertilizer use efficiency, and reduces soil erosion.

• Development and cultivation of climate resilient crops need to be promoted.

• Protected cultivation may be one option.

• Animal shed is essential for alleviating heat stress in livestock. It is necessary to provide low-cost, improved animal shelter with proper dimensions, sufficient light and ventilation for protecting the valuable animals from rain, sunlight and cold and keeping the animals stress free.

• To combat fodder shortage, fodder development needs to have an additional impetus from the government by promoting mixed crop system, growing fodder on waste land, agro forestry etc.

• Crop insurance is must to avoid economic loss out of crop failure due to climate related disastrous. A new scheme 'Pradhan Mantri Fasal Bima Yojana' (PMFBY) from Kharif 2016 has been launched across the country overcoming the inherent deficiencies of Crop Insurance Scheme. The Government is taking effective and substantial measures

to reduce the risk of agriculture sector through Restructured Weather Based Crop Insurance Scheme (RWBCIS) so that farmers feel secure even during the occurance of natural calamities.

• Insurance of domestic animals, such as poultry birds, cattle, goat and pig is essential to avoid economic loss at the time of disease outbreak in villages.

2.3.2.2.8. Strengthen capacity of the farmers through skill training

• Skill development training on crop husbandry, livestock rearing, fisheries, home science and other areas would benefit the farmers for farming in a better way and thus bring a change in more income generation.

• Protected nursery raising technology under low plastic tunnel or poly house through plug plant production is highly suitable and can be established as a small scale industry in major vegetable growing areas of the state by progressive farmers especially in peri-urban areas. By this way the vegetable growers will get disease-free healthy and off-season nursery as per their requirement and it can generate extra employment in urban and peri-urban areas. Similarly, grafting vegetable seedlings of a susceptible scion onto a resistant rootstock can quickly provide resistance against soil-borne diseases such as bacterial wilt, *Fusarium* wilt and rootstock vigor, thus enabling production of high value vegetable crops in areas under predominant soil-borne pathogens. Mass-scale production of grafted seedlings could generate more employment opportunities among rural youth of the state.

• Large-scale awareness programmes on pre- and post-harvest management systems of vegetable/ fruit crops among rural educated youth will help in entrepreneurship development.

• Livestock management is an important area to keep the animals healthy and productive. Hands on training may be undertaken on different aspects of cleaning and sanitation in and around the livestock shed and there is a scope to take such programme in the light of 'Swachh Bharat Abhiyan' throughout the year for the welfare of the livestock as well as the livestock owners. Capacity building on fodder production and conservation technology needs to be organized.

• Educating the people about the importance of river in fisheries perspective and conservation of biodiversity through government sponsored mass awareness programmes.

• Adequate awareness needs to be created among all private hatcheries to follow appropriate breeding protocol to arrest possible inbreeding.

• The selected youths may be trained to provide farm based extension services relating to fish breeding, fish seed raising, soil-water testing, fish disease diagnostic and other technical services akin to Prani Bandhu in the Animal Resource Development Department and Krishi Bandhu in the Agriculture Department of the State.

SWOT ANALYSIS

CHAPTER –III
SWOT ANALYSIS

3.1. Introduction

One of most widely used strategic planning tools is a SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis. SWOT analysis is often used as basic guide for strategic planning. The term SWOT is the acronym made up of four words viz., Strengths, Weaknesses, Opportunities and Threats. The first two variables are internal to a sector whereas the last two are external. SWOT stands for strengths, weaknesses, opportunities and threats.

The following points highlight its importance:
1. SWOT Analysis brings to light whether the sector is healthy or sick.
2. An undertaking comes to know of both internal as well as external factors affecting the success or failure of the strategic plan.
3. It helps in the formation of a strategy so as to make preparations for the possible threats from the externalities.
4. SWOT analysis evaluates the sector environment in a detailed manner so as to take strategic decisions for the future course of action.

3.2. SWOT analysis of the district

For making the SWOT analysis comprehensive, for agricultural activities the same was made blockwise to draw out the picture with greater clarity as presented below. For the allied sectors, however, these were made department wise mentioned after that.

Table 3.1. Agricultural SWOT of selected blocks of the district

block	Strength	Weakness	Opportunity	Threat
Galsi-I	1. Communication facility. 2Canal through the Block. 3. Condition suitable for seed production. 4. Good demand of quality agricultural produce and processed products in the urban areas.	1. Shortage of extension personnel. 2. Villages are scattered & Block area is very larged. 3. Under-development of allied activities like livestock, sericulture, fishery, horticulture so that demand for green fodder, feed, flowers, fruits etc. develops. 4. Poor Agricultural Extension system for lack of field-level workers.	1. Scope of awareness and subsequent quality seed production. 2. Scope of awareness for subsequent Farm Mechanisation. 3. Great scope for development of allied activities and post-harvest technologies to serve a rich market for table products. 4. Scope of development of post-harvest and food-processing industries under P.P.P. mode. 5. Scope of development of Agri-polyclinics under P.P.P. mode. 6. Use of ICT for better network and dissemination of knowledge.	1. Soil erosion and Land degradation. 2. Conversion of Agricultural land. 3. Dependence on chemical fertilizers because of non-availability of sufficient organic matter.
Kalna-I	1.Good communication facilities 2. Presence of irrigation facilities 3. Presence of	1. Degradation of soil fertility due to insufficient use of O.M. 2. Strictly followed the same cropping sequence 3. lack of soil testing facility 4. Fragmentation of Agril. land	1.Scope for expansion of the area for scented rice 2. Scope of quality seed production 3. Scope of Farm Mechanization 4. Scope of scientific fish farming	1.Gradual depletion of ground water 2. Fluctuating market price 3. Conversion of Agril. Land

	Nationalized banks/SKUS 4.Presence of Regulatory market 5. Presence of trained Prani bandhu 6.Presence of large nos. of water bodies	5.Absence of processing facilities of scented rice/sunflower/pulses 6.Unavailability of green fodder or grazing land	with duckery 5.Scope for P.P. partnership for processing or Post harvest structure	4.Outbreak of disease and pest due to following same cropping sequence 5. Outbreak of avian influenza
Kalna-II	1. Good communication facilities 2. Presence of irrigation facilities 3. Presence of Nationalized banks/SKUS 4.Presence of Regulatory market 5. Presence of trained Prani bandhu 6.Presence of large nos. of water bodies	1. Degradation of soil fertility due to insufficient use of O.M. 2. Strictly followed the same cropping sequence 3. lack of soil testing facility 4. Fragmentation of Agril. land 5.Absence of processing facilities of scented rice/sunflower/pulses 6.Unavailability of green fodder or grazing land	1.Scope for expansion of the area for scented rice 2. Scope of quality seed production 3. Scope of Mechanization 4. Scope of scientific fish farming with duckery 5.Scope for P.P. partnership for processing or Post harvest structure	1.Gradual depletion of ground water 2. Fluctuating market price 3. Conversion of Agril. Land 4.Outbreak of disease and pest due to following same cropping sequence 5. Outbreak of avian influenza
Katwa-I	1.Presence of irrigation facility 2. Presence of bank/DACS 3. Availability of skilled &v unskilled laboures 4. Good communications	1.Lack of variation of cropping pattern 2. Lack of soil testing facility 3. Lack of awareness among the farmers 4. Lack of marketing infrastructure 5. Deterioration of soil health	1. Scope of river lift irrigation 2. Expanding market for vegetables & kisan Mandi 3. Scope for utilization of SHG	1.Declination of ground water level 2. Fluctuating market price 3. Excessive injudicious use of chemical fertilizer 4. Increase cost of cultivation
Ketugram-I	a). Skill and unskilled labour is available. b). There are lots of resource for modern Agriculture, c) Horticulture, Pisiculture and dairy rearing. d). Raw material is available for producing organic farming.	a). Lack of knowledge in modern Agriculture & Allied Agriculture. b). Less interest in Horticulture crops. c). Co-operation between the farmers are less. d). uncultivable land is not properly utilized.	a). Wasteland/uncultivable land has to develop by social Forestry and fruits orchard plantation. b). Excavation & Reexcavation ponds for aqua culture. c). Disseminate modern technology through demonstration, farmer's training meeting, awareness camp in different line	a) Unorganized marketing system, therefore farmers not getting actual price for their crops. b) Unavailability of oil crusher ,Maize dehusker
Ketugram-II	1.Presence of irrigation facility 2. Presence of bank/DACS 3. Availability of skilled &v unskilled laboures 4. Good communications	1.Lack of variation of cropping pattern 2. Lack of communications 3. Lack of awareness among the farmers 4. Lack of marketing infrastructure and storage structure 5. Deterioration of soil health	1. Scope of river lift irrigation 2. Expanding market for vegetables & kisan Mandi 3. Scope for utilization of SHG	1.Declination of ground water level 2. Fluctuating market price 3. Injudicious use of chemical fertilizer 4. Increase cost of cultivation
Mongalkote	1.Large Block Area 2.Diversified Soil	1.Shortage of K.P. S. (Field Staff) 2. Aman Paddy- Potato-Boro	1. Diversified cropping programme.	1. Farmers are interested but individually.

	pattern	paddy cropping patterns	2. Opportunity for fishery and animal resource development.	2. Unavailability of quality seeds. 3. Excess harvesting of ground water instead of river and canal.
Purbasthali-I	1. Good Irrigation (Ground Water & Surface Water) facility available 2. Soil Fertility Status medium to high for Crop 3. Availability of Agril. Imputes	1. Farmers less interested to crop diversification 2. Price hike of Agril Inputs 3. Fragmentation of Land holdings 4. Unavailability of Agril Labours	1. Organic Farming 2. Area expansion for horticultural crops 3. Crop Insurance 4. Integrated Farming	1. Soil health degradation 2. Arsenic Problem 3. Hampering Bio-Diversity

Horticulture

Strength

- The agro-climatic condition of the district is suitable for growing variety of flowers and fruits like marigold, chrysanthemum, tuberose, mango, guava, papaya, lime, etc.
- Vast lateritic tracts suitable for orchards
- Good demand of fruits, vegetables and flowers in industrial urban areas and rural areas also
- Good infrastructure of cold storages for storing vegetables
- There are 3 government nurseries at Katwa, Kalna and Ausgram-I and one District Seed Farm for fruit development

Weakness

- Un availability of high producing horticultural crop seed/planting materials
- Lack of knowledge & technical know-how of farmers with respect to horticultural crops.
- Poor availability of good quality planting material and seeds
- Shortage of manpower and officer in the District.
- Low availability of organic manures
- Inadequate market facilities

Opportunity

- Scope of producing high cost horticultural crops having good market value
- Market demand for production of high cost horticultural crops
- Farmers attitude towards diversified production
- Cultivation of vegetables (early and off-time) using net-house and polyhouse technology
- Floriculture and vegetable market complex based on which cultivation of flowers (open field like marigold, tuberose; protected like gerbera, rose) can be done
- Well connected to Kolkata through rail and road linkages
- National Horticultural Board extend subsidy assistance for promotion of Hi-Tech/Commercial Horticulture including nursery

Threat

- Ill developed marketing and cold chain
- Outbreak of pest and diseases

- Inappropriate technology adoption by the farmers and entrepreneurs
- Inadequate government support
- Inadequate consultancy services

Animal Husbandry

Strength

- Huge Agricultural activities in the District yields huge amount of Agri. By-products which provides potential source of animal nutrition.
- Large number of people from minority community, SC/ST and backward classes besides others earns their livelihood through animal husbandry activities solely.
- Widespread infrastructure of ARD Department upto G.P. Level and availability of doorstep services from Pranibandhus.
- Availability of Chicks and Khaki Campbell ducklings from Govt. Poultry farms situated in the district namely State poultry Farm- Durgapur, State poultry Farm- Golapbag and District Composite Farm- Purba Bardhaman Kalna Gate.
- Easy availability of animal feed from Govt. and non-Govt. feed plants including EPIC Feed Plant at Durgapur and fodder from natural grassland and forest fringe areas.
- Presence of so many organized broiler and layer poultry farms as well as organized input and marketing chains.
- The district has huge population to consume all animal products, many markets for animals and its products, functional milk co-operatives under Bardhaman Milk Union and AMUL.
- Functional unit of Mother Dairy, Kolkata,

Weakness

- Intense Agricultural practices leave very small space for fodder cultivation resulting higher feeding cost.
- Lack of large organized cattle / goat/ pig farms.
- Breeds maintained by small animal farmers are indigenous and their productivity is very low,
- Breed upgradation / cross breeding, scientific animal husbandry, animal insurance etc. has not yet been so developed,
- Infrastructures of ARD Dept. at different level remaining unmanned as vacancies are not filled regularly.
- High cost of feed ingredients like corns, oil cakes, fish meals etc. as those are procured from other states.
- Lack of infrastructure to control the entry of animal for surrounding states.

Opportunity

- Involvement of SGHs in poultry dev. Schemes is getting momentum. There is enormous scope of making non-functioning / poorly functioning Pry. Milk Co-ops active.
- With increasing number of Rice Bran Oil Industries being set up in the district, De-oiled

Rice Bran , a major source of animal nutrition is getting available at a lower price,

- Fair number of SC/ST and backward classes population leaves huge opportunity of pig farming,
- In addition to present infrastructure of ARD Deptt. Including PRANIBANDHU, PRANIMITRA (self employed *Kshudra Prani Palan Sahayika*) will be introduced in each G.P. to extend doorstep vaccination facility for small animals,
- Highly fertile land of this area can be used for commercial cultivation of multi-various high quality fodder crops ,
- Organized marketing channels for milk and other animal products are developing in the district
- **Modified Bishes Go Sampad Bikash Abhijan** is helping cattle farmers for potential development of high yielding cattle breeds.
- Introduction of Low Input Variety of poultry bird in rural areas boosting the egg as well as meat production.

Threat

- Young people of this area are losing interest in agriculture and animal farming as well.
- Risk of Bird Flu, Swine Fever and Encephalitis are major threats for poultry and pig farming.
- Recently developed tremendous demand of cow meat in Middle East after out break of Mad Cow Disease in beef exporting country like U.K. is a major cause of potentially productive cattle being slaughtered.
- Increasing objections from residents around animal farms in fear of pollution prohibiting willing farmers from erecting new farms and even old farmers are also losing interest.
- Trend of major portion of butchers cum meat sellers not to abide by the Rules and Regulations regarding slaughter imposing the risk of meat borne diseases.
- Imposing ban on **cage system of layer faring** may perturb the private organizations to enter into this industry.

Fishery

Strength

- Sufficient waterbody
- Avaivality of Local Fish feed ingredients like Rice Bran
- Subsidy oriented SchemesLike NFDB,FFDA, RKVY etc
- Availability of Quality Fish seed from Local Hatcheries/ Fish seed producers

Weakness

- Shortage of staff
- Traditional method of Culture
- Agricultural return is high so people based only on fishery is limited
- Insufficient Knowledge of the Farmenr in scientific Pisciculture
- Utilization of Open cast colliary Pits
- Strengthening of Co-Opt. Socities
- High silt and regular natural calamities restrict the fish capture from the rivers
- Non availability of good quality fish seed specially for air breathing fishes
- Absence of fish processing and preserving facilities

Opportunity

- Opportunity of Training and motivation of Fishfarmers on scientific Pisciculture
- Scope of fishery in abandoned open cast mines in western zone of the district
- There is an opportunity of supply of fish seed to private hatcheries
- Ample scope of inland fishery in domestic tanks, reservoirs, canals, railway ditches, etc.
- Scope for promoting polyculture and freshwater prawn culture
- Sufficient scope for ornamental fish culture

Threat

- Poaching & Poisoning
- Outbreak of diseases
- Lack of insurance in Aquaculture
- Natural calamity is a major threat to capture fishery
- High siltation in the rivers restricts fish production

Soil Conservation

Strength

- New and old alluvium soil in Ganga basin and Ajoy-Damodar valley respectively has high potential of agricultural production
- Clayey-loam soil of the eastern part good for paddy production
- Depth of soil is good

Weakness

- Indiscriminate and imbalanced use of fertilizers and pesticides has negative affect on soil making it acidic
- Sand deposition after flood water is a menace
- Internal drainage problem due to heavy sub-soil
- Inadequate government soil testing laboratory exists and it is cumbersome and time consuming for the farmers to get the test result
- Shortage of manpower in government laboratories

Opportunity

- Establishing more soil testing laboratory in the blocks on PPP mode can be beneficial
- Mobile soil testing van can be helpful

Threat

- Slowly the soil is losing potash content due to high phosphate content
- Loss of micro and macro nutrients from soil
- pH value of the top soil is slowly turning acidic due to high use of chemical fertilizer and chemical-mixed irrigation water
- Brick kiln by the river banks is posing major threat to soil conservation
- Flood poses a major threat due to riverbank erosion

Krishi Vigyan Kendra Purba Bardhaman

Strength

- KVK has multi disciplinary experts such as Agriculture, Animal Husbandry and Veterinary Science, Horticulture, Fisheries, Agril. Extension and Home Science.
- Development, validation and dissemination of location specific technology.
- Capacity building of practicing farmers, farm women, rural youth, adolescent girls and extension functionaries.
- Entrepreneurship development through skill based training.
- Certified seed production of paddy on KVK's instructional farm.
- Production of seedlings various horticultural crop such as cabbage, cauliflower, brinjal tomato and chilli.
- Organizes trainings, vocational training and skill based training in agril and allied sectors.
- Works for better and empowerment of farm women.
- Identification and promotion of farmer's.
- Mass vaccination of animals to eradicated endemic diseases.
- Fully furnished water and soil testing laboratory
- Demonstration units on KVK instructions form.

Weakness

- Fund is limited to undertake big development programme.
- Cannot cater to undertake big development programme.
- Shortage of manpower. 25% posts are remaining vacant.
- KVK's working is restricted to certain pockets of the district due to limited manpower.

Opportunities

- KVK can contribute to R&D as well as capacity building of the farmers in development of new technology. More over they can impart training on orchard, nursery management.
- Management and rejuvenation of old orchards.
- Capacity developments.
- Seed production.
- Entrepreneurship development.
- More multi disciplinary work can be undertaken by KVK.
- Outreach can be increased with strong linkage with line department.
- A well equipped tissue culture laboratory and home science lab will be benefit.

Threat

- KVK's location is not suitable
- Inadequacy of staff for covering the entire district

3.3. Accommodating SWOT

Strategies for accommodating SWOT into the comprehensive plan is as below,

Agriculture

- Soil reclamation and preserving soil quality for sustainable crop production
- Increasing cropping intensity with suitable intervention. Promotion of pulse crops to be largely enhanced
- Productivity augmentation through judicious fertilizer and pest management. Introduction of improved cultivars, dissemination of promising technologies, seed treatment, farm mechanisation
- Capacity building of extension workers for efficient dessimination of technologies
- Implementing strategies for producing more per quanta of land and water through judicious use of resources. Adoption of integrated farming methodologies wherever applicable for enhancing farmers income is called for.
- Correction of soil acidity by using Dolomites, basic slugs, ash etc should be undertaken judiciously so that the effect should be sustainable. Fly ash from the thermal power stations in Purba Bardhaman can be purchased in a very low price and can be distributed among the farmers in place of Dolomite. This will ensure more procurement and less expenditure on transport and procurement.
- Production of quality seed material through participatory approach
- Adoption of climate resilient technologies to cope up with climate change which is imminent
- More emphasis on red and lateritic zone for agriculture intensification through creation of water harvesting structures, watersheds etc.
- Value addition to agricultural produce to be given emphasis. SHGs, common interest groups, JLGs to be

Horticulture Sector

- Strengthening of horticultural department in the line of agriculture, ARD and fisheries department with block level officials and support staff
- Capacity building of farmers and extension workers for speedy development of horticulture in the district
- Protected cultivation techniques to be much strengthened
- Emphasis to be given on production as well as marketing of high value horticultural crops
- Attention to be given on management of water resource through establishment of micro irrigation for fruit, plantation and vegetable crops.

- Entrepreneurship development through value addition to horticultural produces is to be pressed

Animal husbandry

- Breed up-gradation of livestock and poultry
- Capacity building of extension workers/ animal raisers for efficient dissemination of technologies
- Augmentation of productivity of livestock and poultry
- Emphasis on infrastructure of Artificial insemination
- Strengthening of animal feed resource through production of green fodder, preparation of home made concentrate feed and complete feed block
- Availability of medicines through *Pranibandhus* at the doorstep
- Provision for insurance and credit facility
- Strengthening of Post harvest operation including value addition of animal products
- Unorganised market should be converted into organised market linkages
- Removal of technological gap in nutrition, management and housing of poultry birds

Fishery

- Ensuring ready supply of quality fingerling in the district.
- Aquaculture based integrated farming modules to be implemented in all the excavated pond under MGNREGA scheme
- Entrepreneurship development in the area of fingerling production.
- Capacity building of fish farmers for improved techniques of fish production, including pond management, feed management, stocking species and density, multiple tire carp farming etc.
- Efficient marketing chain development through feasible cold chain establishment
- Entrepreneurship development in ornamental fish culture.
- Exploiting potential for fishery development in canals, enclosed large water bodies etc.

Agricultural marketing

- Partnership farming
- SHG/JLG/CIG mediated marketing strategy
- Infrastructural support for SHG/JLG/CIGs involved in production and marketing of agricultural produce

3.4. Growth drivers

The growth accelerators for agriculture and allied sectors have been decided after situation and trend analysis, and need assessment. Such growth drivers are presented below.

- Soil quality maintenance. Amelioration of problem soil
- Sustainable and judicious management of water resources.
- Popularizing resource conserving technologies.
- Increasing cropping intensity and intercropping.
- Promotion of integrated farming modules
- Development of suitable technologies such as varietal improvement, input management supported by a strong institutional arrangements for the supply of inputs like seed, fertilizers, plant protection chemicals, credit, etc, price support system favourable to farmers and market infrastructure for major crops like paddy, potato, maize, sugarcane, banana, vegetables, and fodder crops.
- Development of minor and micro irrigation
- Strengthening water harvesting structures like farm ponds, canals etc.
- Breed development of cattle
- Promotion of rural poultry
- Ensured availability of fodder
- Capacity building of farmers, traders, and other stakeholders on grading, post harvest technologies, value addition and market intelligence.
- Paradigm shift from production oriented farming to market oriented agriculture with the promotion of Agro processing industries.
- Ensured availability of quality fingerling
- Development of canal fisheries and fishery in open water bodies
- Strengthening the extension machinery for effective dissemination of technology.
- Strengthening of rural markets with storage facilities.
- Strengthening of farmers' market with additional storage facilities.
- Establishment of cattle feed units.
- Inland fisheries development in major tanks and reservoirs.

DEVELOPMENT OF AGRICULTURE

4.1. Introduction

Through oodles of rigorous revolutions and heaps of meticulous missions in food materials like green revolution in cereal crops, brown revolution in pulses, white revolution in milk, blue revolution in fish or missions like food security mission, horticulture mission, oilseeds and pulses mission India is now the leader or second best leader in gross production of many food and fibre materials like rice, wheat, cotton or animal products like milk, egg. But then we have to bear in mind that ours' is a country that harbours 17% of global population in only 2.3% land mass supported by 4% of fresh water resources and that we are some distance behind the leaders regarding productivity of food materials with our soils being relentlessly mined of essential nutrients while increasing the loads of nonessential or toxic ones. There is no denying the fact that the net cultivable area in the country of around 140 Mha is remaining constant or even squeezing on account of the pressures from urbanization, industrialization, infrastructure development, and to house the ever-increasing populace etc. Then loss of productive soil is another concern. Around 5 billion tonnes of soil is washed away every year taking away with it nearly 6 million tonnes of nutrients due to ill soil and water management practices.

According to the vision of Indian Council of Agricultural Research, the premier agricultural body in India, our country has to grow 345 million tonnes of foodgrains by 2030 from the present level of 263 million tonnes in 2013-14, meaning increase at a rate of more than 5%, to feed projected 1.6 billion mouths. Concerns are being voiced all over the country that contribution of agriculture and allied sector to the overall GDP is decreasing much rapidly. In fact the same has fallen from 53.7% in 1950-51 to 16.2 % in 2011-12 at factor cost at constant prices (2004-05).

The district of Purba Bardhaman plays an important role in production of food grain, particularly the rice in West Bengal it possesses an area of 9.15 in respect of total rice area and 10.15 percent of total production. It is contributing a lot of production in case of potato also. About 16.74 percent production of potato of West Bengal comes from Purba Bardhaman (2006 - 07). But the production of pulse and oil seeds is not promising, which accounts for only 0.88 percent and 7.23 percent respectively.

4.2 Land use

The district both primarily agrarian one. Generally the soil of the eastern part of the district is pre-dominated with deep alluvium soil having higher clay content and high water holding capacity, sticky in nature. The soil is ideal for paddy cultivation.

Aman paddy is the common crop practiced in all 24 blocks of the district. In some of the blocks like Jamalpur, Memari I & II, Monaglkot, Ketugram II, Kalna I and Aus paddy is grown in the pre-kharif season. Boro paddy is grown in the winter season followed by Aman paddy. Boro is growing in 24 blocks. Among the Boro paddy growing blocks Manteswar, Bhatar, Managalkot, Purba Bardhaman I, Galsi I and II count for the major production.

Among other crops, jute is grown mainly in Kalna I & II, Purbasthali I & II, Katwa II blocks in Kharif season. Potato is another major crop grown in winter. The major area of potato is

covered by Kalna I & II, Mangalkot, Memari I & II, Jamalpur and Raina II. The popular varieties of potato are Kufri-jyoti and Kufri- Chandramukhi. Among the oilseed crops sesame is grown after potato with residual moisture and in some cases with little irrigation. Mustard is also grown in winter season after the harvest of jute crop. Pulses are grown in few blocks like Ausgram, Ketugram and Purbasthali – I, with least importance. As reported, pulse cultivation is at its downfall now-a-days in Purba Bardhaman. Among the pulses, Bengal gram covers the major share. Lentil is given in few blocks but the area under cover is very low.

4.3. Soil health

Soil status of Purba Bardhaman

The soil of the district have been formed and enriched by the silt deposition of the river Ganga, Damodar, Ajay, Khari, Banka and other small rivulets. There are 2 types of soil in the district –

(i) Gangetic Alluvium – This type of soil is found in this district along with river Ganges. This is predominant in Katwa and Kalna subdivisions.
(ii) Vindhya Alluvium – This alluvium soil is found between the rivers Ajoy and Damodar. This is created due to silt deposition of these two rivers.

The Soil in the alluvium Zone is deep and fertile. In this region all type of crops are grown. As a matter of fact the district of Purba Bardhaman is called "Granary of West Bengal" because of high productivity of soil in this region. Fortunately this type of soil occurs in major parts of the district.

Soil maps of the district

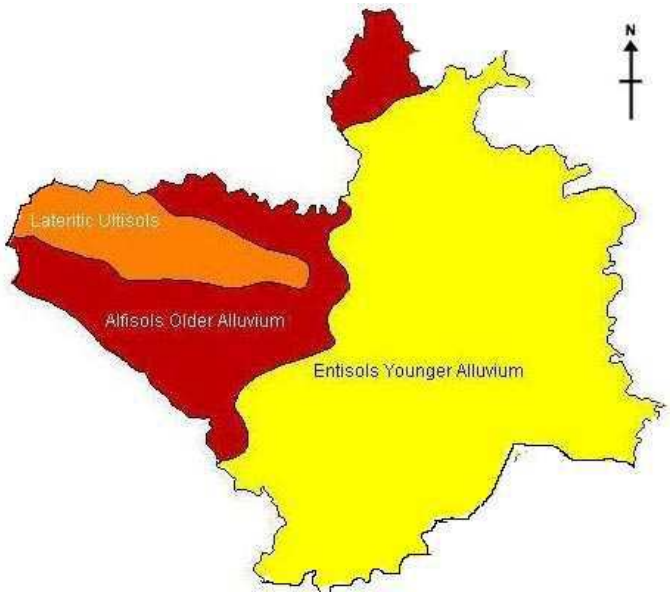


Fig. 4.1. Major soil classification in the district

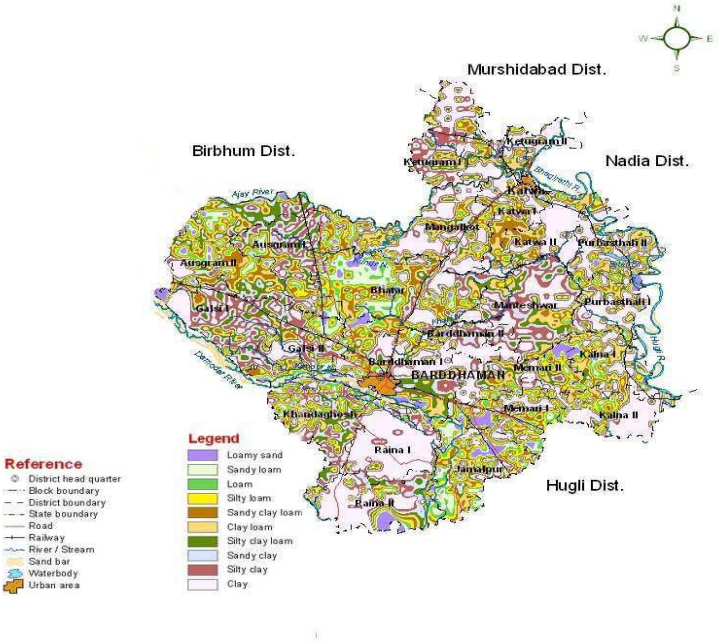


Fig. 4.2. Surface soil texture characteristics in the district

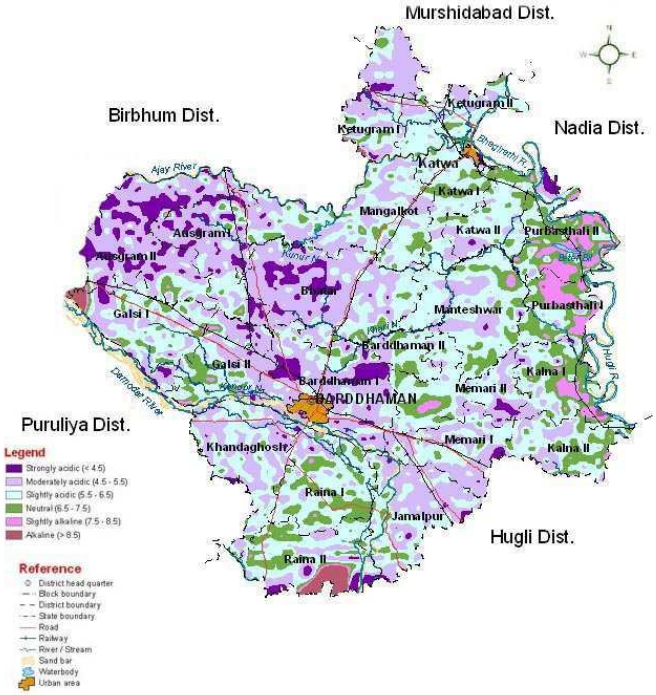


Fig. 4.3. Soil reaction map of the district

Fig. 4.4. Soil organic carbon map of the district

Fig. 4.5. Soil available nitrogen map of the district

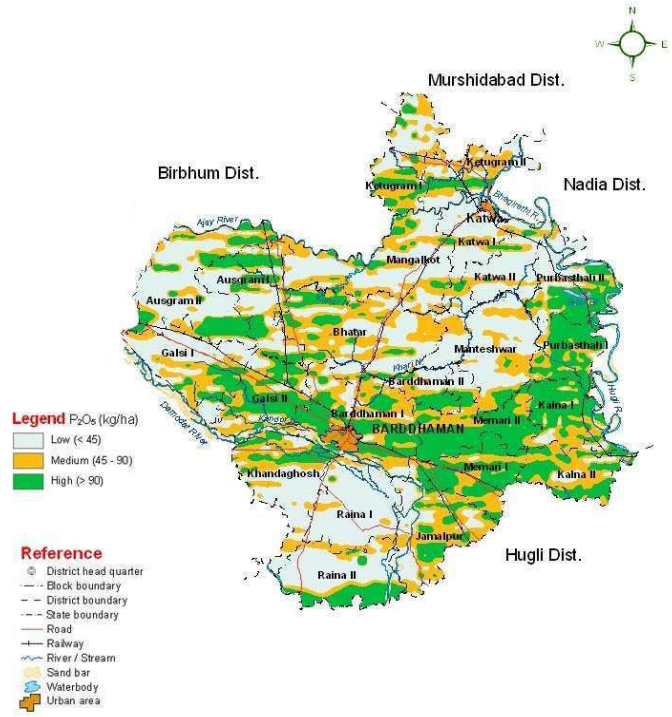


Fig. 4.6. Soil available phosphorus map of the district

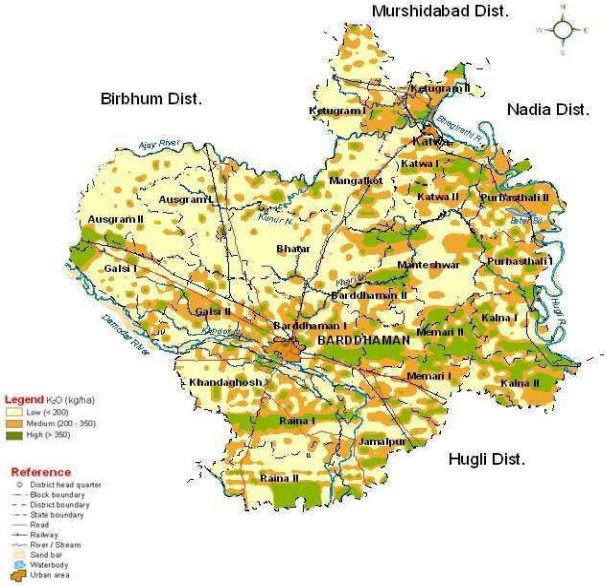


Fig. 4.7. Soil available potassium map of the district

Fig. 4.8. Soil available sulfur map of the district

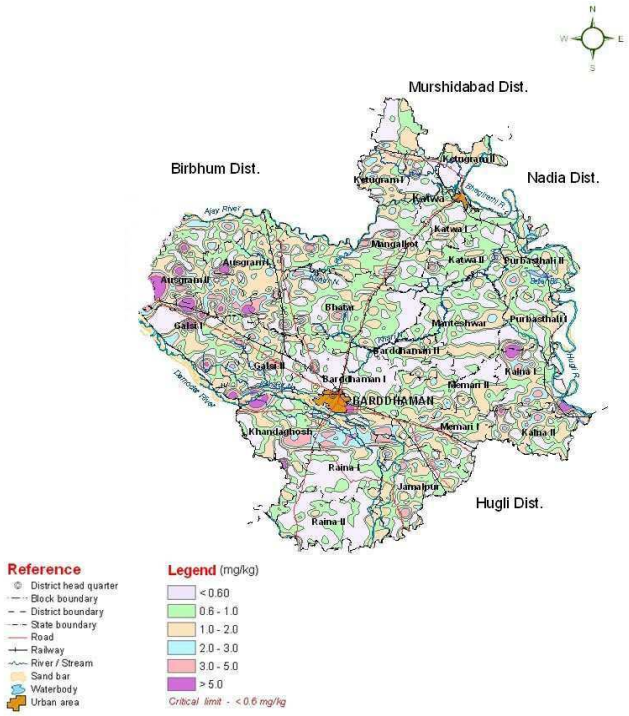


Fig. 4.9. Soil available zinc map of the district

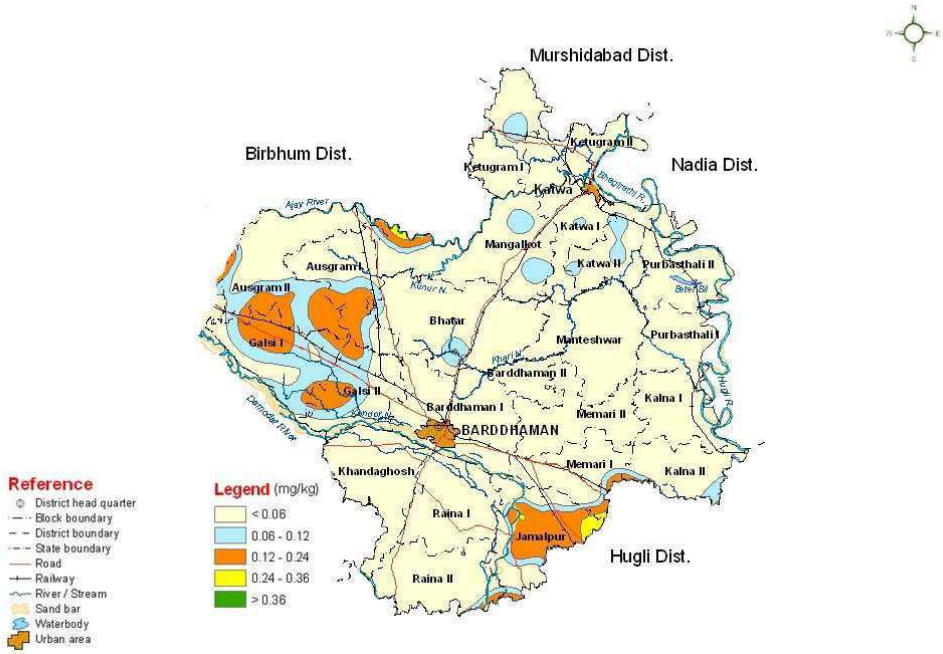


Fig. 4.10. Soil available boron map of the district

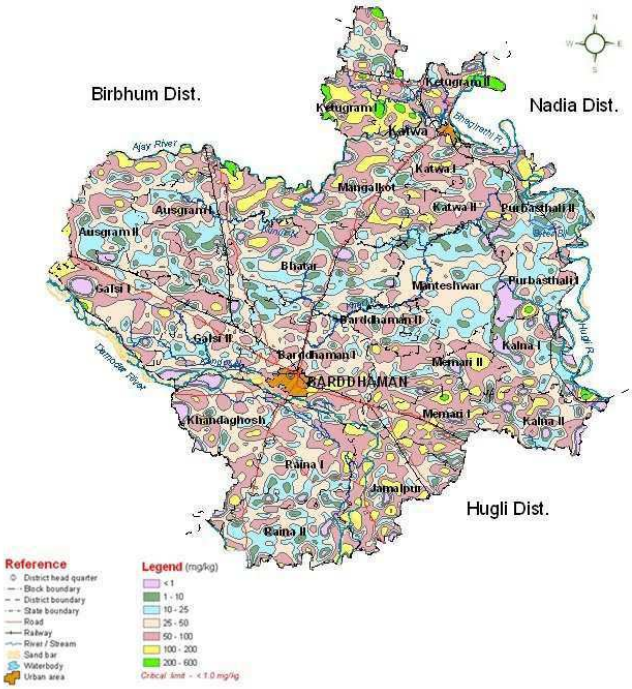


Fig. 4.11. Soil available molybdenum map of the district

Soil health management

No. of soil sample testing laboratory in Purba Bardhaman district: 3 (Three)

(a) Government – 1(One)
(b) Private – 2 (Two)

Table 4.1. Reclamation and Development of acid soil

Name of block	Area under acid Soil (ha)	Area treated (ha) up to 2016	Balance Area (ha)
Andal	2400	2400	13200
Aushgram-I	17950	2160	12890
Aushgram-II	14000	240	1760
Barabani	7500	1440	1560
Bhatar	28248	3000	2400
Purba Bardhaman	26500	240	660
Faridpur-Durgapur	9540	30	6470
Galsi-I	15600	2400	7600
Galsi-II	15050	360	265
Jamalpur	2000	1800	200
Jamuria – I	3000	240	1360
Jamuria – II	5400	600	650
Kalna-I	900	2160	9840
Kalna-II	6500	240	1760
Kanksa	10000	4800	12384
Katwa-I	625	2400	15600
Katwa-II	2000	6835	15949
Ketugram-I	1600	1296	15744
Ketugram-II	1250	804	776
Khandaghosh	12000	1440	2030
Kulti	2000	3000	12100
Memari-I	17184	1998	9102
Memari-II	18000	600	4400
Mongalkote	22784	2400	13200
Monteshwar	17040	2160	12890
Purbasthali-I	1580	240	1760
Purbasthali-II	3470	1440	1560
Raina-I	15100	3000	2400
Raina-II	11100	240	660
Salanpur	5000	30	6470
Total	**295321**	64370	230951

4.4. Water Resources & Management

There are many tanks, wells, canals, swamps and bils are found all over the district. Within the Damodar Valley region, there are around 17000 tanks. The Durgapur barrage and Mithon dam have formed two large reservoirs at the south-western and western periphery of the district. In this district there are two major source of irrigation –

1. Damodar Valley Command Area
2. Mayurakshi Command Area

Out of the 22 blocks, 20 blocks are irrigated by DVC area and 2 blocks, Ketugram I and II are by Mayurakshi Command area. Other sources of irrigation are Deep Tube well, shallow tube well, River lift Irrigation etc.

Ground Water

As per information received from the Water Resource Investigation Department it is understood that the surface water taping is only 11 percent. The blocks of surface water taping includes, Ausgram I & II. The problem of rainwater harvesting is prominent in this district – non-availability of land is one of the major constraints in harvesting rain water.

Bhatar, Monteswar, Ketugram I, Memari II, Purbasthali – II, and Mangalkot blocks are critical for lifting ground water under DTW. The problem of Arsenic infestation exists in Kalna – I and Purba Bardhaman Sadar, is almost saturated by irrigation through canal and ground water.

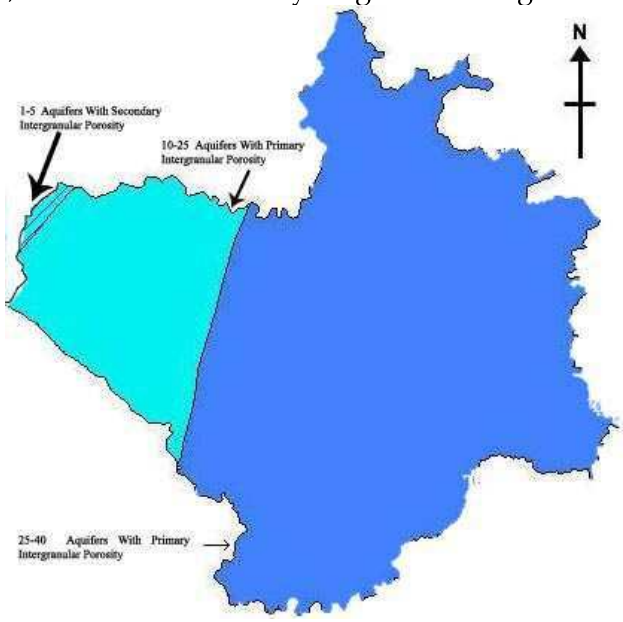


Fig. 4.12. Aquifer map of the district

4.5. Major Crops and Varieties in the District

Table 4.2. Prevalent cropping patterns in Purba Bardhaman district

	RAINFED AREA (SUMMER – KHARIF – RABI)
(a) Upland	Fallow – Paddy/Vegetable – Mustard/Lentil/Wheat
(b) Medium Land	Fallow – Paddy – Pulse/Oilseed /Wheat
© Low Land	Fallow/Jute – Paddy – Pulse/Oilseed/Wheat
	IRRIGATED AREA
(a) Upland	Vegetable/Paddy/Jute – Paddy/Maize – Pulse/Oilseed/ Vegetable/Wheat/Potato/Onion
(b) Medium Land	Paddy/Sesamum/Jute – Paddy – Pulse/Oilseed/Vegetable/Wheat/Potato/Onion
© Low Land	Paddy/Jute – Paddy – Pulse/Oilseed/Vegetable/Wheat/Potato/Onion

Table 4.3. Major crops and their varieties are given in the following table

Crop name	Varieties
Autumn Rice	Khitish, Satabdi, ratna
Winter Rice (HYV)	MTU 1010, IR 36, MTU 7029, CR 1010, GB 1
Summer Rice	MTU 1010, IR 36, IR 36, Ratna, Khitish, Lalat, IET 4786 4094
Wheat	UP 262, PBW – 443, Sonalika
Jute	JRO 524
Potato	Kufri Jyoti, Kufri Chandramukhi, Kufri Pokhraj
Mustard	B-9, B- 54
Til	Tilottama, Rama

Table 4.4. Major crops of the district

Crops	**District**			**State**		
	Area (ha)	**Production (Mt)**	**Yield (kg/ha)**	**Area (Lakh ha)**	**Production (Lakh Mt)**	**Yield (kg/ha)**
Paddy	525500	2611735	4970	54.63	157.48	2883
Wheat	2813	832648	2960	3.39	9.60	2825
Pulses	15097	10870	720	3.47	3.30	952
Oilseeds	54097	60468	1100	7.93	9.37	1181
Jute	9744	21573	2214	5.54	77.76	14.04
Potato	72720	2570652	35350	4.27	84.27	19735
Maize	30	61.71	2057	1.56	7.20	4615

4.6. Input management

F e r t i l i z e r

Fertilizer is one of the major inputs and it plays a great role in accelerating the productivity of crops. The use of fertilizer for boosting up the crop production increased to many fold since its introduction but the farmers are not using the fertilizers in judicious manner. The imbalance use of fertilizers creates problems in physiochemical characteristics of soil, lowering down the soil pH and fertility status of soil. Fertilizers should be used along with organic manures adequately. Intregated approach of application of Organic Manure, Biofertilizer, Chemical Fertilizer and Micronutrient should be maintained to enhance the Soil health & Fertility.

Table 4.5. Total requirement of fertilizer in the from of N:P:K in the district of Purba Bardhaman for pre-kharif and kharif crops during 2013-2014

Sl. No.	Name of fertilizer	Nitrogen (N) in M.T.	Phosphate (P2O5) in M.T.	Potash (K2O) in M.T.
1.	Urea (60398 M.T.)	27783	0	0
2.	S.S.P. (5069 M.T.)	0	811	0
3.	M.O.P. (14907 M.T.)	0	0	8944
4.	D.A.P. (17688 M.T.)	3184	8136	0
5.	Complex (31297 M.T.)	3130	8137	8137
	Total:	**34097**	**17084**	**17081**

Table 4.6. Fertilizer use status of Purba Bardhaman district

Name of the Fertilizer (Nutrient)	2014-15	2015-16	2016-17
Nitrogen	123.5 Kg. /Ha.	125.4 Kg. /Ha.	128.6 Kg. /Ha.
Phosphate	59.1 Kg. /Ha.	62.2 Kg. /Ha.	58.4 Kg. /Ha.
Potash	52.3 Kg. /Ha.	46.6 Kg. /Ha.	44.8 Kg. /Ha.

Constraints in fertilizer distribution / availability in Purba Bardhaman district

Day by Day, with the intensification of Crop Diversification Programme and enhancement of Cropping Intensity for Multiple Cropping System in this district, Consumption of Balance Fertilizers are increasing remarkably.

But it has experienced since last two years that availability of Fertilizers was by and large not so favourable as a result of which we had have to face problems due to disruption of supply chain, actually inadequate supply of fertilizers in the season of peak demands.

Supply of Fertilizers specifically IFFCO 10:26:26 to Co-operative Sector in this district should be enhanced as because the Co-operative Marketing Sectors is functioning very smoothly and properly for the interest of the Farming Community in this district.

Supply of Fertilizers with actual M.R.P in the remotest corner / villages of this district is a great problem. If we can able to make necessary arrangements for the same, then it will obviously play a major role to restrict mal practices in fertilizers distribution like, price hike / dearth situation.

Full time engagement of Fertilizer Inspectors with proper mobility provision / facility should be taken into consideration.Thats why, creation of a post of an Input inspector at Block level and a full time officer i.e., Assistant Director of Agriculture (Fertilizer) at District level is highly needed for proper monitoring of Fertilizer distribution.

Dearth of Fertilizer and price hike at consumer's point are being experienced for a short period due to uneven supply of fertilizers and tagging of other inputs by the companies which are not at all expected. The freight subsidy on roads should be disbursed at the time of supply up to the Block level. The forceful tagging of micronutrients/pesticide/sulphur/seed etc. along with the fertilizers creates tremendous problem although the companies denied to agree this. This should be stopped at any cost.

Table 4.7. No. of Fertilizer, Seed and Pesticide dealers operating in different Blocks of Purba Bardhaman district

Name of the Block	Fertilizer			Seed	Pesticide
	Wholesale	Retail	Total		
Purba Bardhaman	16	128	144	31	83
Ausgram-I	7	55	62	14	40
Ausgram-II	3	36	39	1	10
Bhatar	5	135	140	25	116
Galsi-II	2	76	78	9	37
Jamalpur	5	134	139	16	141
Khandaghosh	9	98	107	16	65
Memari-I	7	93	100	25	84
Memari-II	3	80	83	10	41
Raina-I	4	111	115	11	78
Raina-II	5	79	84	7	60
Sub-division Total:	**66**	**1025**	**1091**	**165**	**755**
Kalna-I	3	77	80	15	95
Kalna-II	5	71	76	20	39
Purbasthali-I	8	94	102	16	30
Purbasthali-II	6	82	88	8	33
Monteswar	3	68	71	7	27

Sub-division Total:	**25**	**392**	**417**	**66**	**224**
Katwa-I	9	69	78	14	28
Katwa-II	2	57	59	5	12
Ketugram-I	3	36	39	NIL	7
Ketugram-II	1	49	50	1	2
Mongalkote	5	130	135	3	61
Sub-division Total:	**20**	**341**	**361**	**23**	**110**
District level dealers	**64**	**-**	**64**	**18**	**-**
District Total:	175	1758	1933	272	1089

Seed

Seed is an important constituent of one of the vital inputs in Agricultural Production. The use of quality seed alone can boost up 10% to 30%. crop production. Quality Seed Production Programme has been undertaken by several Govt., Semi-Govt. and Private Institutions like Government Farm, West Bengal State Seed Corp. Ltd., Co-operative Societies and Private Farms in the district.

The quantum of quality seeds production in the district is not adequate enough to cater the needs of farmers. Samabai Krishi Unnayan Samities and farmers are encouraged by the Extension Agencies to extend their hands of co-operations in undertaking the quality seed production programme in the district and also to use certified seeds in their farms for better production.

Table 4.8. Seed Production at Block seed farm

Name of the Block	Crop	Seed production during 2016 (q)	Proposed Seed Production (q)		
			2017-18	2018-19	2019-20
Aushgram-I	HYV Paddy	145	155	160	165
	Potato	71.5	150	150	160
	Mustard	1.6	10	11	12
	Til	7.15	10	11	10
	Wheat	3.48	5	5.5	6.0
Aushgram-II	Rice- 16.5 Acre	105	160	170	200
	Mustard- 5Acre	2.10	4	6	8
Bhatar	Aman Paddy	134.7	125	127	129
Galsi-I	Paddy	135	500	550	600
Jamalpur	Aman Paddy(2.8)	68.00	90.00	110	130
	Mustard (2.4)	7.46	20	30	40
	Potato(1.0)	60.00	200	250	300
	Til (1.6)	6.49	15	20	25
Kalna-I	Paddy	157.910	173	158	158
	Mustard	5.245	6	7	7.5
	Lentil	1.835	2	2.5	3
	Potato	82.97	90	95	95
Ketugram-I	Paddy(6 Acre)	78.8	82	85	85
	Potato(1.25 Acre)	7.5	25	30	30

	Mustard (2Acre)	0.92	1	1.1	1.1
	Til(4.5 Acre)	1.97	2	2	2
Ketugram-II	Paddy (MTU-7029) 1.6 Ha.	59.2	70	84	100
	Till 0.4 Ha.	0.85	1	1.1	1.2
Memari-I	Paddy	97	130	135	145
	Potato	178.5	200	210	220
	Mustard	0.83	3	3.5	4
	Til	0.5	1.5	1.5	2
Memari-II	Aman Paddy	76.05	76.05	76.05	76.05
Mongalkote	Aman Paddy	103.30	120	125	125
	Mustard	3.07	3.5	3.75	3.75
	Sesame	3.05	3.5	3.75	3.75
Monteshwar	Paddy	73.20	100	100	100
Purbasthali-I	Paddy	159.47	116	124	130
	Lentil	5.00	6.00	6.00	7.00
	Potato	12.30	20.00	28.00	30.00
Purbasthali-II	Paddy	67	80	85	90
	Pulse	0.45	1	1	1
Raina-I	Paddy	200	110	120	130
Raina-II	Paddy	74.51	80	90	105
	Til	3.2	4	5	5.5
Total		**2202.11**	**2950.55**	**3183.75**	**3445.9**

Table 4.9. Seed Production under trial cum demonstration

Name of the Block	Crop	Seed production during 2013(q)	Proposed Seed Production (q)		
			2017-18	2018-19	2019-20
Aushgram-I	Paddy	35500	37000	40000	42000
	Moong	--	10	20	30
	Mustard	1650	1700	1700	1750
Aushgram-II	Paddy	32400	35000	37000	40000
Bhatar	Kh Paddy	27000	22500	22950	23409
	Boro	10000	15000	15300	15606
	Mustard	1062	1100	1122	1145
Purba Bardhaman	Paddy	--	1000	1500	2000
	Potato	--	5000	8000	12000
	Mustard	--	100	200	500
Faridpur-Durgapur	Paddy	14400	15000	15000	15000
	Wheat	1200	2800	3000	3000
	Mustard	75	100	100	100
	Maize	230	250	250	250
Galsi-I	Paddy	30500	31000	32000	35000
Galsi-II	Paddy	28500	30000	32000	34000
Jamalpur	Paddy	16000	20000	22000	24000
	Potato	750	1000	5000	10000
	Mustard	--	50	100	150
	Til	--	50	150	250

Kalna-II	Paddy	840	1200	1500	2000
Katwa-I	Paddy	1000	1250	1500	1750
	Mustard	--	50	75	100
	Sesame/Til	--	50	75	100
	Lentil	--	10	15	20
Katwa-II	Paddy	5000	5750	5800	6000
	Pulse	100	216	230	250
	Oil seed	100	175	200	250
Ketugram-I	Paddy	5000	10000	15000	20000
	Mustard	60	120	180	240
	Sesame	80	160	240	320
Ketugram-II	Aus Paddy	850	850	1150	1300
	Aman Paddy	--	150	200	250
	Boro Paddy	--	100	150	200
	Mustard	--	10	15	20
	Till	--	8	10	12
	Pulses	--	3	5	7
	Sugarcane	--	220	250	300
Memari-II	Kh Paddy	27000	22500	22950	23409
	Boro	10000	15000	15300	15606
	Mustard	1062	1100	1122	1145
Mongalkote	Aman Paddy	5000	5200	5200	5300
Monteshwar	Paddy, Mustard	270250	30000	32000	34000
Raina - I	Paddy	6200	8000	9000	10000
Total		**462259**	**247072**	**270839**	**298989**

4.7. Farm Mechanization/ Farm equipments

In order to achieve the desired production growth, farm mechanization is mightily important. Mechanization in agriculture helps in increasing production, productivity and profitability in agriculture by achieving timeliness in farm operations, bringing precision in metering and placement of inputs, reducing available input losses, increasing utilization efficiency of costly inputs (seed, chemical, fertilizer, irrigation, water etc.), reducing unit cost of produce, enhancing profitability and competitiveness in the cost of operation. It also helps in the conservation of the produce and byproducts from qualitative and quantitative damages; enables value addition and establishment of agro processing enterprises for additional income and employment generation from farm produce. It is one of the important inputs to usher in all round development in the rural India.

4.8. Special Projects/ Programmes on- going in the district

Various programmes are currently under way in the district sponsored by either state or central government for development of agriculture and allied sectors, such as,

- Bringing green revolution to eastern India
- Pradhan Mantri Krishi Sinchayee Yojna

- Sub mission on agricultural Mechanization
- RKVY
- NFSM
- NMOOP
- TRFA (Pulse)
- PKVY
- SAME
- SMAM
- Farmers' Old Age Pension Scheme
- Soil health card

4.9. Constraint Analysis

For constraint analysis selected blocks from the two different AES in the district, i.e. old alluvium and new alluvium were chosen to have an in depth overview about the constraints faced by the crop husbandry sector. Block wise constraints identified are as follows,

Table 4.10. Block wise identified constraints in the crop husbandry sector

Block	Constraints Identified
Purba Bardhaman	i. **Physical**: fragmented land ii. **Social:** very rigid in existing cropping pattern, variety and practice iii. **Financial:** Institutional loan is not easily accessible to them
Galsi-I	i. **Physical:** Irrigation & Seed **ii. Social:** Awareness. iii. **Financial:** Govt. support.
Jamalpur	i. **Physical**: Fragmented land , Lack of marketing particularly in Maize, Pulse and oil seed crop ii. **Social:** Very rigid in existing cropping pattern and variety.
Katwa-I	i. **Physical:** Poor infrastructure of of office establishment. ii. **Social:** Women farmer are less interested in farming, Income from Agriculture is less. iii. **Financial :** ADA Block had less financial power
Katwa-II	i. **Physical:** Development of interest to agriculture (Mental drain to Govt. job or private business) ii. **Social:** Poor economic condition iii. **Financial:** Financial Support through agricultural loan.
Ketugram-I	i. **Physical:** poor infrastructure in office establishment ii. **Social :** women personals are less interested iii. **Financial:** requirement of clerk, cashier/ accountant for maintaining of financial account
Ketugram-II	i. **Physical:** Flood effected area and there is no Storage
Memari-I	i. **Physical**: fragmented land ii. **Social:** very rigid in existing crpping pattern and variety iii. iii. **Financial:** most of the farmers are defaulter in KCC. Institutional loan is not available to them
Mongalkote	i. **Physical:** Shortage of field staff

	ii. **Social:** Existing paddy-potato-boro paddy cropping system.
Purbasthali-I	i. **Physical :** Fragmentation of Land holdings, Difficulties in Farm Mechanisation ii. **Social:** Lack of recognition of Farmers in the society iii. **Financial:** Price hike for Agril. Labour & Agril Inputs

4.9.1. Yield gap analysis of major crops and reasons for gaps

Table 4.11. Block wise yield gap and reasons for gap

Name of crops	Yield (q/ha)		Yield gap (q/ha)	Reasons for gap
	District av. Of 5 years	Avarage from 20 FLDs		
Kharif Paddy	49.70	72.60	12.90	• Non adoption of SRI principles • Imbalanced fertilisation • Non adotion of INM • Lack of disease resistant variety • Non adotion of IPM • Poor soil health • Ill timing of transplanting • Lack of quality seed
Potato	353.5	354.50	Nil	• Non adotion of IPM • Non adotion of INM • Poor soil health • Lack of quality seed
Mustard	11.00	13.46	2.46	• Lack of disease resistant variety • Soil acidity • Ill timing of sowing • Non use of sulfur
Lentil	7.20	12.6	5.4	• Lack of HYV seed • No use of biofertiliser • Less use of phosphatic fertiliser • Poor pest and disease management • Soil acidty
Jute	22.14	28.54	6.4	• Ill weed management • Lack of HYV seed • Improper retting • Improper fertilization

4.9.2. Research/ Extension/ Adoption gaps

There are certain research and extension gap in crop production. Co-ordination between KVK, other research stations and district officials is very essential. In most of the cases convergence is not at all done by the allied department in case of demonstration and training. Extension gap is very prominent in agriculture sector. This is due to lack of sufficient number of extension machinery in the field level. The KPSs have been undertaking the extension works to

the doorsteps of the farmers but their number is inadequate to the service and no new recruitment is being done.

However, the crop wise research extension and adoption gaps, as identified, are as below,

Table 4.12. Block wise research, extension and adoption gaps in the crop husbandry sector

Name of crops	Research gaps	Extension gaps	Adoption gaps
Paddy	• Identification of sheath blight resistant variety • Modified system of rice intensification	• Poor extension of basic knowledge, like proper nutrient management • Lack of adequate extension workers • Lack of extension of improved methodologies of crop production	• Wide spread skepticism • Adequate no of demonstration to bring out the effectivity
Potato	• Identification of late blight resistant variety • True potato seed	• Poor extension of IPM measures	• Skepticism • No reliance on govt. machinery • Adequate no of demonstration
Mustard	• Club root resistant cultivar • High yielding yellow mustard • Sulfur management	• Poor extension of IPM measures • Inadequate awareness on water management under club root condition	• Club root resistant cultivar of WBBN 1/2 is poorly adopted for longer duration and enhanced cost of cultivation
Lentil	• High yielding cultivars • Phosphorus management • Wilt resistant cultivars	• Poor extension of INM measures	• Lack of awareness about the profitability side • Inadequate no of demonstration
Sesame	• High yielding cultivars • Sulfur management • Proper weed management	• Poor extension of nutrient management measures	• Lack of awareness about the profitability side
Jute	• Weed management techniques • Post harvest management techniques	• Poor extension of improved methodologies	• Skepticism • Fear of loss

4.9.3. Processing/ Storage/ Marketing gaps

Purba Bardhaman produces significant quantity of groundnut, pulse, maize etc. But for lack of processing unit farmers are forced to sell their products in a very low rate and most of the cases incur loss. Proper arrangement of processing units needs to be established in order to increase the area and production of the crops.

Requirement felt for processing units given below –

- Dal Mills are proposed in the blocks where large quantity of pulse production
- Low cost maize sheller developed by ICAR-CIFE to be promoted
- Wheat thresher is required in Raina I and II block, Khandaghosh, Ausgram I and II, Purbasthali I and II, Katwa I Mangalkot, Jamalpur, and Purba Bardhaman Sadar etc
- Sugarcane crusher is required in Ketugram I and II, Pubasthali II block
- Maize crusher is needed in Ausgram I and II block.

4.9.4. Existing Institutional Mechanism in the Government Sector

Below are the existing institutional mechanisms in the govt sector

Table 4.13. Storage structures and markets

Block	Storage Structures						Markets (Numbers)	
	Rural Godowns		Cold storage		Any other		Main market	Sub market
	Nos.	Capacity (MT)	Nos.	Capacity (MT)	Nos.	Capacity (MT)		
Aushgram-I	5	10000	8	120035.5			7	20
Ausgram-II			1	250			1	4
Bhatar	2	5000					4	20
Purba Bardhaman	9	540	9	200000			13	35
Galsi-I	15	15					01	9
Galsi-II	20	20	1	14400	8	5000	01	5
Jamalpur			14	200000				
Kalna-I			12	300000			1	4
Kalna-II			18	3800000			1	3
Katwa-I	01		04		50	500	01	1
Katwa-II								4
Ketugram-I	1						1	6
Ketugram-II							1	2
Khandaghosh			2	1000			2	10
Memari-I	2	6000	22	172928.5			5	27
Memari-II	2	5000	5				2	10
Mongalkote			4	400000			1	3
Purbasthali-I	3	2500	1	17452.34			1	7

Purbasthali-II			1	15000			2	10
Raina-I	3	8000	5	43000			8	30
Raina-II	2	6000	2	15720.7			6	27
Total	**65**	**43075**	**110**	**5449787**	**58**	**5500**	**73**	**283**

(Capacity in tonnes)

Table 4.14. Farm Level Storage Plan existing facilities (2013-14)

Block	Type	No.	Capacity (MT)
Aushgram-I	Rural godown	2	10000
	Cold storage	8	1200
	Others	10	
Aushgram-II	Rural Godowns	7	100
	Cold storage	1	1000
Bhatar	Rural Godowns		
	Cold storage		
	Others	11	
Purba Bardhaman	Rural Godowns	9	540
	Cold storage	9	200000
Galsi-I	Rural Godowns	15	15
	Cold storage		
	Others		
Galsi-II	Rural Godowns	20	20
	Cold storage	1	14400
	Others		
Ketugram-I	Rural godowns	2	100
	Cold storage		
	Others		
Khandaghosh	Rural Godowns		
	Cold storage	2	1000
	Others	20	
Memari-I	Rural Godowns	2	6000
	Cold storage	22	172928.5
	Others	10	
Memari-II	Rural Godowns		
	Cold storage	5	
	Others	12	
Purbasthali-I	Rural Godowns	3	2500
	Cold storage	1	17450
Raina-I	Rural Godowns	3	8000
	Cold storage	5	43000
	Others	30	
Raina-II	Rural Godowns	2	6000
	Cold storage	2	15720
	Others	40	
Total		**254**	**499976**

(Capacity in tones and investment Rs. In lakh)

4.10: Recommended interventions for the district, with detailed Action Plan with costs for achieving the production target

The crop wise interventions in the district are as below to meet up the production target,

Rice

(i) Promotion of latest High Yielding Varieties (HYVs)/Hybrids of rice and increase of seed replacement rate (SRR) upto 80 per cent in coming years in HYVs, and 100 per cent in case of hybrids.

(ii) Promotion of bio-fortified high nutrient rich varieties, such as high protein & zinc content rice varieties for nutritional security Over the years, Research Institutes in the country have developed several varieties for increasing per cent yields. Additionally, there has also been, the emphasis on improving the nutritional quality of rice varieties, leading to varieties with improved quality attributes such as high protein content (CR Dhan 310, CR Dhan 311); high zinc content (DRR Dhan 45; Chhattisgarh Zinc Rice 1); and low glycemic index (Improved Sambha Mahsuri).

(iv) Promotion of salt tolerant/stress tolerant/climate resilient/semi-cum-deep water/upland varieties in specific areas for higher productivity. Several crop varieties with enhanced tolerance to biotic and abiotic stresses have been released. Recently, a climate-smart variety. CR Dhan 801 has been released which is tolerant to both submergence and drought situations. It is in the background of very popular variety Swarna with maturity duration of 140 days.

(v) Promotion of System of Rice Intensification (SRI) technique
The basic principles of SRI are transplanting of young seedlings of around 8-15 days in age; transplanting of one seedling per hill at under wider spacing; controlling weeds by mechanical means, initially with rotary pushed weeder or conoweeder; maintaining moist soil under nonsaturated conditions during the vegetative phase; and use of organic manure (compost) instead of chemical fertilizer for maintaining optimum biological activity of the soil. This technique has been widely tested in states like Odisha and Andhra Pradesh transferring higher yields and incomes to the farmers. This technology helps in realizing higher per unit yields at loer cost of cultivation. However, it is labour intensive, and is therefore, optimal in case of family farms, wherein all members of the family engage themselves as labour on their farm.

(vi) Promotion of Direct Seeded Rice (DSR) for increasing production and productivity. Rice is commonly established by transplanting in puddled soil. It is labour, water and energy intensive and is less profitable. These factors demand a major shift from transplanting to direct seeding of rice (DSR). There are 3 principles of DSR i.e., dry seeding (sowing dry seeds into dry soil), wet seeding (sowing of pre germinated seeds in wet puddle soils), and water seeding (seeds sown into standing water). However, high weed infestation is a major constraint for adoption of DSR. Application of post-emergent recommended herbicide at proper time and/or application of early post-emergent herbicide followed by mechanical weed control by motorized weeder in heavy infested areas can successfully control the weeds.

(vii) Promotion of farm implements for rice crop, pre-germinated seed sowing by drum seeder is a good option compared to broadcasting method of seed sowing. Sowing with drum seeder saves seed, fertilizer and other inputs and also provides uniform row to row spacing to perform subsequent field operations. In order to promote drum seeder for sowing of pre-germinated paddy seeds, ICAR-NRRI has developed manually operated four and six row drum seeder and power operated eight row drum seeder, which reduce cost of sowing substantially. Suitably designed farm machinery deployed at various cultivation. Stages will improve farming efficiency, reduce cost of cultivation and enhance net returns. Promoting use of renewable energy in farm equipment segment such as solar-powered pumps can improve efficiency of farm operations and also create alternate source of revenue for the farmers who can sell the additional power. However, a suitable policy will be required for this purpose.

(viii) Application of balanced nutrient fertilization on soil test base including biofertilizers. Soil test based nutrient management can result in higher productivity and sustainability. Sitespecific use of micro/secondary-nutrients combined with soil amendments would result in greater benefit. Green manuring, as also bio-manures need encouragement to improve soil structure and fertility. Customized five-panel leaf colour chart (CLCC) for nitrogen management in rice developed at NRRI Cuttack, is an effective, low-cost, easy to use diagnostic tool which can be used by the farmers to monitor the relative greenness of rice leaf as an indicator of the leaf N status, and decide when and how much N should be applied to the crop. Customized leaf colour chart (CLCC) based N application enhanced yield by 10.3-13.3 per cent and 9.9-10.9 per cent over conventionally applied urea (RDF urea) in direct seeded (DSR) and transplanted rice (PTR), respectively. The CLCC based N application produced 11.2-18.7 per cent more yield. Farmer's feedback data obtained from deputy directors of agriculture (DDA) from different district indicated yield advantage of 5-20 per cent due to use of CLCC.

(ix) Adopting plant protection measures to protect the crops from weeds, insects pests and diseases. There is need to promote latest generation agro-chemicals so that residual effect may not occur. IPM (Integrated Pest Management) may also be promoted among the farmers. The stem borer, brown plant hopper (BPH), leaf folder, gundhi bugh are the major insect pests of rice. The major diseases of rice are brown spot, bacterial leaf blight and blast.

Critical Issues relating to Paddy Cultivation need to be addressed

(i) Crop residue burning
(ii) Water use efficiency
(iii) Crop substitution
(iv) Promotion of bio-fortified and special quality paddy
(v) Strengthening of market forces

Wheat

Wheat is the second and most important food grain crop in our state. Demand of wheat is increasing day by day due to growing population. Beside that, a considerable mass uses wheat as a substitute of rice. So the target of coverage and production of this crop in this district has been fixed with higher aspiration.

Following measures are to be taken up for reaching the targetted production of wheat:

1) **Use of Quality Seeds:**
   Use of quality seeds (certified) to be increased to the extent of 80% at least. Arrangements for distribution of certified seeds both from Govt. and Private trade channel would be continued like previous year.
2) **Replacement of Old Varieties:**
   Farmers would be advised by the extension personnel to discard old varieties and to use improved recently released varieties where ever available.
3) **Judicious application of Fertilizer:**
   Timely application of Chemical Fertilizers on the basis of soil testing report or use of recommended dose of fertilizer in absence of soil testing report would be made acceptable to farmers along with the application of organic manure of recommended quantity.
4) **Application of Micronutrients:**
   Extension personnel should give due importance on use of specific micronutrients in deficite areas.
5) **Plant Protection:**
   Due emphasis would be given towards need based Plant Protection Measures observing principle of Integrated Pest Management.
6) **Timely sowing of seeds in West Bengal:**
   Winter season does not last for long period; attention to be given on timely sowing of seeds because it is a key factor of producitivity of wheat crop.
7) **Transfer of latest technology:**
   Extension agencies would intensify the transfer of latest technology to farmers as evolved from field trials and demonstrations through T & V Programme.
8) **Irrigation:**
   Judicious application of irrigation to the crop at critical stages of growth depending on availability of water as far as possible.
9) **Trials and Demonstrations:**
   On going trials and demonstration on newly evolved varieties to be continued like previous years which have become susceptable to various pest hazards.

Oil Seeds

In agricultural economy the oilseeds stand next only to the food grains in acreage, tonnage and value. Vegetable oils are essential part of human diet. Vegetable oils are also used in making industrial products like soap, paints, lubricants, cosmetics, hair oil, pharmaceuticals etc. Oil cakes and de-oil meals are used in making food products for human consupmptions and animal feeds as well as manures and raw materials for industrial use. Some oilseeds, oils, oil cakes/de-oil meals are exported for earning foreign exchange.

Historically we are deficient in production of oilseeds to its requirement, though we have made a good progress in the field of oilseed production, programmes to be taken up for doubling the food production and making our country hunger free in ten years. The production of oilseeds during 10th to 11th Plan period will also be taken up so that gap between the requirement and production could be narrowed down.

Rapeseed-Mustard are major oilseed crops in this district. It occupies more than 85% of total area under oilseed. There has been a real break through in the expansion of area and to some extent production. In a decade the area has increased three fold, but the production not to that extent.It remained static or it showed down ward trend. Seasamum is the second important oilseed crop in this district. Area of this crop is also increasing and its productivity is encouraging. Next to seasmum is groundnut, which is gaining popularity and has been included in expansion programme of oilseeds in this district. With its present level of production the district has given emphasis to increase the productivity of the crop so that with the limited area available under oilseed, the production of oilseeds can be doubled at the end of 11th 5 year Plan.

Follwing strategies for the increase of production of oilseed crops would be adopted:
Area Approach –

1) Diversion of low yielding rice areas of lateritic region to Kharif Groundnut crops in the Western part of the district i.e. Durgapur Sub-division.
2) To introduce cultivation of Kharif Sesamum in the Western part of the district instead of Rice cultivation where irrigation is not sufficient.
3) To campaign for higher coverage under short duration Toria as a catch crop before start of Rabi season.
4) Diversion of area under rainfed Wheat to Rapeseed-Mustard.
5) Inter-cropping, mixed cropping of Mustard with Autumn-sown Sugarcane, Gram, Lentil and in the border of Potato field.
6) Extensive cultivation of Rabi-Summer Groundnut after the harvest of Aman crop with available soil moisture.
7) Area of Potato are increasing day by day, Sesamum can be grown in those areas after the harvest of Potato Crop.
8) Timely sowing – Farmers should be motivated for timely sowing of Oilseed crops due to short span of winter season.
9) Recently Sunflower has been introduced as a source of alternate Oilseed. Demonstrations are being organized in farmers' field to make it popular. However, if marketing facilities may be provided to the farmers, they can take up Sunflower as an alternate oilseed crop.

Pulses

Pulse cultivation as a major crop could not be popularized due to its low yield in comparison to other field crops. As a result, this crop has become less remunarative to the farmers which replace the interest of farmers from pulse cultivation. Due to this reason a wide gap has been created between the requirement and production of the crop.

However with a view to bridge the gap between the demand and production of the crop, certain measures may be taken up as follows:

1) Cultivation of Pulse Crop in Western tracts of the district -
In the Western rainfed tracts of the district (Durgapur Sub-division) Kharif Pulse i.e. Kalai, Mung and Cowpea cultivation would be adopted in large areas especially in drought prone areas with Maize.
2) Stabilisation of Pulse Area –
Pulse area should be stabilized by adopting Intercropping, Mixed cropping and Paira cropping.
3) Summer Pulse Cultivation –
The pulse area can be increased by growing Summer Mung and Kalai after harvest of Rabi crops. Similarly, in Potato harvested fields, cultivation of Mung can be introduced.
4) Pulse in Non-traditional Areas -
Growing of Pulse crop in Non-traditional areas of Waste land and Water-shed development areas may be introduced.
5) Improved Technology -
Introduction and adoption of improved modern scientific technology of cultivation in traditional areas under pulse in the Kalna and Katwa Sub-division may be done where Lentil, Gram, Arahar have already occupied considerable areas.
6) Rabi Pulse Cultivation in Irrigation Command Area -
Short duration Rabi-Pulse i.e. Arahar cultivation may be popularized and it can be introduced in fringe areas of irrigation command areas.
7) Soil amendments –
Use of Soil amendments (i.e. Basic Slag etc.) for correcting the soil acidity in pulse growing areas would be encouraged for cultivation of pulse crop.
8) Multiplication & Distribution of Quality Seeds –
Multiplication of quality seeds (Foundation / Certified) of various pulse crops in Government concern and other seed producing concern like West Bengal State Seed Croporation Ltd. would be encouraged and adopted for distribution of quality seeds to farmers for enhancing production and productivity of pulse crop.
9) Use of Phosphatic and Bio-fertilizers -
Phosphatic Bio-fertilizers including Phosphate Solubilising Bacterias (PSB) would be introduced in pulse cultivation and spraying of DAP and Micronutrient in deficient areas may also be adopted to boost up pulse production.
10) Plant Protection -
Necessary Plant Protection measures may be adopted maintaining the principle of Integrated Pest Management and use of NPV for control of Pod borer in case of Arahar by organizing Result Demonstration Centre.

Jute

Jute is one of the major important commercial crops in the district cultivated intensively in the Eastern part (i.e. Kalna & Katwa Sub-division). For increasing the productivity of the crop, major thrust would be given on the following steps:

1) Improved Package of Practice -
Adoption of improved package of practice for reduction of cost of cultivation and enhancing the productivity of the crop by the following measures:

a. Distribution of Certified Seeds.
b. Conduction of technological demonstration in farmers plot.
c. Use of balanced fertilizer as per soil testing report or recommended dose in absence of soil testing report.
d. Practicing foliar spray in wide scale.

2) Improvement of Fibre quality -
Fibre quality would be improved by adopting –

a. Timely sowing and harvesting of the crop.
b. Use of fungal culture.
c. Retting in slow running water.
d. Timely washing of fibre in fresh water.
e. Proper drying and storing of fibre.

3) Training of Farmers & Extension Personnel -
The farmers and extension personnel up to grass root level would be imparted training for successful implementation of Centrally Sponsored Special Jute Development Scheme (SJDP) in order to make them acquainted with various technological aspects for boosting up production of Jute.

Sugarcane

Sugarcane is an important commercial crop. Its coverage in the district could not be increased significantly as it is an annual crop and due to the lack of Processing Industry / Sugar Mill in Purba Bardhaman district. Following measures would be taken to achieve the targetted production.

a. Production & Distribution of short duration varieties –
Intensification of production of short duration improved varieties and distribution of disease free planting materials.

b. Improved Cultural Practices –
Adoption of improved cultural practices including treatment of sets and use of balanced fertilizer as per soil testing report or recommended dose in absence of soil testing report.

c. Coverage under Autumn Planting –
The extension personnel right from grass root level should motivate the farmers for increasing the area of coverage of Autumn Planting for making availability of Canes to Sugar Mills (if established).

d. Intercropping -
Practice of Intercropping with companion crops both in autumn and spring season would be advocated.

e. Demonstrations –

Conducting more numbers of Technological Demonstration Centre and establishment of Seedcane Multiplication Nursery Centres with application of advanced modern scientific technology would be organized.

f. Transport Subsidy –

Transport subsidy would be allowed to farmers for bringing quality seedcane from different authentic seedcane production centres.

g. Marketing price of Seedcane –

Action would be taken up so that the quality seed cane growers get remunerative marketing price of their produce from the Mill owners.

Table 4.15. Financial requirement for reclamation of acid soil

Name of Block	Area to be reclaimed and fund requirement*						Total	
	2017-18		2018-19		2019-20			
	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Aushgram-I	1379	103	2758	207	2758	207	6895	517
Aushgram-II	1300	98	2600	195	2600	195	6500	488
Bhatar	2532	190	5065	380	5065	380	12662	950
Purba Bardhaman	1870	140	3740	281	3740	281	9350	701
Faridpur-Durgapur	752	56	1504	113	1504	113	3760	282
Galsi-I	1360	102	2720	204	2720	204	6800	510
Galsi-II	1325	99	2650	199	2650	199	6625	497
Jamalpur	180	14	360	27	360	27	900	68
Kalna-I	70	5	140	11	140	11	350	26
Kalna-II	648	49	1295	97	1295	97	3238	243
Katwa-I	33	2	65	5	65	5	163	12
Katwa-II	50	4	100	8	100	8	250	19
Ketugram-I	140	11	280	21	280	21	700	53
Ketugram-II	75	6	150	11	150	11	375	28
Khandaghosh	1020	77	2040	153	2040	153	5100	383
Memari-I	1318	99	2637	198	2637	198	6592	494
Memari-II	1600	120	3200	240	3200	240	8000	600
Mongalkote	1709	128	3418	256	3418	256	8544	641
Monteshwar	1596	120	3192	239	3192	239	7980	599
Purbasthali-I	91	7	182	14	182	14	455	34
Purbasthali-II	227	17	454	34	454	34	1135	85
Raina-I	1260	95	2520	189	2520	189	6300	473
Raina-II	944	71	1887	142	1887	142	4718	354
Total	21479	1613	42957	3224	42957	3224	107392	8057

Table 4.16. Seed Production at Block seed farm:

Name of the Block	Crop	Seed production during 2013 (q)	Proposed Seed Production (q)		
			2017-18	2018-19	2019-20
Aushgram-I	HYV Paddy	145	155	160	165
	Potato	71.5	150	150	160
	Mustard	1.6	10	11	12
	Til	7.15	10	11	10
	Wheat	3.48	5	5.5	6.0
Aushgram-II	Rice- 16.5 Acre	105	160	170	200
	Mustard- 5Acre	2.10	4	6	8
Bhatar	Aman Paddy	134.7	125	127	129
Galsi-I	Paddy	135	500	550	600
Jamalpur	Aman Paddy(2.8)	68.00	90.00	110	130
	Mustard (2.4)	7.46	20	30	40
	Potato(1.0)	60.00	200	250	300
	Til (1.6)	6.49	15	20	25
Kalna-I	Paddy	157.910	173	158	158
	Mustard	5.245	6	7	7.5
	Lentil	1.835	2	2.5	3
	Potato	82.97	90	95	95
Ketugram-I	Paddy(6 Acre)	78.8	82	85	85
	Potato(1.25 Acre)	7.5	25	30	30
	Mustard (2Acre)	0.92	1	1.1	1.1
	Til(4.5 Acre)	1.97	2	2	2
Ketugram-II	Paddy (MTU-7029) 1.6 Ha.	59.2	70	84	100
	Till 0.4 Ha.	0.85	1	1.1	1.2
Memari-I	Paddy	97	130	135	145
	Potato	178.5	200	210	220
	Mustard	0.83	3	3.5	4
	Til	0.5	1.5	1.5	2
Memari-II	Aman Paddy	76.05	76.05	76.05	76.05
Mongalkote	Aman Paddy	103.30	120	125	125
	Mustard	3.07	3.5	3.75	3.75
	Sesame	3.05	3.5	3.75	3.75
Monteshwar	Paddy	73.20	100	100	100
Purbasthali-I	Paddy	159.47	116	124	130
	Lentil	5.00	6.00	6.00	7.00
	Potato	12.30	20.00	28.00	30.00
Purbasthali-II	Paddy	67	80	85	90
	Pulse	0.45	1	1	1
Raina-I	Paddy	200	110	120	130
Raina-II	Paddy	74.51	80	90	105
	Til	3.2	4	5	5.5
Total		**2202.11**	**2950.55**	**3183.75**	**3445.9**

Table 4.17. Seed Production under trial cum demonstration

Name of the Block	Crop	Seed production during 2013(q)	Proposed Seed Production (q)		
			2017-18	2018-19	2019-20
Aushgram-I	Paddy	35500	37000	40000	42000
	Moong	--	10	20	30
	Mustard	1650	1700	1700	1750
Aushgram-II	Paddy	32400	35000	37000	40000
Bhatar	Kh Paddy	27000	22500	22950	23409
	BORO	10000	15000	15300	15606
	Mustard	1062	1100	1122	1145
Purba Bardhaman	Paddy	--	1000	1500	2000
	Potato	--	5000	8000	12000
	Mustard	--	100	200	500
Faridpur-Durgapur	Paddy	14400	15000	15000	15000
	Wheat	1200	2800	3000	3000
	Mustard	75	100	100	100
	Maize	230	250	250	250
Galsi-I	Paddy	30500	31000	32000	35000
Galsi-II	Paddy	28500	30000	32000	34000
Jamalpur	Paddy	16000	20000	22000	24000
	Potato	750	1000	5000	10000
	Mustard	--	50	100	150
	Til	--	50	150	250
Kalna-II	Paddy	840	1200	1500	2000
Katwa-I	Paddy	1000	1250	1500	1750
	Mustard	--	50	75	100
	Sesame/Til	--	50	75	100
	Lentil	--	10	15	20
Katwa-II	Paddy	5000	5750	5800	6000
	Pulse	100	216	230	250
	Oil seed	100	175	200	250
Ketugram-I	Paddy	5000	10000	15000	20000
	Mustard	60	120	180	240
	Sesame	80	160	240	320
Ketugram-II	Aus Paddy	850	850	1150	1300
	Aman Paddy	--	150	200	250
	Boro Paddy	--	100	150	200
	Mustard	--	10	15	20
	Till	--	8	10	12
	Pulses	--	3	5	7
	Sugarcane	--	220	250	300
Memari-II	Kh Paddy	27000	22500	22950	23409
	BORO	10000	15000	15300	15606
	Mustard	1062	1100	1122	1145
Mongalkote	Aman Paddy	5000	5200	5200	5300
Monteshwar	Paddy, Mustard	270250	30000	32000	34000
Raina - I	Paddy	6200	8000	9000	10000
Total		**531809**	**320782**	**349559**	**382769**

Table 4.18. Proposed Plan to Improve Agriculture & Allied Training Facilities for Farmers at block level

Block	New Agro polyclinics proposed	Govt./ Non Govt.	Capacity generated (No. of farmers)	Requirement of Funds for renovation of old / establishment of new agro polyclinics		
				Type of Facility Required	Financial Requirement (Rs. In Lakh)	Additional Capacity generated through farmers training (No. of farmers)
Andal	01	Govt.	100	• Plant Pathological clinic, Farmers (50 nos) training hall with AV aids.	20	1000
Aushgram-I	1	Govt.	50	• Quick Soil testing kit • Training hall • Sitting arrangement • Mirophone facility • Laptop Projector • Screen • Sample preservation shelf • Fridge	10	500
Barabani	01	Govt.	100	• Disease Diagnosis., Soil testing	15	800
Purba Bardhaman	1	Govt.	100	• Soil testing kit • Refrigerated Sample preservation system • Training hall along with Sitting arrangement • Ssound system, audio-visual facility	15	500
Faridpur-Durgapur	2	Govt.	15000	• Disease diagnosis • Soil Testing	30	1000
Galsi-I	01	Govt.	75	• Quick soil testing • Reagents • Testing apparatus including glass wares • Computer accessories • Training hall with audio visual sets	15	500
Galsi-II	01	Govt.	50	• Testing apparatus including glass wares • Reagents • Quick soil testing with • Training hall with audio visual sets • 5. Computer accessories	12	500
Jamalpur	2	Govt./ Non Govt.	2000	• Infrastructure	40.00	500
Jamuria – I	01	Govt.	100	• Disease Diagnosis, • Soil testing	15	800
Jamuria – II	01	Govt.	100	• Disease Diagnosis,	15	800

				• Soil testing		
Kalna-I	1	Govt./ Non Govt.	100	• Power point presentation • Sitting arrangements of 100 farmers • Soil testing	30.0	100
Kalna-II	1	Non-Govt.	100	• Power point presentation • Sitting arrangements of 100 farmers • Soil testing • Canteen	20.00	100
Kanksa	01	Govt.	100	• Testing apparatus, reagents, soil testing kits, training hall with AV aids.	15	800
Katwa-I	01	Govt	100		15	1000
Katwa-II	4	Govt.	700	New	60	100
Ketugram-I	1	Govt.			15	200
Khandaghosh	1	Govt.	50	• Quick Soil testing kit • Training hall • Sitting arrangement • Mirophone facility • Laptop, • Projector • Projectoreen • Sample preservation shelf • Refrigerator	10	450
Memari-I	1	Govt.	50	• Quick Soil testing kit • Training hall • Sitting arrangement • Mirophone facility • Laptop Projector • Screen • Sample preservation shelf • Refrigerator	10	500
Mongalkote	1	Govt.	200	• Disease Centre	2.00	50
Monteshwar	4	Govt./Non-Govt	500	• New Building, • Bio-Fertilizer • unit, Soil • Testing • Laboratory, • High tech Farm • Machinery, • Plant • Pathological • laboratory, • Contractual person	70	600
Purbasthali-I	2	Govt.	4000	• R.C.C., Lab, Manpower, Kits etc.	70	1500
Raina-I	1	Govt.	50	• Quick Soil testing kit • Training hall	10	450

				• Sitting arrangement • Mirophone facility • Laptop, Projector Projectoreen • Sample preservation shelf • Refrigerator		
Raina-II	1	Govt.	50	• Quick Soil testing kit • Training hall • Sitting arrangement • Mirophone facility • Laptop, Projector Projectoreen • Sample preservation shelf • Refrigerator	10	450
Total	**33**		**23685**		**524**	**13200**

Table 4.19. Planning for Farmers Training Programme Related to Agriculture and Allied Departments in block

Name of Block	**Name of technologies to be transferred**	**No of farmers to be trained and fund requirement***					
		2017-18		**2018-19**		**2019-20**	
		Phy	**Fin**	**Phy**	**Fin**	**Phy**	**Fin**
Aushgram-I	Zero tillage	1500	4.5	2000	6	4500	13.5
	SRI	1500	4.5	2000	6	4500	13.5
	Alternate crop	1500	4.5	2000	6	4500	13.5
	Introduction of Mechanised agriculture	1500	4.5	2000	6	4500	13.5
	Drum Seeder	1500	4.5	2000	6	4500	13.5
	Mixed Farming Technique	1000	3	1500	4.5	4000	12
	Organic Farming	1500	4.5	2000	6	4000	12
Ausgram-II	SRI	800	2.4	800	2.4	2200	6.6
	Drum Seeder	600	1.8	800	2.4	1800	5.4
	Zero Tillage	1000	3	1000	3	2800	8.4
	Vermi compost	400	1.2	400	1.2	1200	3.6
Bhatar	Zero tillage	3000	9	4000	12	9000	27
	SRI	3000	9	4000	12	9000	27
	Alternate crop	3000	9	4000	12	9000	27
	Introduction of Mechanised agriculture	3000	9	4000	12	9000	27
	Drum Seeder	3000	9	4000	12	9000	27
	Mixed Farming Technique	2000	6	3000	9	8000	24
Purba Bardhaman	Zero tillage	1500	4.5	2000	6	4500	13.5
	SRI	1500	4.5	2000	6	4500	13.5
	Alternate crop	1500	4.5	2000	6	4500	13.5
	Introduction of Mechanised agriculture	1500	4.5	2000	6	4500	13.5
	Drum Seeder	1500	4.5	2000	6	4500	13.5

	Mixed Farming Technique	1000	3	1500	4.5	4000	12
	Organic Farming	1500	4.5	2000	6	4000	12
Galsi-I	SRI	250	0.75	600	1.8	1000	3
	Zero Tillage	250	0.75	600	1.8	1,000	3
	Crop diversification	250	0.75	600	1.8	1,000	3
	Agriculture Mechanization	1000	3	2000	6	3500	10.5
	Integrated Farming	100	0.3	200	0.6	350	1.05
	Alternate crop nutrients	200	0.6	500	1.5	800	2.4
	Organic farming	100	0.3	200	0.6	350	1.05
Galsi-II	SRI	200	0.6	500	1.5	800	2.4
	Zero Tillage	200	0.6	500	1.5	800	2.4
	Crop diversification	200	0.6	500	1.5	800	2.4
	Agriculture Mechanization	1000	3	2000	6	3500	10.5
	Integrated Farming	100	0.3	200	0.6	350	1.05
	Alternate crop nutrients	200	0.6	500	1.5	800	2.4
	Organic farming	100	0.3	200	0.6	350	1.05
Jamalpur	Zero Tillage in paddy	200	0.6	200	0.6	500	1.5
	SRI	150	0.45	200	0.6	450	1.35
	Potato Seed Production	300	0.9	400	1.2	900	2.7
	Poly house cultivation	100	0.3	100	0.3	250	0.75
	Low cost Storage	100	0.3	200	0.6	350	1.05
	Off season vegetable production	200	0.6	300	0.9	650	1.95
	Kharif Onion	100	0.3	200	0.6	350	1.05
Kalna-I	One day training on IPM	250	0.75	250	0.75	750	2.25
	One day training on INM	250	0.75	250	0.75	750	2.25
	One day training on Seed production technology	250	0.75	250	0.75	750	2.25
	One day training on horticultural nursery management	100	0.3	100	0.3	300	0.9
	One day training on improved dairy management for increase milk production	250	0.75	250	0.75	600	1.8
	Composite fish culture for better utilisation of pond	250	0.75	250	0.75	600	1.8
Kalna-II	INM	250	0.75	250	0.75	750	2.25
	IPM	250	0.75	250	0.75	750	2.25
	Nursery	100	0.3	100	0.3	300	0.9
	Mushroom Prep. Tech.	100	0.3	100	0.3	300	0.9
	Fish seed hatcheries	250	0.75	250	0.75	750	2.25
	A.I. of cows	250	0.75	250	0.75	750	2.25
	Vaccination of Poultry	250	0.75	250	0.75	750	2.25
Katwa-I	SRI	500	1.5	600	1.8	1350	4.05
Katwa-II	Microfinance related to	420	1.26	420	1.26	630	1.89

	Agriculture						
	Production Synchronise with demand of market	420	1.26	420	1.26	420	1.26
	Diversification of production price & market	420	1.26	420	1.26	420	1.26
	BPL (Boyler, Poultry, Lactiferous)	420	1.26	420	1.26	420	1.26
Ketugram-I	SRI	100	0.3	100	0.3	250	0.75
	Drum seeder	100	0.3	100	0.3	250	0.75
	Organic farming	100	0.3	100	0.3	250	0.75
	IPM	100	0.3	100	0.3	250	0.75
	Vermicompost	100	0.3	100	0.3	300	0.9
	INM	100	0.3	100	0.3	250	0.75
Ketugram-II	Seed production Technologist	150	0.45	180	0.54	420	1.26
	IPM	120	0.36	150	0.45	330	0.99
	INM	120	0.36	180	0.54	360	1.08
	SRI	120	0.36	180	0.54	360	1.08
	Organic farming	150	0.45	180	0.54	420	1.26
	Crop diversification	120	0.36	180	0.54	360	1.08
	Vermicompost Production	120	0.36	180	0.54	390	1.17
Khandaghosh	SRI	1500	4.5	2000	6	4500	13.5
	Zero tillage	1500	4.5	2000	6	4500	13.5
	Alternate crop	1500	4.5	2000	6	4500	13.5
	Introduction of Mechanised agriculture	1500	4.5	2000	6	4500	13.5
	Drum Seeder	1500	4.5	2000	6	4500	13.5
	Mixed Farming Technique	1000	3	1500	4.5	4000	12
	Organic Farming	1500	4.5	2000	6	4000	12
Memari-I	IPM	50	0.15	50	0.15	50	0.15
	SRI	1500	4.5	2000	6	4500	13.5
	Alternate crop	1500	4.5	2000	6	4500	13.5
	Introduction of Mechanised agriculture	1500	4.5	2000	6	4500	13.5
	Drum Seeder	1500	4.5	2000	6	4500	13.5
	Mixed Farming Technique	1000	3	1500	4.5	4000	12
	Organic Farming	1500	4.5	2000	6	4000	12
Memari-II	Zero tillage	3000	9	4000	12	9000	27
	SRI	3000	9	4000	12	9000	27
	Alternate crop	3000	9	4000	12	9000	27
	Introduction of Mechanised agriculture	3000	9	4000	12	9000	27
	Drum Seeder	3000	9	4000	12	9000	27
	Mixed Farming Technique	2000	6	3000	9	8000	24
Mongalkote	Drum Seeder	100	0.3	50	0.15	250	0.75

	Zero tillage	50	0.15	100	0.3	200	0.6
	Goatery	100	0.3	100	0.3	250	0.75
	Fishery	100	0.3	100	0.3	250	0.75
	Floriculture	50	0.15	50	0.15	150	0.45
Monteshwar	SRI, IPM. INM, Drup Seeder, Zero Tillage, Organic Farming	2000	6	2500	7.5		0
Purbasthali-I	S.R.I	150	0.45	150	0.45	450	1.35
	Drum Seeder	60	0.18	60	0.18	180	0.54
	Seed Treatment	150	0.45	150	0.45	450	1.35
	Green House	90	0.27	90	0.27	240	0.72
	Soil Health Management	180	0.54	180	0.54	510	1.53
	Bio- Fertilizer & Bio-Pesticide use	150	0.45	150	0.45	420	1.26
	Drip Irrigation	60	0.18	60	0.18	180	0.54
	Agro Shed Net & Poly culture of horticultural crops	90	0.27	90	0.27	270	0.81
	Zero Tillage	30	0.09	30	0.09	90	0.27
Purbasthali-II	One day training on 1PM	250	0.75	250	0.75	250	0.75
	One day training on INM	250	0.75	250	0.75	250	0.75
	One day training on Seed production technology	250	0.75	250	0.75	250	0.75
	One day training on horticultural nursery management	100	0.3	100	0.3	100	0.3
	One day training on improved dairy management for increase milk production	250	0.75	250	0.75	250	0.75
	Composite fish culture for better utilisation of pond	250	0.75	250	0.75	250	0.75
Raina-I	Zero tillage	1500	4.5	2000	6	4500	13.5
	SRI	1500	4.5	2000	6	4500	13.5
	Alternate crop	1500	4.5	2000	6	4500	13.5
	Introduction of Mechanised agriculture	1500	4.5	2000	6	4500	13.5
	Drum Seeder	1500	4.5	2000	6	4500	13.5
	Mixed Farming Technique	1000	3	1500	4.5	4000	12
	Organic Farming	1500	4.5	2000	6	4000	12
Raina-II	Zero tillage	1000	3	1500	4.5	3000	9
	SRI	1500	4.5	2000	6	4500	13.5
	Alternate crop	1500	4.5	2000	6	4500	13.5
	Introduction of Mechanised agriculture	1500	4.5	2000	6	4500	13.5
	Drum Seeder	1500	4.5	2000	6	4500	13.5
	Mixed Farming Technique	500	1.5	500	1.5	4000	12
	Organic Farming	1500	4.5	2000	6	4000	12
Total		**110840**	**332.52**	**149370**	**448.11**	**330670**	**992.0**

*(Phy. in no. and fin. in lakh Rs.)

Total financial requirement for capacity building programme in 3 years = (332.52 + 448.11 +992.01) lakh = 1772.64

Table 4.20. Planning of Agriculture Inputs in the District – Seed

Block Name	Name of the Crop	Area under Crop (ha)	Present SRR	Target SRR
Aushgram-I	Paddy Kharif	16000	25	33
	Boro Paddy	3000	50	65
	Potato	3000	70	91
Aushgram-II	Paddy	22000	25	33
	Potato	850	20	26
Bhatar	Paddy Kharif	30000	25	33
	Boro Paddy	20000	80	104
	Potato	1300	90	117
	Mustard	1200	70	91
Purba Bardhaman	Paddy Kharif	31600	30	39
	Boro Paddy	16500	60	78
	Potato	4600	50	65
	Mustard	200	30	39
Galsi-I	1.Kharif Paddy	17000	20	26
	2.Boro Paddy	13000	40	52
Galsi-II	1.Kharif Paddy	17000	20	26
	2.Boro Paddy	9000	50	65
Kalna-I	Paddy	8700	50	65
	Potato	4900	75	98
	Mustard	750	80	104
	Jute	1200	100	130
Kalna-II	Aman Paddy	12400	50	65
	Boro Paddy	5200	70	91
	Potato	5800	60	78
	Jute	550	100	130
	Onion	500	60	78
Katwa-I	Paddy	15535	02	3
	Mustard	975	0.4	1
	Sesame/Til	640	0.1	0
	Lentil	132	0.2	0
Ketugram-II	Aus Paddy	500	10	13
	Aman Paddy	10500	12	16
	Boro Paddy	9000	15	20
	Mustard	500	50	65
	Till	400	25	33
	Pulses	350	40	52
	Sugarcane	250	0.2	0
Khandaghosh	Paddy Kharif	18500	25	33

	Boro Paddy	5000	55	72
	Potato	5000	70	91
Memari-I	Paddy Kharif	16500	25	33
	Boro Paddy	10000	55	72
	Potato	9000	70	91
Mongalkote	Aman Paddy	100	35	46
	Pulse & oilseeds	100	40	52
Monteshwar	Aman Paddy	22000	60	78
	Boro Paddy	18000	70	91
	Mustard	2300	70	91
Purbasthali-I	Aman Paddy	8518	54	70
	Boro Paddy	4450	65	85
	Jute	2450	89	116
	Potato	1450	42	55
	Til	630	40	52
	Mustard	1790	45	59
	Onion	725	86	112
Purbasthali-II	Paddy	10750	50	65
	Potato	1200	75	98
	Mustard	3400	80	104
	Jute	4000	100	130
	Vegetables	13000	80	104
Raina-I	Paddy Kharif	21300	25	33
	Boro Paddy	6000	25	33
	Potato	5000	70	91

SRR – Seed Replacement Rate

Table 4.21. IPM Demonstrations in 3 years

Block	Name of crop	Present Area under IPM (ha)	IPM Demonstration Projections					
			2017-18		2018-19		2019-20	
			Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
Aushgram-I	Potato	100	50	2	60	2.4	66	2.64
	Paddy	200	100	4	120	4.8	132	5.28
	Mustard	10	5	0.2	6	0.24	6.6	0.26
Aushgram-II	Aman Paddy	200	100	4	120	4.8	132	5.28
	Mustard	50	25	1	30	1.2	33	1.32
	Potato	100	50	2	60	2.4	66	2.64
Bhatar	Paddy	400	200	8	240	9.6	264	10.56
	Mustard	10	5	0.2	6	0.24	6.6	0.26
Bardhaman Sadar	Potato	10	5	0.2	6	0.24	6.6	0.26
	Paddy	20	10	0.4	12	0.48	13.2	0.53
	Mustard	5	2.5	0.1	3	0.12	3.3	0.13
Galsi-I	Potato	140	70	2.8	84	3.36	92.4	3.70
	Paddy	200	100	4	120	4.8	132	5.28

	Mustard	10	5	0.2	6	0.24	6.6	0.26
Galsi-II	Potato	100	50	2	60	2.4	66	2.64
	Paddy	200	100	4	120	4.8	132	5.28
	Mustard	10	5	0.2	6	0.24	6.6	0.26
Jamalpur	Aman Paddy	0	10	0.4	12	0.48	13.2	0.53
	Boro Paddy	0	10	0.4	12	0.48	13.2	0.53
	Potato	0	10	0.4	12	0.48	13.2	0.53
	Mustard	0	10	0.4	12	0.48	13.2	0.53
	Til	0	10	0.4	12	0.48	13.2	0.53
Kalna-I	Pulse	1	0.5	0.02	0.6	0.024	0.66	0.03
Kalna-II	Aman Paddy	150	75	3	90	3.6	99	3.96
	Boro Paddy	100	50	2	60	2.4	66	2.64
	Potato	100	50	2	60	2.4	66	2.64
Katwa-I	Pulse & Oilseed	10	5	0.2	6	0.24	6.6	0.26
	Paddy	20	10	0.4	12	0.48	13.2	0.53
Katwa-II	Paddy	100	50	2	60	2.4	66	2.64
	Oil seed	50	25	1	30	1.2	33	1.32
	Pulse	20	10	0.4	12	0.48	13.2	0.53
Ketugram-I	Pulse	10	5	0.2	6	0.24	6.6	0.26
	Paddy	150	75	3	90	3.6	99	3.96
Ketugram-II	Oil Seed	20	10	0.4	12	0.48	13.2	0.53
	Paddy	300	150	6	180	7.2	198	7.92
	Pulses	100	50	2	60	2.4	66	2.64
Khandaghosh	Potato	100	50	2	60	2.4	66	2.64
	Paddy	200	100	4	120	4.8	132	5.28
	Mustard	10	5	0.2	6	0.24	6.6	0.26
Memari-I	Potato	100	50	2	60	2.4	66	2.64
	Paddy	200	100	4	120	4.8	132	5.28
	Mustard	10	5	0.2	6	0.24	6.6	0.26
Memari-II	Paddy	400	200	8	240	9.6	264	10.56
	Mustard	10	5	0.2	6	0.24	6.6	0.26
Mongalkote	Aman Paddy	100	50	2	60	2.4	66	2.64
Monteshwar	Paddy	90	45	1.8	54	2.16	59.4	2.38
Purbasthali-I	Paddy	150	75	3	90	3.6	99	3.96
	Lentil	18	9	0.36	10.8	0.432	11.88	0.48
	Til	30	15	0.6	18	0.72	19.8	0.79
	Jute	50	25	1	30	1.2	33	1.32
Raina-I	Potato	30	15	0.6	18	0.72	19.8	0.79
	Paddy	200	100	4	120	4.8	132	5.28
	Mustard	10	5	0.2	6	0.24	6.6	0.26
Raina-II	Potato	200	100	4	120	4.8	132	5.28
	Paddy	200	2	0.8	2.4	0.8	3	0.80
Total		**5004**	**2454**	**98.88**	**2944.8**	**118.50**	**3239.64**	**130.27**

(Phy – Area covered in ha.; Fin – Rs. In lakh)

Total fund requirement = (98.88+118.50+130.27) 347.64 lakh

Table 4.22. INM Demonstrations in 3 years

Block	Name of crop	Present Area under INM (ha)	IPM Demonstration Projections					
			2017-18		2018-19		2019-20	
			Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
Aushgram-I	Paddy	100	50	2	60	2.4	66	2.64
	Boro Paddy	100	50	2	60	2.4	66	2.64
	Potato	100	50	2	60	2.4	66	2.64
Aushgram-II	Aman	200	100	4	120	4.8	132	5.28
	Mustard	100	50	2	60	2.4	66	2.64
	Potato	300	150	6	180	7.2	198	7.92
Barabani	Paddy	300	150	6	180	7.2	198	7.92
Purba Bardhaman	Potato	150	75	3	90	3.6	99	3.96
	Paddy	250	125	5	150	6	165	6.60
	Mustard	100	50	2	60	2.4	66	2.64
Galsi-I	Paddy	100	50	2	60	2.4	66	2.64
	Boro Paddy	100	50	2	60	2.4	66	2.64
	Potato	100	50	2	60	2.4	66	2.64
Galsi-II	Paddy	200	100	4	120	4.8	132	5.28
	Boro Paddy	150	75	3	90	3.6	99	3.96
	Potato	130	65	2.6	78	3.12	86	3.43
Jamalpur	Aman Paddy	300	150	6	180	7.2	198	7.92
	Boro Paddy	150	10	0.4	12	0.48	13	0.53
	Potato	100	10	0.4	12	0.48	13	0.53
Kalna-I	Pulse	130	10	0.4	12	0.48	13	0.53
Kalna-II	Aman Paddy	300	10	0.4	12	0.48	13	0.53
	Boro Paddy	150	10	0.4	12	0.48	13	0.53
	Potato	100	50	2	60	2.4	66	2.64
Katwa-I	Paddy	200	100	4	120	4.8	132	5.28
	Pulse & Oilseed	200	100	4	120	4.8	132	5.28
Katwa-II	Paddy	150	75	3	90	3.6	99	3.96
	Oil seed	130	65	2.6	78	3.12	86	3.43
	Pulse	300	150	6	180	7.2	198	7.92
Ketugram-I	Lentil	50	25	1	30	1.2	33	1.32
Ketugram-II	Paddy	100	50	2	60	2.4	66	2.64
	Pulses	20	10	0.4	12	0.48	13	0.53
	Oil Seed	40	20	0.8	24	0.96	26	1.06
Khandaghosh	Paddy	100	50	2	60	2.4	66	2.64
	Boro Paddy	100	50	2	60	2.4	66	2.64
	Potato	100	50	2	60	2.4	66	2.64
Memari-I	Paddy	100	50	2	60	2.4	66	2.64
	Boro Paddy	100	50	2	60	2.4	66	2.64
	Potato	100	50	2	60	2.4	66	2.64
Memari-II	Paddy	100	50	2	60	2.4	66	2.64
	Boro Paddy	100	50	2	60	2.4	66	2.64
	Potato	50	25	1	30	1.2	33	1.32
Mongalkote	Aman Paddy	200	100	4	120	4.8	132	5.28

	Potato	120	60	2.4	72	2.88	79	3.17
Monteshwar	Paddy	500	250	10	300	12	330	13.20
Purbasthali-I	Paddy	600	300	12	360	14.4	396	15.84
	Lentil	18	9	0.36	10.8	0.432	12	0.48
	Til	20	10	0.4	12	0.48	13	0.53
	Jute	100	50	2	60	2.4	66	2.64
Purbasthali-II	Boro Paddy	250	125	5	150	6	165	6.60
	Pulse	140	70	2.8	84	3.36	92	3.70
	Til	80	40	1.6	48	1.92	53	2.11
Raina-I	Paddy	200	100	4	120	4.8	132	5.28
	Boro Paddy	100	50	2	60	2.4	66	2.64
	Potato	200	100	4	120	4.8	132	5.28
Raina-II	Paddy	100	60	0.8	72	0.8	79	0.80
	Boro Paddy	100	80	0.8	96	0.8	106	1.20
	Potato	100	100	0.8	120	0.8	132	0.80
Total		8378	3914	149.36	4696.8	178.75	5166	196.79

(Phy – Area covered in ha.; Fin – Rs. In lakh)

Total fund requirement = (149.36 +178.75+196.79) or 524.90 lakh

Table 4.23. Varietal Demonstration in 3 years

Block	Name of crop	Average Area per demon-stration (ha.)	Present Area under Varietal demon. (ha)	Varietal Demonstration Projection					
				2017-18		2018-19		2019-20	
				Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
Aushgram-I	Paddy	0.4	300	330	13.2	363	14.52	399	15.97
	Boro	0.4	200	220	8.8	242	9.68	266	10.65
	Onion	0.13	10	11	0.44	12	0.48	13	0.53
Aushgram-II	Aman Paddy	0.4	100	110	4.4	121	4.84	133	5.32
Bhatar	Paddy	0.4	150	165	6.6	182	7.26	200	7.99
	Boro	0.4	200	220	8.8	242	9.68	266	10.65
	onion	0.13	10	11	0.44	12	0.48	13	0.53
Purba Bardhaman	Paddy	0.4	1100	1210	48.4	1331	53.24	1464	58.56
	Potato	0.4	500	550	22	605	24.20	666	26.62
	Mustard	0.4	100	110	4.4	121	4.84	133	5.32
Galsi-I	Paddy (Aman)	0.4	200	220	8.8	242	9.68	266	10.65
	Paddy (Boro)	0.4	200	220	8.8	242	9.68	266	10.65
	Mustard	0.13	100	110	4.4	121	4.84	133	5.32
Galsi-II	Paddy (Aman)	0.4	400	440	17.6	484	19.36	532	21.30
	Paddy (Boro)	0.4	400	440	17.6	484	19.36	532	21.30
	Mustard	0.13	100	110	4.4	121	4.84	133	5.32
	Onion	0.26	5	5.5	0.22	6	0.24	7	0.27
Jamalpur	Paddy	0.4	300	330	13.2	363	14.52	399	15.97
	Boro Paddy	0.4	200	220	8.8	242	9.68	266	10.65
	Onion	0.13	5	5.5	0.22	6	0.24	7	0.27
	Til	0.13	40	44	1.76	48	1.94	53	2.13

Kalna-I	Paddy	0.4	100	110	4.4	121	4.84	133	5.32
	Mustard	0.13	100	110	4.4	121	4.84	133	5.32
	Lentil	0.13	50	55	2.2	61	2.42	67	2.66
	Sunflower	0.26	20	22	0.88	24	0.97	27	1.06
	Moong	0.13	50	55	2.2	61	2.42	67	2.66
	Groundnut	0.13	20	22	0.88	24	0.97	27	1.06
	Sesame	0.26	50	55	2.2	61	2.42	67	2.66
Kalna-II	Aman Paddy	0.8	100	110	4.4	121	4.84	133	5.32
	Boro Paddy	0.8	200	220	8.8	242	9.68	266	10.65
	Potato	0.4	300	330	13.2	363	14.52	399	15.97
	Kharif Onion	0.13	10	11	0.44	12	0.48	13	0.53
Katwa-I	Paddy	0.8	250	275	11	303	12.10	333	13.31
	Pulse	0.13	50	55	2.2	61	2.42	67	2.66
	Oilseed	0.13	100	110	4.4	121	4.84	133	5.32
Katwa-II	Paddy	0.8	300	330	13.2	363	14.52	399	15.97
	Jute	0.4	100	110	4.4	121	4.84	133	5.32
	Sugar cane	0.13	30	33	1.32	36	1.45	40	1.60
	Oil seed	0.26	80	88	3.52	97	3.87	106	4.26
	Pulse	0.13	60	66	2.64	73	2.90	80	3.19
Ketugram-I	PULSE	0.13	60	66	2.64	73	2.90	80	3.19
Ketugram-II	Paddy	0.4	500	550	22	605	24.20	666	26.62
	Pulse	0.13	100	110	4.4	121	4.84	133	5.32
Khandaghosh	Paddy	0.4	300	330	13.2	363	14.52	399	15.97
	Boro	0.8	200	220	8.8	242	9.68	266	10.65
	onion	0.13	10	11	0.44	12	0.48	13	0.53
Memari-I	Paddy	0.4	300	330	13.2	363	14.52	399	15.97
	Boro	0.8	200	220	8.8	242	9.68	266	10.65
	onion	0.13	10	11	0.44	12	0.48	13	0.53
Memari-II	Paddy	0.8	500	550	22	605	24.20	666	26.62
	Boro	0.8	500	550	22	605	24.20	666	26.62
	onion	0.26	10	11	0.44	12	0.48	13	0.53
Mongalkote	Aman Paddy	0.8	600	660	26.4	726	29.04	799	31.94
	Lentil	0.26	50	55	2.2	61	2.42	67	2.66
	Mustard	0.4	100	110	4.4	121	4.84	133	5.32
	Sesame	0.26	50	55	2.2	61	2.42	67	2.66
	Moong	0.13	25	27.5	1.1	30	1.21	33	1.33
Monteshwar	Boro+Aman Paddy	0.8	1000	1100	44	1210	48.40	1331	53.24
	Mustard	0.13	600	660	26.4	726	29.04	799	31.94
	Pulses	0.13	25	27.5	1.1	30	1.21	33	1.33
	Sesame	0.13	30	33	1.32	36	1.45	40	1.60
	Sunflower	1	10	11	0.44	12	0.48	13	0.53
Purbasthali-I	Paddy	0.8	300	330	13.2	363	14.52	399	15.97
	Ground Nut	1	20	22	0.88	24	0.97	27	1.06
	Til	1	14	15.4	0.616	17	0.68	19	0.75
	Jute	1	25	27.5	1.1	30	1.21	33	1.33
	Mustard	1	50	55	2.2	61	2.42	67	2.66
Purbasthali-II	Paddy	0.8	100	110	4.4	121	4.84	133	5.32
	Lentil	**0.4**	25	27.5	1.1	30	1.21	33	1.33

	Sunflower	0.8	15	16.5	0.66	18	0.73	20	0.80
	Moong	0.13	25	27.5	1.1	30	1.21	33	1.33
Raina-I	Paddy	0.8	300	330	13.2	363	14.52	399	15.97
	Boro	0.8	200	220	8.8	242	9.68	266	10.65
	onion	0.26	10	11	0.44	12	0.48	13	0.53
Raina-II	Paddy (A. Rice)	0.8	700	770	30.8	847	33.88	932	37.27
	Boro	1	200	220	8.8	242	9.68	266	10.65
Total			13754	15129	605	16644	666	18305	732

(Phy Area covered in ha) (Fin – Rs. In lakh)

Totl fund requirement = (605 +666 +732) lakh = 2003 lakh

Table 4.24. Farmers Field Schools Projection in 3 years

Block	Name of crop	2017-18		2018-19		2019-20	
		No. of FFS	No .of villages to be covered	No. of FFS	No. of villages to be covered	No. of FFS	No. of villages to be covered
Aushgram-I	Paddy	2	10	2	10	2	100
	Boro	1	10	1	10	1	50
	Potato	2	5	2	5	2	100
	Fish	2	5	2	5	2	100
	Animal Husbandry	2	4	2	4	4	100
Bhatar	Paddy	2	10	2	10	2	100
	Boro	1	10	1	10	1	50
	Potato	2	10	2	10	2	100
Purba Bardhaman	Paddy	4	8	6	8	4	16
	Potato	2	4	4	4	3	12
	Mustard	2	10	4	10	4	30
Galsi-I	Paddy	1	10	2	10	2	2
Galsi-II	Paddy	1	10	2	10	2	2
	Mustrad	1	5	1	5	2	1
Jamalpur	Aman Paddy	2	10	2	10	2	100
	Boro Paddy	1	10	1	10	1	50
	Potato	2	10	2	10	2	100
Kalna-I	Potato	1	7	1	7	2	1
	Paddy	1	8	1	8	1	1
Kalna-II	AmanPaddy	2	10	2	10	2	2
	Boro Paddy	2	10	2	10	2	2
	Potato	2	5	2	5	2	2
	Kharif Onion	2	5	2	5	2	2

Katwa-I	Paddy	0	10	1	10	1	2
	Pulse	1	5	1	5	2	2
	Oilseed	1	4	1	4	1	2
Katwa-II	Paddy	1	5	2	5	2	4
	Mustard	1	5	1	5	1	4
	Oil seed	1	5	1	5	1	4
Ketugram-I	PADDY	1	10	2	10	2	6
Ketugram-II	Paddy	2	10	3	10	3	2
	Pulse	2	10	3	10	3	3
	Oil seed	3	5	3	5	3	4
Khandaghosh	Paddy	2	4	2	4	2	100
	Boro	1	7	1	7	1	50
	Potato	2	4	2	4	2	100
	Fish	2	6	2	6	2	100
	Animal Husbandry	2	5	2	5	2	100
Memari-I	Paddy	2	5	2	5	2	100
	Boro	1	10	1	10	2	50
	Potato	2	10	2	10	2	100
	Fish	2	5	2	5	2	100
	Animal Husbandry	2	5	2	5	2	100
Memari-II	Paddy	2	10	2	10	2	100
	Boro	1	5	1	5	1	50
	Potato	2	10	2	10	2	100
Mongalkote	AmanPaddy	2	10	4	10	4	22
	Boro Paddy	1	7	2	7	2	15
Monteshwar	1	2	4		4	2	
Purbasthali-I	Aman Paddy	2	4	2	4	2	6
	Mustard	1	10	1	10	1	3
Purbasthali-II	Paddy	1	5	1	5	1	
Raina-I	Paddy	2	10	2	10	2	10
	Boro	1	5	1	5	2	5
	Potato	1	5	2	5	2	10
	Fish	2	10	2	10	2	10
	Animal Husbandry	2	10	2	10	2	10
Raina-II	Paddy	2	10	2	10	2	2
	Boro	1	10	1	10	1	1
	Potato	2	10	2	10	2	2
	Fish	2	5	2	5	2	2
	Animal Husbandry	2	5	2	5	2	2
Total		102	461	117	461	123	2306

Total fund requirement for FFS:

Fund requirement for one (1) FFS = 0.8 lakh

Total FFS planned in the plan = (102+117+123) = 342

Therefore, total fund requirement = 342 * 0.8 = 273.6 lakh

Table 4.25. Crop Diversification Plan in 3 years

Block	Existing Cropping Pattern 2015-16		Crop Diversification Proposed (Area in ha.)					
			2017-18		2018-19		2019-20	
	Crop Group	Area	Area under crop	Change in area with reference to 13-14 (+/-)	Area under crop	Change in area with reference to 13-14 (+/-)	Area under crop	Change in area with reference to 13-14 (+/-)
Aushgram-I	Paddy -potato -Til	3000	3200	200	3520	520	3168	168
	Paddy- Mustard -Til	1000	1200	200	1320	320	1188	188
	Paddy -potato -GN	100	150	50	165	65	148.5	48.5
	Paddy-paddy	7000	6500	-500	5850	-1150	5265	-1735
	Kh Veg- rabi Veg-summer veg	400	450	50	495	95	445.5	45.5
Aushgram-II	Rice- Mustard	1000	1200	200	1320	320	1188	188
	Rice- Potato	650	750	100	825	175	742.5	92.5
	Rice- Mustard-Veg	2000	2500	500	2750	750	2475	475
	Paddy- Lentil	1000	2000	1000	2200	1200	1980	980
	Rice	12000	8000	-4000	7200	-4800	6480	-5520
Bhatar	Paddy- Mustard -Paddy	1250	1000	-250	1100	-150	990	-260
	Paddy -potato -Paddy	1550	2000	450	2200	650	1980	430
	Paddy-Potato-Til	1400	1500	100	1650	250	1485	85
	Kh Veg- rabi Veg-summer veg	25	50	25	55	30	49.5	24.5
Purba Bardhaman	Aman paddy-Boro paddy	21000	15000	-6000	16500	-4500	14850	-6150
	Aman paddy-Mustard- Boro	3000	3500	500	3850	850	3465	465
	Aman paddy -Potato	2800	3000	200	3300	500	2970	170
	Kharif Veg- Rabi Veg	850	1000	150	1100	250	990	140

	Aman paddy - Potato- Til	800	1000	200	1100	300	990	190
	Aman Paddy- Rabi Veg.	700	900	200	990	290	891	191
	Kharif Veg.- Potato- Summer Veg.	700	900	200	990	290	891	191
	Aman paddy - Potato- Summer Veg.	500	90	-410	99	-401	89.1	-410.9
	Kharif Veg.- Potato- Til	200	500	300	550	350	495	295
Galsi-I	Paddy -potato - Til	7000	7500	500	8250	1250	7425	425
	Paddy- Mustard -Til	100	150	50	165	65	148.5	48.5
	Paddy -potato - GN	100	150	50	165	65	148.5	48.5
	Paddy-paddy	9000	7000	-2000	6300	-2700	5670	-3330
	Kh Veg- rabi Veg-summer veg	200	500	300	550	350	495	295
Galsi-II	Paddy -potato - Til	9000	9000	0	9900	900	8910	-90
	Paddy- Mustard -Til	100	200	100	220	120	198	98
	Paddy -potato - GN	100	200	100	220	120	198	98
	Paddy-paddy	7000	5000	-2000	4500	-2500	4050	-2950
	Kh Veg- rabi Veg-summer veg	400	500	100	550	150	495	95
Jamalpur	Paddy -potato - Til	10000	10500	500	11550	1550	10395	395
	Paddy- Mustard -Til	700	850	150	935	235	841.5	141.5
	Paddy -potato - GN	400	500	100	550	150	495	95
	Paddy-paddy	5000	3000	-2000	2700	-2300	2430	-2570
	Kh Veg- rabi Veg-summer veg	800	1000	200	1100	300	990	190
Kalna-I	Aman Paddy- Potato-Til	5500	4250	-1250	3825	-1675	3442.5	-2057.5
	Aman Paddy - Onion-Jute			0	0	0	0	0
	Aman Paddy- Mustard-Boro Paddy	6000	6200	200	6820	820	6138	138
Kalna-II	Aman Paddy			0	0	0	0	0
	Boro Paddy	120	200	80	220	100	198	78
	Potato			0	0	0	0	0
	Onion	100	200	100	220	120	198	98

	Jute			0	0	0	0	0
	Vegetables	5000	5200	200	5720	720	5148	148
Katwa-II	Cereal	5800	20	-5780	22	-5778	19.8	-5780.2
	Fibre crop	450	500	50	550	100	495	45
	Oil seed	550	55	-495	60.5	-489.5	54.45	-495.55
	Pulse crop	1400	1500	100	1650	250	1485	85
Ketugram-II	Onion	4000	2000	-2000	1800	-2200	1620	-2380
	Mustard	6000	2000	-4000	2200	-3800	1980	-4020
	Pulse	500	1000	500	1100	600	990	490
Khandaghosh	Paddy -potato -Til	500	1000	500	1100	600	990	490
	Paddy- Mustard -Til	11500	9000	-2500	8100	-3400	7290	-4210
	Paddy -potato -GN	500	550	50	605	105	544.5	44.5
	Paddy-paddy	800	1000	200	1100	300	990	190
	Kh Veg- rabi Veg-summer veg	505	1000	495	1100	595	990	485
	Paddy -Masoor	100	8900	8800	9790	9690	8811	8711
Memari-I	Paddy -potato -Til	5000	5200	200	5720	720	5148	148
	Paddy- Mustard -Til	1000	1200	200	1320	320	1188	188
	Paddy -potato -GN	500	750	250	825	325	742.5	242.5
	Paddy-paddy	5000	3000	-2000	2700	-2300	2430	-2570
	Kh Veg- rabi Veg-summer veg	700	1000	300	1100	400	990	290
Memari-II	Paddy -Paddy	1000	1200	200	1320	320	1188	188
	Paddy- Mustard -Paddy	2150	2100	-50	1890	-260	1701	-449
	Paddy -potato -Paddy	80	130	50	143	63	128.7	48.7
	Paddy-Potato-Til	9000	9500	500	10450	1450	9405	405
	Kh Veg- rabi Veg-summer veg	100	150	50	165	65	148.5	48.5
Mongalkote	Aman Paddy	100	150	50	165	65	148.5	48.5
	Boro Paddy	7000	5000	-2000	4500	-2500	4050	-2950
	Potato	400	500	100	550	150	495	95
Monteshwar	Boro Paddy - Aman Paddv	4000	3000	-1000	2700	-1300	2430	-1570
	Aman Paddy - Mustard	1250	1500	250	1650	400	1485	235
	Aman paddy-Potato	7000	7500	500	8250	1250	7425	425
	Aman Paddy - Sesame	1500	1750	250	1925	425	1732.5	232.5
	Aman Paddy - union	35	70	35	77	42	69.3	34.3

	Aman paddy-pulses	26800	20000	-6800	18000	-8800	16200	-10600
	Vegetables - other	15000	13000	-2000	14300	-700	12870	-2130
Purbasthali-I	Cereal Crops	6000	6000	0	6600	600	5940	-60
	Pulse Crop	19800	15000	-4800	13500	-6300	12150	-7650
	Oil Seed			0	0	0	0	0
	Fibre Crop	2400	2300	-100	2530	130	2277	-123
Purbasthali-II	Jute - Rice	900	1000	100	1100	200	990	90
	Jute - Onion	400	450	50	495	95	445.5	45.5
	Rice - Potato- Til	150	200	50	220	70	198	48
	Jute - Kalai - Rice			0	0	0	0	0
	Rice- Vegetable	45	80	35	88	43	79.2	34.2
	Jute - Vegetable/ Rabi crops	650	680	30	748	98	673.2	23.2
	Rice - Oil seed/Pulse -Rice	13210	8518	-4692	7666	-5544	6899.58	-6310.42
	Rice - Rice	935	450	-485	495	-440	445.5	-489.5
	Paddy -potato - Til	2515	2080	-435	2288	-227	2059.2	-455.8
	Paddy- Mustard -Til	2570	2450	-120	2695	125	2425.5	-144.5
	Paddy -potato - GN	400	450	50	495	95	445.5	45.5
	Paddy-paddy	500	550	50	605	105	544.5	44.5
	Kh Veg- rabi Veg-summer veg	1100	1200	100	1320	220	1188	88
Raina-II	Paddy -potato - Til	65	100	35	110	45	99	34
	Paddy- Mustard -Til	4000	4500	500	4950	950	4455	455
	Paddy -potato - GN	3000	3200	200	3520	520	3168	168
	Paddy-paddy	700	1000	300	1100	400	990	290
	Kh Veg- rabi Veg-summer veg	3000	2000	-1000	1800	-1200	1620	-1380

Table 4.26. Additional area to be brought / under Organic Farming in 2017-18 to 2019-20

Block	**Present area (2013-14) under Organic Farming (ha)**	**Year wise area to be brought under organic farming (ha)**			
		2017-18	**2018-19**	**2019-20**	**Total**
Aushgram-I	100	500	700	900	2100
Aushgram-II	25	35	100	150	285
Bhatar	610	5	10	15	30
Purba Bardhaman	50	100	200	300	600
Galsi-I		10	20	50	80
Galsi-II		10	20	50	80

Jamalpur	100	300	500	700	1500
Kalna-I		15	20	25	60
Katwa-I	03	5	7	10	22
Katwa-II		2	3	4	9
Ketugram-I	3	5	6	10	21
Ketugram-II	10	100	200	300	600
Khandaghosh	100	500	700	900	2100
Memari-I	100	500	700	900	2100
Memari-II	500	10	10	15	35
Mongalkote		50	100	200	350
Monteshwar		5	**10**		
Purbasthali-I		25	40	100	**165**
Purbasthali-II		**10**	15	25	
Raina-I	200	300	400	600	1500
Raina-II		50	70	100	220
Total	**1801**	**2537**	**3831**	**5354**	**11857**

Additional proposed activities and fund requirement therein for RKVY support are as below,

Table 4.27. Production Growth sector

Block Name	Activity proposed	Target					
		2017-18		2018-19		2019-20	
		Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
Aushgram-I	Demonstration of medium or early rice		0	20	0.8	20	0.8
	Demonstration of zero tillage machine in rice		0	10	0.4	10	0.4
	Demonstration of zero tillage machine in wheat		0	10	0.4	10	0.4
	Hybrid maize seed production	10	0.4	5	0.2	5	0.2
	Hybrid sunflower seed production	10	0.4	2	0.08	2	0.08
	Demonstration of traditional rice (30 varieties)	20	0.8	2	0.08	2	0.08
	Demonstration on hybrid rice	10	0.4	10	0.4	10	0.4
	Kharif Onion demonstration		0	10	0.4	10	0.4
	Demonstration of maize based on nutrient expert system	25	1	15	0.6	15	0.6
	Demonstration of wheat based on nutrient system		0	15	0.6	15	0.6
	Demonstration of rice based on nutrient system		0	10	0.4	10	0.4
Aushgram-II	Demonstration of rice of different traditional varieties.		0	20	0.8	20	0.8
	Demonstration of innovative technology like zero tillage		0	25	1	25	1
	Demonstration of seed production	20	0.8	20	0.8	20	0.8
	Demonstration of potato seed		0	10	0.4	10	0.4

	Demonstration of scented rice		0	25	1	25	1
	Construction of germplasm demonstration unit		0	10	0.4	10	0.4
	Soil health testing kit	50	2	20	0.8	20	0.8
	Demonstration of sprinkler and drip irrigation	10	0.4	10	0.4	10	0.4
	Demonstration of rice mini harvester		0	10	0.4	10	0.4
	Demonstration of hybrid rice		0	20	0.8	20	0.8
Bhatar	Hybrid rice demonstration		0	20	0.8	20	0.8
	Aromatic rice demonstration		0	20	0.8	20	0.8
	Seed village		0	10	0.4	10	0.4
	Mechanical controlled demonstration		0	10	0.4	10	0.4
Purba Bardhaman	HYV paddy demonstration with new variety		0	20	0.8	20	0.8
	Demonstration of sunflower, groundnut		0	20	0.8	20	0.8
	Implement hub		0	2	0.08	2	0.08
	Demonstration on organic farming		0	20	0.8	20	0.8
	Subsidy for farm mechanization	1	0.04	1	0.04	1	0.04
Galsi-I	Agriculture mechanization		0		0		0
	IFS	5	0.2	15	0.6	15	0.6
	Demonstration of organic farming		0	15	0.6	15	0.6
Galsi-II	Aromatic rice demonstration		0		0		0
	Sesame demonstration	100	4	20	0.8	20	0.8
	Lentil demonstration	50	2	50	2	50	2
	Groundnut demonstration		0	10	0.4	10	0.4
Jamalpur	Implement hub		0		0		0
	Soil testing lab		0		0		0
	Food processing unit		0	1	0.04	1	0.04
	Demonstration unit		0	20	0.8	20	0.8
	Exposure visit	1	0.04	5	0.2	5	0.2
	Model village		0	1	0.04	1	0.04
Kalna-I	Sesame demonstration	50	2	15	0.6	15	0.6
	Aromatic rice demonstration		0	15	0.6	15	0.6
	Mustard demonstration		0	15	0.6	15	0.6
	Demonstration of pulses and oilseeds		0	15	0.6	15	0.6
	Agricultural mechanization		0	1	0.04	1	0.04
	Development of rainfed farming system		0	10	0.4	10	0.4
	Organic manure		0		0		0
	Cultivation of horticulture crops	10	0.4	15	0.6	15	0.6
Katwa-I	Sesame demonstration	10	0.4	20	0.8	20	0.8
	Lentil demonstration		0	20	0.8	20	0.8
Ketugram-I	Zero tillage in rice		0	5	0.2	5	0.2
	Drum seeder D/C	10	0.4	10	0.4	10	0.4
	D/C on dhaincha		0	15	0.6	15	0.6
	Kharif onion D/C		0	1	0.04	1	0.04
	Soil health card	100	4	20	0.8	20	0.8
Khandaghosh	Lentil demonstration		0	20	0.8	20	0.8
	Sesame demonstration		0	15	0.6	15	0.6

Memari-I	D/C on scented rice		0	10	0.4	10	0.4
	D/C on hybrid rice		0	20	0.8	20	0.8
	D/C on off season vegetable		0	25	1	25	1
	Seed village		0	20	0.8	20	0.8
	Seed village of potato		0	5	0.2	5	0.2
	Organic farming		0	5	0.2	5	0.2
	D/C on groundnut		0	20	0.8	20	0.8
	D/C on mixed farming		0	5	0.2	5	0.2
	D/C on lentil		0	20	0.8	20	0.8
Memari-II	Mustard demonstration		0	20	0.8	20	0.8
	Pulse demonstration		0	20	0.8	20	0.8
	Sesame demonstration		0	25	1	25	1
Mongalkote	HRD training for extension officials	2	0.08	2	0.08	2	0.08
Monteshwar	Compact area demonstration/ area expansion in paddy		0	25	1	25	1
	Compact area demonstration in mustard and other oil seed		0	25	1	25	1
	Compact area demonstration in pulses		0	25	1	25	1
	Compact area demonstration in aromatic rice		0	20	0.8	20	0.8
	Compact area demonstration in maize		0	20	0.8	20	0.8
Purbasthali-II	D/C on dhaincha		0	20	0.8	20	0.8
	Bio-control of pest and insects	2	0.08	2	0.08	2	0.08
	D/C on jute ribboning		0	1	0.04	1	0.04
	D/C on microbial jute retting		0	20	0.8	20	0.8
Raina-I	Lentil demonstration		0	25	1	25	1
Raina-II	Demonstration		0	10	0.4	10	0.4
	Leaflet	10	0.4	10	0.4	10	0.4
	Green house		0	1	0.04	1	0.04
	Model village		0	2	0.08	2	0.08
	Seed village of aromatic rice		0	6	0.24	6	0.24
Total		506	20.24	1120	44.8	1120	44.8

(Phy. in ha. and Fin. in Lakh)

Total fund requirement for other activities = (20.24+44.8+44.8) lakh = 109.84 lakh

Table 4.28. Infrastructure and assets sector

Block	Activity proposed	Target					
		2017-18		2018-19		2019-20	
		Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
Aushgram-I	Training hall			1	20		
	Pest and disease monitoring system through ICT			1	10		
	Information Kiosk			1	2.5	1	2.5
	Infrastructure of ADA office				10		
	Soil testing lab and pest & disease diagnostic center			1	20		
	Green house & poly house for vegetables			2	25	1	12.5
	Implement hub			2	30		
	Improved godown for BSF			1	20		
	Multipurpose cold storage					2	20
Aushgram-II	Plant health clinic			1	10		
	Soil health clinic			1	10		
	IT support system					1	20
	Weather forecasting support system			1	10		
	Implement hub at farmers level			1	50		
	Seed processing unit			1	20		
	Seed storage godown					1	10
Bhatar	Boundary wall			1	40		
	Office building			1	30		
	Godown			2	5	2	5
	Soil testing lab			1	5		5
	Meeting hall			1	10		
	Implement hub					1	30
	IT facility				5		
	Man power at field level			2	10		
Purba Bardhaman	Construction of office building at block level			1	50		
	ICT infrastructure at ADA office		5		2		2
	Setting up of soil testing lab & diagnostic lab with PPP mode			2	20		
	Vermicompost unit	4	4	10	10	15	15
	Green house/poly house	2	20	4	40	6	60
	Mobility support	1	3	1	3.5	1	4
	Mobile agriculture extension van			2	50		
	Well equipped training hall for extension			1	20		
Galsi-I	Boundary wall				50		
	Godown						20
	Mobility support by hired vehicle						3

Galsi-II	Establishment of block level krishi bhavan including new furnished training hall, seed godown etc					1	50
Jamalpur	ADA office with godown			1	50		
	Training hall			1	30		
	Video conferencing	1	5				
Kalna-I	Office of ADA with training hall with hundred sitting capacity and seed godown with 500 MT capacity			1	50		
	Desktop, printer, laptop			1	3		
	Photocopy machine			1	2		
	Steel file/instrument cabinet			1	0.5		
Katwa-I	Establishment of ADA office, training hall.			1	50		
	Godown.			2	20	2	20
	Computer	2	1				
	Jumbo Xerox	1	1				
	Printer	3	1.5				
	Projector	1	1.5				
	Scanner	1	0.5				
Ketugram-I	Expansion of ADA office			1	50		
	Approach road to ADA and BSF office				40		
	Boundary wall						50
	Training hall						20
	Godown			1	20		
	Soil testing lab			1	20		
	Information Kiosk			1	2.5		
Khandaghosh	HRD training			2	2	2	2
	Management training			1	2	1	2
	Information Kiosk			2	5	2	5
	Establishment of ADA office with training center with godown			1	50		50
	Xerox/fax machine			1	1		
	Laptop/Tablet PC			1	1		
Memari-I	Boundary wall					1	50
	Boundary wall of BSF, Memari –I					1	50
	Seed godown			1	30		
	Fertilizer godown			1	20		
	Telecommunication				10		
	Information Kiosk			1	2.5		
	Training hall			1	50	1	25
Memari-II	Establishment of ADA office at block level			1	20		
	Establishment of farmers training hall at block block level			1	25		

	Projector	1	1.5				
	Desktop	1	0.5				
	Xerox	1	1				
Mongalkote	Training meeting hall with 50 sitting capacity			1	20.5		20.5
	ADA office cum demonstration component godown (500 MT)			1	50		
Monteshwar	Establishment of block krishi bhavan					1	50
	Establishment of boundary wall in block seed farm				20		
	Establishment of irrigation channel in block seed farm				10		
	ICT facilities at block level		5				
	Training hall at block level			1	10		
	Seed and Input godown					1	15
	Establishment of mustard / sunflower extraction mill			1	10		
	Establishment of dal mill			1	10		
	Implement hub at G.P. level			4	40	5	50
Purbasthali-II	Boundary wall of BSF				50		50
	Boundary wall of ADA office				40		40
	Godown				20		20
	Training hall			1	20		
	Soil testing lab			1	20		
	Furniture of ADA office				5		
	Projector, scanner cum printer			1	2		
	ADA office infrastructure				5		
	Conditional seed godown					1	70
Raina-II	Office building			1	40		
	Godown					1	30
	Training hall			1	10		
	Video conferencing					1	1
	Farm boundary wall					1	60
	AFM office			1	20		
	Farm godown					1	30
	Pump house			1	2		
	Covered threshing floor			2	2		
	IT facilities				2		2
Total		19	50.5	88	1553	54	971.5

(Phy. in nos. and Fin. in Lakh)

Total fund requirement for other activities = (50.5+1583+971.5) lakh = 2605 lakh

Apart from these regular activities, few innovative programme to be undertaken, e.g. information kiosk at ADA office/model village, soil health card, multi component integrated farming system, climate resilient programmes, protection of plant varieties, identification and

promotion of farmers innovation, farmer-farmer technology dissemination etc. for meeting the projected growth target in the XIIth plan. These are enumerated below, blockwise,

Table 4.29. Innovative programme to be undertaken

Name of Blocks	Proposed Programmes	Fund required (Lakh)
Kalna-1	Information Kiosk for providing weather data/pest disease information and marketing information	5.00
	Setting up of implement hub on PPP mode – 3 nos.	25.00
	Setting up of soil testing labs at block level	5.00
	Plant disease diagnostic centre at block level	10.00
	Setting up of vermicompost production unit on individual farm – 50 nos @ Rs.60,000/- each	30.00
	To organize exposure visit/study tour within district and outside district at 10 nos. per year (at least 50 farmers per time)	5.00
Purba Bardhaman sadar	Information Kiosk at ADA office – 1 no.	2.50
	Information Kiosk at G.P office and model village – 20 nos.	50.00
	Pest & disease warning system	10.00
	Cold chain facilities	20.00
	Soil health card	10.00
	Germplasm presentation of indigenous varieties	10.00
Galsi-II	ICT based Kiosk at ADA office/GP level	5.00
	Pest and disease warning system (SMS based recommendation)	5.00
	Introduction of pulse mill (Dall mill) (2 Nos.)	5.00
	Cold chain facility for marketing of vegetables and flowers	10.00
	Renovation and re-excavation of "Bhuri Bill" to get rid of inundation problem at Galsi-II block	500.00
	Mobile agriculture extension vehicle`	20.00
Raina –I	Implement hub	10.00
	Dal Mill	5.00
	Information Kiosk	5.00
	Combined harvester	10.00
	Soil health card	5.00
	Mobile extension van	10.00
Memari – II	Information Kiosk 2 Nos. (ADA office & model village)	5.00
	Soil health card and soil testing laboratory	5.00
	Exposure visit of farmers	5.00
	Seed village – 10 nos.	5.00
	Bio village – 2 Nos.	5.00
Katwa – I	Information Kiosk at ADA office	10.00
	Exposure visit of farmers within state and outside the state	5.00
	Soil testing laboratory	10.00
	Seed village – 4 nos.	2.00
Khandaghosh	Information Kiosk at ADA office, model village	10.00
	Multi component integrated farming system include vermin compost, organic manure production	5.00
	Protection of plant varieties by formation of seed bank by	10.00

	PPP mode	
	Identification and promotion of farmers innovation by awarding farmers for their innovative activities	2.00
	Farmer to farmer technology dissemination by arranging study tour, farmer's training programme etc.	10.00
Ausgram-I	Information Kiosk – 2 Nos. (Block office & Model village)	5.00
	Soil health card – soil testing lab	10.00
	Dal mills – 3 Nos at co-operative to increase area and quality of production	8.00
	Awareness about climate resilient agriculture and adoption of smart village, development of system to disseminate information on climate change to farmers	1.00
	Implement hub	20.00
	Laser land labeler with tractor	15.00
	Sunflower expulsion machine to increase the area of oil seed	10.00
	Maize sheller to promote maize grower farmers	5.00
	Mobile agriculture – extension school	50.00
Mongalkote	Information Kiosk at ADA office and 2 model villages, total 3 Nos.	5.00
	Soil health card at disease diagnostic centre	2.50
	Block plant museum for protection of plant varieties	2.50
	Farmers to farmers technology through 50 nos. farmers training meeting – 30 nos.	3.00
	Seed village and bio-village – 40 nos and 5 nos. respectively	6.00
Monteswar	ICT Kiosks at ADA office/PACs	2.00
	Mobile soil testing van	2.00
	Pest and disease diagnostic centre	2.00
	Exposure visit of farmers and extension personnel of block level	2.00
	Establishment of bio village	1.5
	Compact area demo of oilseeds and pulses	10.00
	Literature preparation and distribution on all types of scientific technologies	2.00
	Sunflower oil extraction mill	2.00
Ausgram-II	Information Kiosk at ADA office	2.50
	Single window polyclinics	10.00
	Plant protection support through SMS to the innovative farmers/SHG/Co-operatives/NGO etc.	2.00
	Farmers to farmers technology dissemination through exposure visit	2.50
	Farmer reward for innovative/outstanding activities	2.00
Raina – II	Information Kiosk at ADA office	10.00
	Plant health laboratory	5.00
	Climate resilient programmes	1.00
	Farmer to farmers technology dissemination	0.50
	Protection of aromatic varieties	1.00
	Farmers recognition	0.20
Jamalpur	Farmers to farmers technology dissemination	0.50

	Farmers recognition	0.20
	Plant health laboratory	5.00
	Information Kiosk at ADA office	10.00
	Climate resilient programme	0.50
	Model village	5.50
Bhatar	Information Kiosk at ADA office	10.00
	Establishment of plant protection clinic	15.00
	Establishment of soil testing lab	10.00
	Enforcement and extension of Matir-Shakti protect at all KPS level	5.00
	Model- village	10.00
	Climate resilient programme	
	Encourage the farmers innovation	5.00
	Farmers to farmers technology dissemination	2.00
Ketugram – I	Plant health clinic centre	3.00
	Soil health card	2.00
	Climate resilient programme like SRI programme	2.00
	Farmers to farmers information technology dissemination	2.00
	Information Kiosk at ADA office	2.50
Purbasthali –II	Plant health diagnostic centre to be established	2.50
	Soil testing facilities to be extended by providing kits to some farmers groups after giving proper training	2.50
	Supplying microscope to the office of ADA for plant disease diagnosis	2.50
Galsi-I	Model village	5.00
	Information Kiosk	2.50
	Protection of plant varieties	2.00
Memari – I	Information Kiosk at ADA office and at least 2 small one in GP level	10.00
	Mobile soil testing lab (preliminary level) in every subdivision	10.00
	Enforcement and extension upto every GP level at Krishi Sakti Project	2.00
	Video conferencing unit at every block level telecalling unit in every subdivision level	5.00
	Model village	10.00
	Innovative farmers prize	0.50
	Agri poly clinic	2.00
	Model village	5.00
	Farmer to farmer technology dissemination (tours of farmers to after villages)	5.00
Total		**1221.4**

Agri Irrigation

The existing agri-irrigation facilities prevailing in the district is as follows,

Table 4.30. Block-wise statement on both surface water and ground water irrigation structure In the district of Purba Bardhaman

Name of Block	No. of RLI				NO. Of DTW (Figure in No.)				No. Of MDTW (Figure in No.)				No.of SDTW (Figure in No.)			
	Govt.	Private	Defunct	Area (in hect)	Govt.	Private	Defunct.	Area (in hect)	Govt.	Private.	Defunct	Area (in hect)	Govt.	Private.	Defunct	Area (in hect)
Bardhaman	7	25	1	560	21	-	4	660	1180	1000	12	4330	21	2200	6	2200
Ausgram-I	7	25	1	100	5	-	3	40	100	50	75	1500	4	310	4	620
AusgrarrHI	22	313	-	720	8	-	1	240	5	-	--	100	29	81	1	460
Bhatar	8	64	-	780	3	-	1	40	2940	1000	48	3900	41	1370	11	1370
Galsi-I	2	71	-	40	7	1	1	280	-	-	-	-	62	640	24	300
Galsi-ll	-	94	3	180	4	-	1	160	100	140	40	2100	-	1420	380	1700
Jamalpur	24	41	8	880	4	-	1	120	405	375	--	1760	6	2040	22	2000
Khandagho	1	-	1	-	30	-	-	450	-	-	--	-	43	1900	50	3000
Memari-I	3	~	-	60	14	-	-	350	200	85	--	1760	30	100	25	600
Memari-il	6	-	1	200	29	-	-	740	2	-	--	40	1	1200	25	3000
Raina-I	3	22	-	1000	50	-	-	840	800	50	65	2670	7	1560	240	5290
Raina-ll	5	-	-	400	40	3	1	740	-	-	-	-	7	1555	55	5590
Sub- div. Total	**86**	**584**	**15**	**4880**	**208**	**3**	**12**	**4380**	**5730**	**2703**	**240**	**18160**	**190**	**13736**	**818**	**25830**
Kalna-l	31	22	-	2480	40	3	1	1760	1	-	-	20	20	2007	7	4040
Kalna-ll	3	2	1	240	44	4	-	1680	2	-	-	40	143	1900	43	4160
Purbasthali-	52	14	-	3760	60	1	2	2240	-	-	-	-	7	1700	23	3500
Purbasthali-	13	73	*	2520	63	4	9	2280	2	-	-	40	55	3900	45	7820
Monteswar	19	20	1	1360	49	3	2	1480	-	-	-	-	6	2155	110	4280
Sub-Div. Total	**118**	**131**	**2**	**10360**	**256**	**15**	**13**	**9440**	**5**	**-**	**-**	**100**	**231**	**11620**	**228**	**23800**
Katwa-I	4	2	-	320	35	2	8	1680	2	-	-	40	9	863	20	1740
Katwa-I!	7	24	1	780	54	1	10	1400	2	-	-	40	4	650	-	1300
Ketugranv	4	92	3	480	14	-	-	70	1040	-	253	7880	38	880	10	1300
Ketugrarr	27	85	4	1880	28	1	11	800	13	-	3	260	40	760	-	1560
Mongalkot	4	138	1	7200	12	1	-	460	-	-	-	-	4	1700	26	3400
Sub.-Div. Total	46	**341**	9	10660	**143**	5	29	**4410**	1057	-	**256**	8220	95	**4853**	56	**9300**

Table 4.31. Proposal for new installation of irrigation facilities

Component of PMKSY	2017-18	2018-19	2019-20	Total (Lakh)
PMKSY (Har Khet Ko Pani)	3802.77	4182.98	4601.28	12587.03
PMKSY (Per Drop More Crop)	2490.96	2740.06	3315.47	8546.49
PMKSY (watershed development)	329.1	895.84	339.84	1564.78
Total PMKSY	**6622.83**	**7818.88**	**8256.59**	**22698.3**
MGNREGA	70.4	85.18	93.7	249.28

Total (PMKSY + MGNREGS)	**6693.23**	**7904.06**	**8350.29**	**22947.58**
Administrative cost 5%	322.17	451.59	543.5	1317.26
Grand Total	**7015.4**	**8355.65**	**8893.79**	**24264.84**

Total

Strengthening of Krishi Vigyan Kendra, Bud Bud

KVK Bud Bud is a multidisciplinary unit of scientist of agriculture and allied disciplines working towards economic upliftment of the Purba Bardhaman district with the prime mandates of,

- On-farm testing of agricultural technologies to identify its location –specificity under various farming systems
- Frontline demonstrations to establish its production potentials
- Training of farmers to update their knowledge and skills
- Training of extension personnel to orient them in the frontier areas of technology development
- Seed production of major crop/crops of the region

KVK is the principal extension wing of ICAR, Govt. of India and therefore strengthening of KVK has been identified as prime area under RKVY as per Planning Commission guidelines. Below is the outlined proposal of KVK strengthening under XIIth plan in RKVY,

Table 4.32. Plan for KVK, Bud Bud under RKVY from under production growth component

Sl. No.	Name of scheme / programme under production growth	Unit cost.	2017 - 2018		2018 - 19		2019 - 20		Total	
			Ph	Fin	Ph	Fin	Ph	Fin	Ph	Total
1.	**Establishment of bio-fertilizer lab for bulk production of bio- fertilizer**									
a)	Purchasing and setting up of bio safety cabinet for bio-fertilizer lab	15.00			1	15.00			1	15.00
b)	Construction of lab	25.00			600 sq ft	25.00			600 sq. ft	25.00
c)	Purchasing and setting up of B O D incubator cum shaker.	2.50					1	2.50	1	2.50
d)	Purchasing & setting a centrifuge.	0.50					1	0.50	1	0.50
e)	Procurement of deep freeze and refrigerator	1.00			1	0.4	1	0.60	1	1.00
f)	Purchasing & setting of accessories like stabilizer, gas cylinder, air conditioner & installation of the system.	0.50	-	0.50	-		-		-	0.50
g)	Purchasing of autoclave	1.30	1	1.30	-		-		1	1.30

h)	Running cost for maintaining the lab for 3 years including honorariums for assistant.	4.00	-	1.50	-	1.50	-	1.00	-	4.00
Sub total		**49.80**		**46.9**		**1.90**		**1.00**		**49.80**
2.	**Establishments of demonstration unit of fruit orchard for production of quality planting materials.**									
a)	Establishing drip irrigation system for 1 ha of land.	2.50	1	1.50	1	0.50	1	0.50	1	2.50
b)	Fertigation system and other accessories like tank, pump & electrical fitting.	1.50	1	1.50	-	-		-	1	1.50
c)	Purchase of power tiller	1.50	1	1.50	-	-		-	1	1.50
d)	Land development & levelling	4.50	1	2.00	1	2.00		0.50	1	4.50
e)	Table cum working desk and computers to conduct training documentation	0.65	3	0.50	1	0.15	-	-	4	0.65
g)	Cost of vegetable production and fruit orchard management including cost of seed fertiliser etc.	2.0	1	1.0		0.5		0.5		2.0
Sub –total		**12.65**		**8.00**		**3.15**		**1.50**		**12.65**
3.	**Developing of hatchery for hi- breathing Fish (Deshi Magur)**									
a)	Capital cost	1.00		0.40	1	0.3	1	0.3	3	1.00
b)	Pond construction	0.40	0.10/0.10 ha-m	0.40	-	-	-	-	1	0.40
c)	Construction of hatchery shed - - - -	1.00	1	1.00	-	-	-	-	1	1.00
d)	Hatchery (Portable) - - - -	0.80	1	0.80	-	-	-	-	1	0.80
e)	Electrical connecting fitting - - - -	0.40	-	0.40	-	-	-	-	-	0.40
f)	Rearing tank - - - - (1m x 1m x 0.25m)	0.40	1	0.40	-	-	-	-	1	0.40
g)	Aerators	0.60	0.25	0.60			-	-	12	0.20
h)	Operational equipment - - - -	0.20	-	0.20	-	-	-	-	1	0.20
i)	Overhead tank	0.50	0.50	0.50	-	-	-	-	1	0.50
j)	Electrical pump - - - -	0.50	0.50	0.50		-	-	-	1	0.50
k)	Blood stock, Feed inducing agent, laboures	1.00	-	1.00	-	-	-	-	1	1.00
Sub Total		**6.80**		**6.20**		**0.30**		**0.30**		**6.80**
4.	**Formulation and production of mineral mixture for goat**									
a)	Grinder	0.50			1	0.50			1	0.50
b)	Mixer (For preparing homogeneous mineral mixture)	0.75			1	0.75			1	0.75
c)	Packaging unit	3.0			1	3.0			1	3.0
d)	Glass ware and Digital balance	3.0					1	3.0		0.025
e)	Deep Freeze (-20 ^{O}C)	0.75			1	0.75			1	0.75
g)	Ingredients for mineral mixture preparation (DCP, copper sulphate, zinc	1.50	10 q	1.20		0.30				1.50

	sulphate, cobalt salt, iodine salt, manganese salt etc)									
Sub Total				**9.20**		**0.30**				**9.50**

Table 4.33. Plan for KVK, Bud Bud under RKVY in XIIth plan under infrastructure and asset component

Sl. No.	Name of scheme / programme under infrastructure and asset	Unit cost.	2017-18		2018-19		2019-20		Total	
			Ph.	Fin	Ph.	Fin	Ph.	Fin	Ph.	Fin
5. **Establishment of Plant – Animal –Fish Health Clinic**										
a)	Stanchion	0.20	1	0.20						0.20
b)	Hospital shed	6.00	180 sq. ft	6.00	-	-	-	-	-	6.00
c)	Refreezarator	0.40	1	0.40	-	-	-	-	-	0.40
d)	A. C.	0.80	2	0.80						0.80
e)	Inspection table -hydraulic	0.8	1	0.8						0.8
f)	Light microscope	1.20	1	1.20	-		-	-	-	1.20
g)	Knife , desiccators	0.50	1 set	0.50	-		-	-	2	0.50
h)	Hospital aids	0.40	1 set		-	0.40	-	-	-	0.40
i)	Chemical and media	0.80	-		-	0.80	-	-	-	0.80
j)	Surgical set (scissors, forceps, needle)	0.50	1set	0.50	-		-	-	-	0.50
k)	Oxygen generator	0.60	1	0.60	-		-	-	-	0.60
l)	U. S. G unit	4.50	1		-	4.50	-	-	-	4.50
m)	Portable digital X- ray unit	4.10	1	4.10						4.10
Sub –total		**20.80**		**14.10**		**6.70**				**20.80**
6.	**Mushroom spawns production cum maintenance lab.**									
a)	Motorized Grain Cleaner	0.75	1	0.75					1	0.75
b)	pH meter	0.50	1	0.50					1	0.50
c)	Autoclave	0.75	1	0.75					1	0.75
d)	Digital weighing scale Accuracy 10 g Capacity 50 kg	0.40	1	0.40					1	0.40
e)	Grain Boiler	0.50	1	0.50					1	0.50
f)	Boiled Grain and Chalk Powder Mixer	0.60	1	0.60					1	0.60
g)	Bag Filling Machine	0.80			1	0.80				0.80
h)	Bulk Spawn Inoculator	0.05	1	0.05					1	0.05
i)	Laboratory (40 ft x 25 ft x 10 ft)	6.00	1	6.00					1	6.00
j)	Manpower	1.0		0.40		0.30		0.30		1.0
Sub –total		**11.35**		**9.95**		**1.10**		**0.30**		**11.35**
7.	**Establishment of Information technology Lab at KVK and and Information Kiosk center in six village**									
a)	Construction of lab	35.00	1000 sq ft	35.00	-	-	-	-	1000 sq. ft	35.00
b)	Purchasing and setting of computers	0.55	6	3.30	6	3.30	-	-	12	6.60

c)	Purchasing of computer tables and chairs.	0.12	6	0.72	6	0.72	-	-	12	1.44
d)	Purchasing printers.	0.20	6	1.20	6	1.20	-	-	12	2.40
e)	Purchasing of softwares and other accessories	0.10	6	0.60	6	0.60	-	-	12	1.20
f)	Purchasing & setting air conditioner.	0.40	2	0.80	-	-	-	-	2	0.40
g)	Development of CD-ROMs	1.00	-	-	2	2.00	3	3.00	5	5.00
h)	Purchase of Camcorder	0.70	1	0.70					1	0.70
i)	Running cost for maintaining the lab for 3 years including honorariums for village Helper. -	0.60 (for lab) 4.45 for lab and Kiosk	-	0.60	-	4.45	-	4.45	-	9.5
Sub total		**43.12**	**28**	**42.92**	**26**	**12.27**	**3**	**7.45**	**57**	**62.24**
8.	**Establishment of Home sc. lab. for preparation of weaning food/ value added food product**									
a)	Cooking range	1.50	1	1.50					1	1.50
b)	Culinary utensil	0.50	1	0.50					1	0.50
c)	Input cost of demonstration	1.00	1	0.80	1	0.20			1	1.00
d)	Freeze	0.20	1	0.20					1	0.20
e)	Multi-purpose grinder/mixer	0.60	1	0.30	1	0.30			1	0.60
f)	Capacity building programme	0.60	1	0.20		0.20		0.20	1	0.60
h)	Dryer	0.20	1	0.20					1	0.20
i)	Vacuum packaging unit	5.00	1	5.00					1	5.00
Sub –total		**9.6**	**8**	**8.7**	**2**	**0.7**	**0**	**0.2**	**8**	**9.6**
9.	**Infrastructure for capacity building through training**									
a)	Colour Copier	5.00			1	5.00			1	5.00
b)	Projector with necessary accessories for training hall	3.00			1	3.00			1	3.00
c)	LED T.V. set for training purpose with accessories	1.00			2	2.00			2	2.00
d)	Laptop Computer	0.75			3	2.25			3	2.25
e)	Colour Laser printer cum scanner	0.60			1	0.60			1	0.60
f)	Digital SLR camera	1.50			1	1.50			1	1.50
	Tablet computer for training	0.25			3	0.75			3	0.75
Sub –total					**11**	**15.10**			**11**	**15.10**

Table 4.34. Plan for KVK, Bud Bud under RKVY from under special programme component

Sl. No.	Name of programme under special programme	Unit cost	2017-18		2018-19		2019-20		Total	
			Ph	Fin	Ph	Fin	Ph	Fin	Ph	Total
10.	**Assessment of paddy productivity through SRI (*kharif)* vis-à-vis nutrient mining in rice oriented production systems under irrigated and medium upland situation of Purba Bardhaman district**									
a)	Glass triple distillation unit	1.0			1	1.00			1	1.0
b)	Centrifuge	0.50			1	0.50			1	0.50
c)	BOD incubator	1.80			1	1.80			1	1.80
d)	Milipore water preparation unit	4.0	1							4.0
e)	Operational expenses	0.50	1							0.50
f)	Field school /Training	0.60	1	0.30	1	0.30				0.60
g)	Input cost for demonstration	1.00	4 ha	0.60		0.30		0.10		1.00
h)	Wages as labour	0.80	1 ha	0.60	1 ha	0.20				0.80
i)	Chemical and glassware	2.00	1	1.00	1	0.50	1	0.50	1	2.00
Sub –total		**12.20**		**10.30**		**1.30**		**0.60**		**12.20**

Total fund requirement for KVK = Sum of sub totals from Sl. No. 1 -10 = 210.04

DEVELOPMENT OF ALLIED SECTORS

5.1 Introduction

The flow of two rivers Ganga and Damodar covered the larger areas of the district where vegetable cultivation is the major activities of the farmers specially Kalna, Katwa and Purba Bardhaman Sadar subdivisions. Apart from the horticulture, other Allied sectors like animal husbandry, fisheries development, sericulture, forestry and agricultural marketing contribute substantially to agricultural growth of the district. Animal resources and aquatic resource of the district also help in employment generation, supplementing family nutrition as well as income generation among the rural and semi urban communities.

Therefore development of Allied sectors assumes to create a significant impact in the district to ensure the food security of the district as well as the nation.

5.2. Horticulture

The horticulture sector of the district offers a wide variety of crops, vegetables, fruits and medicinal plants. The agro climatic situation of the district is ideal and conducive for the growth and development of horticultural crops. Kalna-and Katwa subdivision are identified as major onion grower areas of state. The sector also gives emphasis on kharif onion production and storage under zero energy structure. Many fruitfull and innovative approaches has been taken for adoption and popularization of area suited technologies like protective cultivation under High-tech Poly Green House, micro-irrigation, kisan nursery, drought tolerance plantation cropping at laterite zone and Horti-food festival. The horticulture of the district includes fruits, vegetables, flowers, spices, plantation crops, medicinal and aromatic plants. Total production of fruit in Purba Bardhaman is near about 56 thousand M.T. Among the vegetables, onion, Brinjal, chilli, Ladies finger, Cucurbits, Tomato, Cabbage, Cauliflower are cultivated widely with profuse production. This sector has necessity to emphasize in planed manner for sustainable growth and production in the district.

Objectives of the development:

- To encourage the small and marginal farmers to adopt the horticulture practices for the economic upliftment
- Preservation of horticulture product like vegetable, flower & fruits etc.
- To establish the multi cold storage to promote the preservation facility of vegetables, fruits & flowers etc. during off-season
- To strengthen drip and sprinkler irrigation facility for cultivation of vegetables, fruits, flowers, spices and other horticultural crops
- To develop the skill of the farmers on vegetables, fruits, flowers, spices and other horticultural crops production

Table 5.1: Area and Production of Fruits and Vegetables in the district of Purba Bardhaman

Name of Fruits / Vegetables	Area (Thousand hectares)					Prouduction (Thousand tonnes)				
	2012-13	2013-14	2014-15	2015-16	2016-17	2012-13	2013-14	2014-15	2015-16	2016-17
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
A. Fruits :										
Mango	3.82	3.90	3.97	4.01	4.09	17.54	17.89	18.25	18.61	18.99
Banana	1.09	1.11	1.13	1.15	1.17	16.89	17.23	17.57	17.92	18.28
Pineapple	0.05	0.05	0.05	0.05	0.05	0.96	0.98	1.00	1.02	1.04
Papaya	0.51	0.52	0.53	0.54	0.55	14.33	14.62	14.91	15.21	15.51
Guava	0.71	0.72	0.74	0.75	0.76	9.13	9.31	9.50	9.69	9.88
Jackfruit	0.58	0.59	0.60	0.61	0.62	6.99	7.13	7.27	7.42	7.57
Litchi	0.29	0.30	0.30	0.30	0.31	2.85	2.91	2.97	3.02	3.08
Other Citrus	0.33	0.34	0.34	0.35	0.35	3.26	3.33	3.39	3.46	3.53
Sapota	0.03	0.03	0.03	0.03	0.03	0.25	0.26	0.26	0.27	0.27
Others	0.4	0.41	0.42	0.42	0.43	3.96	4.04	4.12	4.20	4.29
Total	**7.81**	**7.97**	**8.11**	**8.21**	**8.36**	**76.16**	**77.70**	**79.24**	**80.82**	**82.44**
B. Vegetables :										
Tomato	3.96	4.04	4.12	4.20	4.29	47.89	48.85	49.82	50.82	51.84
Cabbage	4.96	5.06	5.16	5.26	5.37	93.97	95.85	97.77	99.72	101.72
Cauliflower	5.96	6.08	6.20	6.32	6.45	86.98	88.72	90.49	92.30	94.15
Peas	6.96	7.10	7.24	7.39	7.53	6.34	6.47	6.60	6.73	6.86
Brinjal	7.96	8.12	8.28	8.45	8.62	123.9	126.38	128.91	131.48	134.11
Onion	8.96	9.14	9.32	9.51	9.70	16.95	17.29	17.63	17.99	18.35
Cucurbits	9.96	10.16	10.36	10.57	10.78	159.3	162.49	165.74	169.05	172.43
Ladies Finger	10.96	11.18	11.40	11.63	11.86	61.23	62.45	63.70	64.98	66.28
Radish	11.96	12.20	12.44	12.69	12.95	6.13	6.25	6.38	6.51	6.64
Others	12.96	13.22	13.48	13.75	14.03	135.25	137.96	140.71	143.53	146.40
Total	**70.09**	**57.12**	**58.51**	**58.71**	**64.84**	**783.45**	**672.46**	**691.99**	**719.99**	**737.94**

Table 5.2: Financial plan for horticulture development:

Name of activities	**2017-18**		**2018-19**		**2019-20**		**Total Financial cost (Rs. In lakh)**
	Physical	Financial	Physical	Financial	Physical	Financial	
NHM (Post harvest management)	25 no low cost onion storage	15.0	30 no low cost onion storage	18	40 no low cost onion storage	24	57.0
Horticultural mechanization	10 no tractor	36.0	12 no tractor	43.2	15 no tractor	54	133.2
	15 no power tiller	27.0	20 no power tiller	36	25 no power tiller	45	108.0
Protective cultivation unit	30	360.0	20	420	20	480	1260.0
Demonstration of micro-irrigation system	50	120.0	50	120	50	120	360.0
Development of high value orchard	10 ha	60.0	10 ha	60	20 ha	120	240.0
Construction of Water harvesting structure in western part of the district	20	60.0	10	30	10	30	120.0
Total		**678.0**		**727.2**		**873**	**2278.2**

5.3: Animal husbandry Development:

The district has a gigantic livestock and poultry population. The sector gives a significant economic contribution through production of milk, meat, eggs and hides. The major livestock enterprises are cattle, goat, sheep, pig, buffalo, poultry and duck.
The visions of the sector are,

i) improvement of animal productivity including poultry sector to reduce the demand gap and ii) generation of livelihood of rural/semi-urban communities through improved livestock husbandry practice. Very small numbers of Emu has been introducing for meat and oil production. The population of crossbred cattle is near about 14 % of the total cattle population. The district runs a central funded scheme in the name of **Bishes Go Sampad Bikash Abhijan** for fast and sustainable crossbreeding programme. The district also creates a good animal polyclinic at Fagupur, Purba Bardhaman with latest health care facilities. There are many constraints in livestock like poor genetic stock of the animals and poultry, scarcity of feed, improper scientific knowledge, low productivity, distressed selling of livestock produces

specially milk. Therefore district needs to be emphasized for sustainable growth of animal husbandry to ensure district as well as national food security.

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Objectives of the development of ARD sector of the district:

- Strengthening of A.I. facilities by infusion of exotic germ plasm for breed up -gradation to enhance milk production
- Strengthening of State Poultry Farm, which acts as nodal unit for providing inputs like (chicks/ducklings/hatching eggs) for implementation of different Govt. shemes and increasing production and productivity of the existing stock reared under backyard system.
- For providing better health coverage facilities to livestock and poultry of the district, health units at district, sub-division and blocks requires to be equipped with necessary equipments and other infrastructures. At G.P. level the Animal Dev. Aid Centres will be provided with facilities for A.I.
- Economic upliftment of weaker section of the community by providing subsidized distribution of poultry/piggery/goatery/fodder plot / enrichment of cellulosic waste units under family base programme through departmental scheme
- Improvement of production and productivity of livestock through adoption of location specific technologies and improved extension programme like training, demonstration, health camp and exposure visit.

Table 5.3. Infrastructure of the sector

Type	Number	Location	Type of service render
Office of the DD, ARD & PO	01	Purta Bhavan 6th floor, Sripally, Purba Bardhaman	Administrative activities of ARD dept. for whole district
Veterinary Hospital	62	All blocks and municipalities	Treatment, immunization, extension etc.
Block Livestock Development Office	31	All blocks	Extension activities including all departmental schemes implementations
Veterinary Poly clinics	01	Fagupur, Purba Bardhaman	Special care of the ailing animals mainly complicated surgery
Animal Dev. Aid Centre	198	Various GP covering whole district	AI and primary health care
Regional Disease Diagnostic Laboratory	01	Purba Bardhaman	Disease diagnostic for whole Purba Bardhaman Division
Pathological Laboratory	03	Purba Bardhaman and Katwa	Diagnostic services for the field units
Milk Union	01	Purba Bardhaman	Milk collection from the milk co-operatives and dispatch to Mother Dairy & Central dairy.
Milk co-operatives	101	Ketugram-I &I, Katwa-I&II, Memari-II, Purbasthali-I	Milk procurement from the farmers and dispatched to BMU
Chilling Plant	02	Kusumgram, Katwa	Temporary storage of milk
Bulk Milk Cooler	09 (04 no. are functional)	Galbati, Kusumgram (2) Beldanga kanchgaria, Asanpur, Rakshitpur, Kandra, Nimar, Amgaria	Temporary storage of milk

State Dairy	02	Purba Bardhaman	Milk collection, packaging and marketing
Fodder farm	02	Rasulpur, Sursurah	Production of fodder for local supply.
Input supply farm/ livestock breeding farm	03	SPF Golapbag, DCF Kalna Gate and SPF Durgapur	Supply of chick/duckling to the farmers and the govt. for implementation of schemes.
Training centers	03	Golapbag, DCF Kalna Road and Durgapur	Training to the farmers and also various governmental trainings
A.I Unit / centre	313	Throughout the district	AI activities at GP level
Liquid Nitrogen Storage Centre	01	Fagupur, Purba Bardhaman	Supply of LN_2 for FSS transport through the district.
Mobile Veterinary centre	03	Ausgram-II, Memari-II and Purbasthali-II	Animal Health Care services in remote areas of the district.
Check post	01	Barakar	Control of transboundary diseases
Central Medical Store	01	Purba Bardhaman	Temporary storage place of medicine for the whole district.
Milk cooperative	01	Kalna and Katwa subdivision	collection of molk from producers and bulk cooling.

Table 5.4. Livestock Census of the district Purba Bardhaman (2007-08) (source: District ARD Purba Bardhaman)

Name of Block	Total Cattle	Cross bred Cattle (%)	Total Buffalo	Total Sheep	Total Goat	Total Pig	Total Fowl	Total Duck
Ausgram-I	44539	4.64	3236	3182	35282	1718	87576	43396
Ausgram-I	73841	1.63	3868	4867	58016	5824	444230	59891
Bhatar	115115	9.0	8091	19598	82034	4463	610749	133206
Purba	81837	13.35	6530	10107	73687	2896	198663	104502
Purba	45321	23.64	1672	3339	50904	1875	106670	73786
Galsi-II	41550	9.44	2471	317	34840	1848	93802	47019
Bardhaman (M)	10099	45.31	498	74	13569	761	23438	12990
Guskara (M)	4646	2.35	166	80	3485	169	5655	4609
Jamalpur	78446	22.34	1131	442	80743	5044	146717	87317
Khandaghosh	76215	4.78	3539	343	77195	375	129650	88704
Memari-I	50660	25.89	1586	640	49464	5566	108590	54467
Memari-II	45739	14.14	1666	1958	39815	1579	75828	53837
Raina-I	62638	4.53	2320	22	39003	2281	144294	69919
Raina-II	76096	7.57	4938	25	36332	1500	375775	70381
Memari (M)	1708	23.89	29	0	4598	77	7542	1605
Kalna-I	55165	31.96	3299	1239	49864	5916	79674	62214
Kalna-II	43632	18.19	1296	4766	29406	4428	64196	51397
Monteswar	80156	16.91	6025	12206	68459	2093	114074	106320
Purbasthali-I	59051	44.01	1113	3841	49600	910	104346	60810
Purbasthali-II	33707	47.85	1631	6448	56481	892	105433	50261
Kalna (M)	2362	95.64	0	0	1065	29	2117	1382
Katwa-I	48489	11.85	4229	16235	36388	5500	65502	55671
Katwa-II	39876	12.5	3383	13839	22354	434	32151	29412
Ketugram-I	51650	3.58	4906	19682	56710	2405	127455	74171
Ketugram-II	39989	8.29	4783	13425	26943	1353	41654	40190

Manglkote	99930	2.98	6396	22236	67328	1745	182902	137792
Dainhat (M)	3594	6.34	55	174	3654	40	4987	2049
Katwa (M)	2785	39.53	42	135	2354	414	5011	1534
Galsi-I	55478	4.93	3335	879	56201	3884	106381	82877
Total	1424314	1424314	1424314	1424314 5	1424314	1424314	1424314 5	1424314

Table 5.5. Production of milk, meat, egg and wool of the district

Species	**Produces**	**Production (2013-14) (Estimated)**
Cattle (Ind.)	Milk	358.859 Metric Tonnes
Cattle (CB)		224.825 Metric Tonnes
Buffalo		57.859 Metric Tonnes
Goat		17.983 Metric Tonnes
All species (Cumulative)	Meat	48952.1 Metric Tonnes
Desi Fowl	Egg	1946.88 Lakhs No.
Improved Fowl		643.77 Lakhs No.
Duck		2125.27 Lakhs No.
Sheep	Wool	68.885 Metric Tonnes

Table 5.6. Carcass yield of meat animals and poultry

Type of animals	**Average live weight of mature animals (Kg)**	**Average carcass weight (Kg)**
Goat	14.5	7.368
Sheep	15.6	8.045
Pig	45.3	28.488
Poultry	1.95	1. 31

Table 5.7. Milk yield of type of animals in whole district

Type of animals	**Average milk yield /lactation (Kg)**
Desi cow	650-750
Graded cows	1300-1400
Cross bred cows	1700-1800
Buffaloes	1800-2000
Goat	12-14

Table 5.8. Information regarding milk marketed by producer

District	**Private vendors (%)**	**Avg. milk price/Lt. (Rs)**	**Co operative chain (%)**	**Avg. milk price/Lt. (Rs)**
Purba Bardhaman	>99%	26.00	<1% (Total 2500 litre/day)	21.00

Table 5.9. Production target for

Name of commodity	Baseline (2013-14)		2017-18		2018-19		2019-20	
	Production	Productivity	Production	Productivity	Production	Productivity	Production	Productivity
Milk (MT)	763484	NA	801658	NA	841741	NA	883828	NA
Meat (MT)	567181	NA	595540	NA	625317	NA	656583	NA
Egg (Million)	545.927	NA	573.22	NA	601.88	NA	631.98	NA
Wool (MT)	79.743	NA	83.73	NA	87.92	NA	92.31	NA

Table 5.10. on-going project/ Scheme of the department

Sl. No.	Name of Scheme/ plan/ project	Funding agent	Sanctioned Amount (Rs in Lakhs)
1	Optimization of productive efficiency through organization of Animal Health Camp (Parasitic Control Camp & Fertility Improvement Camp).	RKVY	243.4403
2	Bishes Go Sampad Bikash Avijan (Modified)	PBGSBS	1257.7656
3	Distribution of inputs for improvement of Livelihood through Pig Farming.	RKVY	24.00
4	Distribution of inputs for improvement of Livelihood through Goat Farming.	RKVY	58.196
5	Augmentation of meat production by intensive sheep/ goat production through adoption of good husbandry practices.	RKVY	101.70
6	Distribution of Chick/Duckling among Women SHG.	State Plan	162.36
7	Centrally Sponsored Rural Backyard Poultry Developmen	Centrally Sponsored	362.20
8	Extension of Animal Health Care Services in Remote areas of W. B through Mobile Veterinary Clinic	RKVY	21.87
9	Strengthening of bio-security practices in Govt. Poultry Farms	RKVY	15.00
10	Assistance to State for Control of Animal Diseases (ASCAD)	Centrally Sponsored	295.138

5.11. Financial plan of the Department of Animal Husbandry

A. Budget for production growth

Sl. No.	Name of Activity	2017-18			2018-19			2019-20			Total Financial Involvement
		Unit cost	Physical	Financial	Unit cost	Physical	Financial	Unit cost	Physical	Financial	
1	Organization of Animal Health Camp (24 camps in each block)	0.05	818.4	40.92	0.055	818.4	45.012	0.06	818.4	49.104	135.036
2	Organization of Fertility Camp (4 camps in each block)	0.10	136.4	13.64	0.11	136.4	15.004	0.12	136.4	16.368	45.012
3	Distribution of pig (3 sows/ beneficiary & 2 boar/) among SHG members (16 SHG i.e 160 beneficiary for the district)	3.50	6.6	23.1	3.80	5.5	20.9	4.20	5.5	23.1	67.1
4	Distribution of goat (4 does/beneficiary & 2 bucks/group) among SHG members (2 SHG i.e 20 beneficiary /GP)	1.00	202.4	202.4	1.10	203.5	223.85	1.2	203.5	244.2	670.45
5	Assistance to goat rearers for renovation of shelter, medicinal support and training. (500 beneficiaries from each block)	0.015	6050	90.75	0.0175	5500	96.25	0.020	5500	110	297
6	Distribution of Chick/Duckling among Women SHG (60 SHG from each block)	0.066	2046	135.036	0.073	2046	149.358	0.080	2046	163.68	448.074
7	Purchase of FAX and photocopier (1 set/ block including district HQ)	0.50	17.6	8.8	16	0.55	8.8	-	0	0	17.6
8	Installation of public addressing system in all three farms for training	1.00	1.1	1.1	1.00	1.1	1.1	1.00	1.1	1.1	3.3
9	Renovation of Rasulpur Fodder farm and demonstrative Goat Farm.	20.00	1.1	22	-	0	0	-	0	0	22
10	Demonstrative Dairy Farm for farmers	-	0	0	20.00	0	0	-	0	0	0
11	Setting up laboratory of the Veterinary Polyclinic at Fagupur, Purba Bardhaman.	10.00	0	0		0	0		0	0	0
12	20 bed residential set up for farmers in all three SPF/DCF	25.00	1.1	27.5	25.00	1.1	27.5	25.00	1.1	27.5	82.5

	Total			**565.246**			**587.774**			**635.052**	**1788.072**

B. Budget for infrastructure and asset

Activity proposed	**Target (Rs. In Lakh)**						Total	
	2017-18		**2018-19**		**2019-20**			
	Phy.	**Fin.**	**Phy.**	**Fin.**	**Phy.**	**Fin.**	Physical	Financial
Feed plan	1	75.00	-	-	-	-	1	75.00
Office of the DD, ARD including J.D. office Purba Bardhaman division zone – III	1	300.00	1(Furnishing)	100	-	-	2	400.00
Vety. Poly clinics and A.B.H. C.	32	32.00	32	32.00	1	20	63	84.00
A.I. container	100	7.50	50	3.25	50	3.25	200	14.00
Fodder Kiosk/livestock Kiosk	32	64.00	6	12.00	-	-	38	76.00
Bulk cooler for milk collection	1	1.00	1	1.00	-	-		2.00
Total	**167**	**479.5**	**90**	**148.25**	**51**	**23.25**	**304**	**651.00**

Total fund requirement (A + B) = 1778.072 + 651.00 = 2439.072 lakh

5.4: Fishery Development

Purba Bardhaman district has large areas of water bodies in the form of small, medium and large tanks. Besides there is some riverine resources of captured fisheries. Area of cultivation of IMC is increasing day by day due to high profitability and demand in the district as well as in the state. During last three decades the Fisheries Department has made effort in the field of Seed & table fish production by motivating people with training and financial assistance through F.F.D.A. This has resulted in employment generation and uplifted socio-economic condition of the fishermen community. The sectors should be emphasized for development in holistic manner to reduce the production and demand gaps.

The objectives of development of this sector:

- To make the district self sufficient in fish production increasing productivity of the water areas already in culture or bringing them under culture through scientific pisciculture
- To develop skill of the fish farmers to enrich their technical knowledge for scientific fish culture
- To develop pisciculture in tanks owned by different Govt. Department / Institution / Panchayat bodies for fish culture through social fishery scheme
- To Strengthen the production of quality fish seed by setting up of carps as well as magur hatcheries
- To introduce ornamental fish breeding and culture through self help groups
- To generate employment to the rural youth and to meet the demand of protein in our society.

Table 5.12. Fishery Resource (undivided district of Burdwan)

Aquatic resource	Area (ha)
Impounded Water Area	31180.28
Reverine Water Area	11316.64
Canal	5951.36
Beel	1939.91
Water Logged Area	0.00

Table 5.13. Seed production status in Purba Bardhaman

Sl No	Resources	Water Area (in ha.)	Seed production (in million)
1	Private Hatchery (27)	12.40	7200
2	Government hatchery under SFDC (1)	24.00	1306
3	Natural	0.00	200
	TOTAL	36.40	8706.00

Table 5.14. Status of Fishery Sector

Name Of Block	No Of Govt. Scheme Operated	Expenditure in Thousand	Assistance to needy Fisherman	Net Area Available for Pisci Culture (Ha)	Net Area Under Effective Pisci Culture (Ha)	No Of Persion Engaged
Galsi - i	6	1830	1815	1005	850	3690
Bardhaman – I	7	4433	4418	956.25	930	8006
Bardhaman - II	5	2685	2670	1000.25	850	4580
Ausgram - I	6	3025	3010	1624.45	1500	6750
Ausgram - II	8	3606.8	3591.8	700	600	4560
Bhatar	6	2731	2716	2376.12	2160	5040
Galsi - II	7	1094.2	1079.2	1045.43	800	4990
Memari - I	7	5973	5958	1149.4	940	7165
Memari - II	7	2689	2674	1347.38	1064.36	4483
Jamalpur	7	2054.5	2039	1318.21	1014.36	5428
Raina - I	8	3014.8	2999	820	520	4570
Raina - II	6	1920.4	1905.4	800.41	605	3842
Khandaghosh	7	2930	3065	1535.65	1237	5146
Mangolkote	6	3578	3563	2476.65	1954.95	5430
Ketugram - I	5	2657	2642	600.1	450	5134
Ketugram - II	7	2940.2	2925	659	509	5475
Katwa - I	10	3711.2	3696	605	550.74	8441
Katwa - II	7	3733.2	3718	790.02	711	7815
Purbasthali - I	10	281449.4	14943	601.6	450	5591
Purbasthali - II	8	2933.8	2918	660.04	510	4884
Kalna - I	5	3963.5	3948	904	680	8265
Kalna - II	7	2822.6	2807	800.75	737	5156
Monteswar	6	1862	1997	1261.64	728.34	5117
158		347638	81097	25037	20352	129558

Table 5.15. Financial target

A. Budget for production Growth

Activity proposed	Target (Phy. in ha. and Fin. in Lakh)					
	2017-18		2018-19		2019-20	
	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
Culture of indigenous small fish in backyard ponds	110	33	121	36.3	165	49.5
Seed Mahotsav	22	11	33	16.5	44	22
Liberation of fish fingerlings in the ponds excavated under MGNREGS	44	4.4	55	5.5	66	6.6
Scheme for intensive fish culture	990	364.32	1100	404.8	1210	445.28
Scheme for production of fingerling of carps	330	37.95	363	41.75	396	45.54
Culture of magur in small ponds	8.8	3.22	9.90	3.62	11.00	4.03
Scheme for brooders management and production of quality spawn of IMC	110	22	121	24.2	132	26.4
Culture of Monosex Tilapia	110	33	121	36.3	132	39.6
Rearing of indigenous small fish seed from wild collection	110	11	121	12.1	132	13.2
	1834.8	**519.89**	**2044.9**	**581.07**	**2288**	**652.15**

Total for production growth = Rs. 519.89 + Rs. 581.07 + Rs. 652.15 = 1753.1 lakh

B. Budget for Infrastructure and assets

Activity proposed	Target (financial- Rs. In Lakhs)					
	2017-18		2018-19		2019-20	
	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
Distribution of hygienic insulated box to fish vendors	1980	65.34	2200	72.6	2420	79.86
Distribution of bi-cycle with insulated box to fish vendors	396	31.68	440	35.2	484	38.72
Distribution of matsyajan	77	38.5	82.5	41.25	88	44
Construction and commissioning of block lab. cum trg. center.	6.6	47.52	6.6	79.2	3.3	39.6
Soil and water testing kits	110	77	110	88	110	88
Infrastructure for oxygen packing of fish seed	34.1	10.23	34.1	10.23	34.1	10.23
Fish seed carrying vehicle.	6.6	33	3.3	16.5	4.4	22
Total	**2610.3**	**303.27**	**2876.5**	**342.98**	**3143.8**	**322.41**

Total for infrastructure and asset = 303.27 + 342.98 + 322.41 = 968.66 lakh

Total financial budget for fishery development: (A+B)= (1753.1 +968.66)= Rs. 2474.33 lakhs

5.5: Agricultural Marketing

The department is playing a vital role in development of agriculture marketing, transportation of produces and setting up the Minimum Support Price (MSP) of agricultural produces. The basic vision of the department is to develop the vast and strong market network of farm produces for better profitability of farmers and better linkage between producers and consumers. .

The basic objectives of the sector are

- To establish the modern krishak bazaar at all blocks of the district
- To promote agricultural processing for minimization of post harvest losses and value addition of produces
- Promotion of indigenous agricultural produces of the district for better market linkage
- To develop the organized market through SHGS and Co-operatives

Table 5.16. Storage & Marketing Facilities in Purba Bardhaman

Nos. of cold storage	114
Total Capacity	1600013.29 MT
Nos. Regulated Market Nos. Sub-Market	Regulated market -4 Sub market- 12
Nos. of wholesale market and Terminal market Nos.	38
Bazar/Hat	155

Table 5.17. Plan of Agriculture Marketing

Sl.no.	Activity	Financial requirement (in lakh Rs.)			
		2017-18	**2018-19**	**2019-20**	Total
1	Processing & Preservation of Fruits & Vegetables-001	2.00	2.00	2.00	6.00
2	Farmer's Training in Post Harvest Technology-003	2.00	2.00	2.00	6.00
3	Construction and Improvement of Storage Structure-800	50.00	50.00	50.00	150
4	Development of farm to Market Link Roads	50.00	50.00	50.00	150.00
5	Development of Rural and Primary Markets	50.00	50.00	50.00	150.00
6	Development of Regulated Markets	100.00	100.00	100.00	300.00
7	Export Promotion of flower	8.00	8.00	8.00	24.00
8	Training and Marketing Officials & Others	5.00	5.00	5.00	15.00
9	Introduction of Pledge Finance	4.00	4.00	4.00	12.00
10	Agril. Marketing Information & Exhibition	15.00	15.00	15.00	45.00

11	Annual Macro Management Mode Work Plan	1.00	1.00	1.00	3.00
12	Subsidy to Bullock Cart & Van Rickshaw	60.00	60.00	60.00	180.00
13	Scheme for Strengthening & Supervision of Cold Storages	6.00	6.00	6.00	18.00
	Total:				**1059.00**

5.6: Agriculture credit and cooperation

Development of Co-operatives, especially the Primary Co-operative Societies is required to bring in real development of farming community. Special emphasis has been given for strengthening of financial base vis-à-vis sustaining economic solvency of the members. The credit facilities through rural bank, cooperative gramin banks and nationalished bank have been provided to the farmers for agriculture purpose. Therefore the development of credit and co-operative sector needs to be emphasized for better agricultural growth.

Table 5.18. Agriculture Co operative and credit society:

Type of society / Year		Number of		Working capital (Rs.in thousand)	Loans due from individuals & other societies (Rs.in thousand)	Loans repayment by individuals & other societies (Rs.in thousand)
		Societies	Members			
(1)		(2)	(3)	(4)	(5)	(6)
1	**Central Bank :**					
	2006-07	1	1745	9764647	4098605	3880516
	2007-08	1	5460	9822191	5135487	4299943
	2008-09	1	5492	11476487	5621482	4905209
	2009-10	1	1076	15392391	4199766	5040300
	2010-11	1	5460	9822191	5135487	4299943
2	**Primary Land Mortgage bank :**					
	2006-07	2	14057	506778	374446	134483
	2007-08	2	14034	530689	217817	75313
	2008-09	2	14112	651963	230113	189335
	2009-10	2	14598	651437	291839	405273
	2010-11	2	14058	665357	248672	112399
3	**Agricultural Credit Societies :**					
	2006-07	617	418799	2283912	1320920	1054792
	2007-08	617	460517	2432204	1559151	943619
	2008-09	586	470710	2480425	2249038	1587135

	2009-10	560	535158	3986131	1028166	1693746
	2010-11	561	559196	4020978	1906326	1253275

(Source: Statistical handbook, Bardhaman-2011)

Table 5.19. List of credit institutions in Purba Bardhaman

FINANCIAL INSTITUTIONS:	Nos
a) Commercial Banks	417 Nos.
b) Gramin (Rural) Bank	67 Nos.
c) Purba Bardhaman Central Co-operative Bank	36 Nos.
d) Purba Bardhaman Co-operative Agril. & Rural Development Bank	5 Nos.
e) West Bengal Finance Corporation	1 No.
f) Land Development Bank	1 No.
g) National Bank for Agril. And Rural Development (NABARD) Regional Office	1 No.

Source: District Statistical Handbook, Purba Bardhaman

Table 5.20. Co-operative Societies in the Blocks of Purba Bardhaman in the 2013-14

Ll. No	Name of Block	No. of Co-operative Societies	No. of Members	Working Capital ('000 Rs.)
(1)	(2)	(3)	(4)	(5)
1	Purba Bardhaman-I	76	23609	52382
2	Purba Bardhaman-II	69	15288	84307
3	Ausgram-I	64	16310	97188
4	Ausgram-II	57	17876	48975
5	Bhatar	65	30389	177442
6	Galsi-II	54	14000	63691
7	Memari -I	55	49931	389047
8	Memari -II	62	30474	545574
9	Jamalpur	65	41616	236388
10	Raina I	73	34389	146279
11	Raina II	49	26413	186794
12	Khandaghosh	62	21428	113706
	Total	**751**	**321723**	**2141773**

5.21. Financial Plan (Rs. In Lakh)

A. : Proposals under RKVY Scheme for Co-operative Societies from Purba Bardhaman –I Range

Sl. No.	Proposal	Amount per unit	Scheme Name	No. of Proposals							
				2017-18		**2018-19**		**2019-20**		Total	
				No. of Scheme	Amt. Required	No. of Scheme	Amt. Required	No. of Scheme	Amt. Require	No. of Schem	Amt. Required
1	Agril Hubs	20.00	Agri Hubs/ Customs Hiring Unit	2	40.00	1	20.00	3	60.00	6	120.00
2	Agro- Processing Unit	6.00	Agro- Processing Unit	1	6.00	1	6.00	-	-	2	12.00
3	Bio- Fertiliser Unit	1.50	Bio- Fertiliser/ Vermicompost (2 Units)	1	1.50	1	1.50	1	1.50	3	4.50
4	Farmers' Training Centre	10.00	Farmers' Training Centre	6	60.00	4	40.00	3	30.00	13	130.00
5	Godown	6.00	Rural Storage Godown	12	72.00	10	60.00	10	60.00	32	192.00
6	Integrated Farming Unit	10.00	Integrated Farming Unit	-	-	-	-	-	-	-	-
7	Mini Deep Tubewell	2.50	Mini Deep Tubewell/ Drip Irrigation/ Sprinkle	44	110.00	30	75.00	10	25.00	84	210.00
8(a)	Repair of Godown	1.50	Repairing of Storage Godown	12	18.00	10	15.00	11	16.50	33	49.50
8(b)	Completion of Incomplete	4.00	Repairing of Storage Godown	2	8.00	2	8.00	-	-	4	16.00
9	Rural Haat/ Market	10.00	Rural Haat	2	20.00	2	20.00	1	10.00	5	50.00
10	S.H.G. Workshed	8.00	S.H.G. Workshop- cum-Sales Counter- PACS	6	48.00	6	48.00	3	24.00	15	120.00

11	Seed Processing Unit	20.00	Seed Multiplication & Processing Unit	2	40.00	3	60.00	1	20.00	6	120.00
TOTAL				90	423.50	70	353.50	43	247	203	**1024**

B. Activity wise Physical and Financial Outlay of Co-operation Department- Raina-I block

Name of activity/programme/ scheme	Name of block	Name of SKUS	Physical and financial outlay							
			2017-18		**2018-19**		**2019-20**		Total (Rs. In lakhs)	
			Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Rural Godown	Raina-II	K.B.C	1	6.00					1	6.00
Do		Kamargoria			1	6.00			1	6.00
Do		Hodilpur					1	6.00	1	6.00
Repair of Godown		Chotobainan	1	1.50					1	1.50
Do		Barati					1	1.50	1	1.50
Completion of Incomplete		Keunta		4.00					1	4.00
Do		Bulchand				4.00			1	4.00
Mini Deep Tubewell		Srirampur	1	2.50					1	2.50
DO		Pahalanpur			1	2.50			1	2.50
SHG Workshop		Neor Pasanda			1	8.00			1	8.00
Total										42.00

C. Activity wise Physical and Financial Outlay of Co-operation Department- Purba Bardhaman-II

Name of activity/programme/ scheme	Name of block	Name of SKUS	Physical and financial outlay							
			2017-18		**2018-19**		**2019-20**		Total (Rs. In lakhs)	
			Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Agril Hubs		Adarsha	1	20.00					1	20.00
Do		Korori			1	20.00			1	20.00
Do		Brahmanpara					1	20.00	1	20.00
Bio-Fertiliser Unit		Majherpara	1	1.50					1	1.50
Do		Bhaita					1	1.50	1	1.50
Farmers Training Centre		Balgona Malkita	1	10.00					1	10.00

Do	Purba Bardhaman-II	Swasti			1	10.00			1	10.00
Do		Hatgobindapur					1	10.00	1	10.00
Mini Deep Tubewell		Nabastha	5	12.50					5	12.50
Do		Adarsha	5	12.50					5	12.50
Do		Ghatsila			2	5.00			2	5.00
Do		Majherpara			3	7.50			3	7.50
Do		Sonapalashi			3	7.50			3	7.50
Repair of Godown		Samanti	1	1.50					1	1.50
Do		Korori	1	1.50					1	1.50
Do		Raipur			1	1.50			1	1.50
Do		Nabastha					1	1.50	1	1.50
Rural Haat		Samanti			1	10.00			1	10.00
Do		Adarsha					1	10.00	1	10.00
SHG Workshop		Sanakur Kashiara	1	8.00					1	8.00
Do		Adarsha			1	8.00			1	8.00
Seed Processing Unit		Sukur	1	20.00					1	20.00
Seed Processing Unit		Sonakur Kashiara			1	20.00			1	20.00
Seed Processing Unit		Balgona Malkita			1	20.00			1	20.00
Total										240.00

D. Activity wise Physical and Financial Outlay of Co-operation Department- Purba Bardhaman-I

Name of activity/programme/ scheme	Name of block	Name of SKUS	Physical and financial outlay							
			2017-18		**2018-19**		**2019-20**		Total (Rs. In lakhs)	
			Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Rural Godown		Baro Kashiara	1	6.00					1	6.00
Do		Deypara	1	6.00					1	6.00
Do		Panrui			1	6.00			1	6.00
Do		Pallimongal			1	6.00			1	6.00
Do		Chotobelun					1	6.00	1	6.00
Do		Kshetia					1	6.00	1	6.00
Repair of Godown		Pallimongal	1	1.50					1	1.5
Mini Deep Tubewell		Panrui	1	10.00					1	10.00
DO		Barokasiara			1	10.00			1	10.00

Do	Purba Bardhaman-I	Mahinagar					1	5.00	1	5.00
SHG Workshop		Jamar	1	8.00					1	8.00
Do		Sanpar			1	8.00	1	8.00	2	16.00
Farmers Training Centre		Jamar			1	10.00			1	10.00
Total										96.50

E. Activity wise Physical and Financial Outlay of Co-operation Department- Galsi-II

Name of activity/programme/ scheme	Name of block	Name of SKUS	Physical and financial outlay							
			2017-18		**2018-19**		**2019-20**		Total (Rs. In lakhs)	
			Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Rural Godown	Galsi-II		1	6.00					1	6.00
Repair of Godown		Gomai	1	1.50					1	1.50
Do		Sarul	1	1.50					1	1.50
Do		Uro Chotomuria			1	1.50			1	1.50
		Masjidpur					1	1.50	1	1.50
Mini Deep Tubewell										
Total									5	**12..00**

F. Activity wise Physical and Financial Outlay of Co-operation Department- Ausgram-II

Name of activity/programme/ scheme	Name of block	Name of SKUS	Physical and financial outlay							
			2017-18		**2018-19**		**2019-20**		Total (Rs. In lakhs)	
			Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Rural Godown		Koucha	1	6.00					1	6.00
Do		Amrargarh	1	6.00					1	6.00
Completion of Incomplete Godown		Balarambati Garai	1	4.00					1	4.00
Repair of Godown		Dhonkora			1	1.50			1	1.50
Do		Erar UCACS			1	1.50			1	1.50
Do		Aus Mktg.	1	1.50					1	1.50
Do		Amrarghar					1	1.50	1	1.50
Mini Deep Tubewell		Jagalmohal	1	2.50					1	2.50

DO	Ausgram-II	Jamtara			1	2.50			1	2.50
Do		Sar					1	2.50	1	2.50
		Kalaijhuti					1	2.50	1	2.50
SHG Workshop		Vivekananda	1	8.00					1	8.00
Do		Jangalmohal			1	8.00			1	8.00
Farmers Training Centre		Aus-II Marketing			1	10.00			1	10.00
Total										58.00

G. Activity wise Physical and Financial Outlay of Co-operation Department- Bhatar

Name of activity/programme/ scheme	Name of block	Name of SKUS	Physical and financial outlay							
			2017-18		**2018-19**		**2019-20**		Total (Rs. In lakhs)	
			Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Agril Hub	Bhatar	Sahebganj No.I	1	20.00					1	20.00
Do		Bamunara						20.00	1	20.00
Bio-Fertiliser Unit		Kubrajpur						1.50	1	1.50
Farmers Training Centre		Nityanandapur Balbona	1	10.00					1	10.00
Rural Godown		Bhumsore	1	6.00					1	6.00
Do		Madhpur				6.00			1	6.00
Do		Sahebgnj Ucacs				6.00			1	6.00
Do		Basuda						6.00	1	6.00
Do		Aruar						6.00	1	6.00
Repairing of Godwn		Palligandhi Bamunara				1.50			1	1.50
Mini Deep Tubewell		Bonpas	5	12.50					5	12.50
DO		Basuda			5	12.50			5	12.50
SHG Workshop		Sahebganj No.I					1	8.00	1	8.00
Do		Hargram			1	8.00			1	8.00
Do		Barabelun	1	8.00					1	8.00
Seed Processing Unit		Kashipur	1	20.00					1	20.00
Do		Kubajpur			1	20.00			1	20.00
Total										172.00

H. Activity wise Physical and Financial Outlay of Co-operation Department- Ausgram-I

Name of activity/programme/ scheme	Name of block	Name of SKUS	Physical and financial outlay							
			2017-18		**2018-19**		**2019-20**		Total (Rs. In lakhs)	
			Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Rural Godown	Aus-I	Batagram Kalyanpur	1	6.00					1	6.00
		Ausgram Skus			1	6.00			1	6.00
		Belari					1	6.00	1	6.00
		Billwagram					1	6.00	1	6.00
		Digha Gobindapur			1	6.00			1	6.00
Repair of Godown		Majhergram	1	1.50					1	1.50
		Joykrishnapur	1	1.50					1	1.50
		Silut			1	1.50			1	1.50
		Batagram kalyanpur			1	1.50			1	1.50
		Digha Gobindapur			1	1.50			1	1.50
		Takipur Chowari					1	1.50	1	1.50
		Ban nabagram					1	1.50	1	1.50
		Ausgram					1	1.50	1	1.50
Total										42.00

I. Activity wise Physical and Financial Outlay of Co-operation Department- Khandakosh

Name of activity/programme/ scheme	Name of block	Name of SKUS	Physical and financial outlay (Rs. In lakhs)							
			2017-18		**2018-19**		**2019-20**		Total	
			Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Rural Hat		Berugram	1	10.00					1	10.00
		Ukhrid			1	10.00			1	10.00
Rural Godown		Indos	1	6.00					1	6.00
		Sakha			1	6.00			1	6.00
		Daichanda					1	6.00	1	6.00

Repair of Godown	Khandakosh	Daichanda	1	1.50					1	1.50
		Jotchandi			1	1.50			1	1.50
		Sagrai					1	1.50	1	1.50
Total										42.50

J. Activity wise Physical and Financial Outlay of Co-operation Department- Mem.II

Name of activity/programme/ scheme	Name of block	Name of SKUS	Physical and financial outlay							
			2017-18		**2018-19**		**2019-20**		Total (Rs. In lakhs)	
			Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Rural Godown	Mem-II	Horkola					1	6.00	1	6.00
Do		Kuchut					1	6.00	1	6.00
Do		Makra	1	6.00					1	6.00
Do		Jhikira 'O'Bamunpukur	1	6.00					1	6.00
Do		Mondalgram	1	6.00					1	6.00
Repairing of Godown		Bijur	1	1.50					1	1.50
Rural Hat		Baneswarpur	1	10.00					1	10.00
Farmers Training Centre		Astogram	1	10.00					1	10.00
Do		Bitra			1	10.00			1	10.00
Do		Panchgram	1	10.00					1	10.00
SHG Workshop		Gandharbapur	1	8.00					1	8.00
Do		Hamunpur			1	8.00			1	8.00
Agril. Hubs		kandarpapur	1	20.00					1	20.00
Mini Deep Tubewel		Kandarpapur	1	2.50					1	2.50
Agro. Processing Unit		Mohanpur	1	6.00					1	6.00
Total										116.00

K. Activity wise Physical and Financial Outlay of Co-operation Department- Mem.I

Name of activity/programme/ scheme	Name of block	Name of SKUS	Physical and financial outlay							
			2017-18		**2018-19**		**2019-20**		Total (Rs. In lakhs)	
			Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Godown		Gope gantar	1	6.00					1	6.00
		Kenna			1	6.00			1	6.00
Repair of Godown		Mobarakpur					1	1.50	1	1.50

Mini Deep Tubewell	Memari-I	Jujharpurpur	5	12.50	5	12.50			10	25.00
		Sahanui	6	15.00					6	15.00
		Debipur	5	12.50			5	12.50	10	25.00
		Mobarakpur			5	12.50			5	12.50
		Haripur			1	1.50			1	1.50
		Borakona					1	2.50	1	2.50
SHG Workshed		Sashinara	1	8.00					1	8.00
		Nimo			1	8.00			1	8.00
Farmers Training Centre		Kashiarapally	1	10.00					1	10.00
		Daluibazar	1	10.00					1	10.00
		Mobarakpur			1	10.00			1	10.00
		Gope gantar			1	10.00			1	10.00
		Amadpur					1	10.00	1	10.00
		Sahanui					1	10.00	1	10.00
Agril Hubs		Sahanui			1	20.00			1	20.00
		Gope gantar					1	20.00	1	20.00
Agro Processing Unit		Sashinara			1	6.00			1	6.00
Total										217.00

L. Activity wise Physical and Financial Outlay of Co-operation Department- Raina-I

Name of activity/programme/ scheme	Name of block	Name of SKUS	Physical and financial outlay							
			2017-18		**2018-19**		**2019-20**		Total (Rs. In lakhs)	
			Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Godown	Raina-I	Jotsadi	1	6.00					1	6.00
		Bontir			1	6.00			1	6.00
Repair of Godown		Dharan	1	1.50					1	1.50
		Rmbati			1	1.50			1	1.50
		Rainagar					1	1.50	1	1.50
		Meral					1	1.50	1	1.50
		Borakona	1	1.50					1	1.50
		Balagarh			1	1.50			1	1.50
		Gopinaathpur	1	2.50	1	2.50			2	5.00
		Burar	1	2.50	1	2.50			2	5.00

Mini Deep Tubewell		Rainagar	2	5.00	1	2.50			3	7.50
		Sanktia	1	2.50	1	2.50			2	5.00
		Kulia Nurpur	1	2.50	1	2.50			1	2.50
Bio-Fertiliser Unit		Dharan			1	1.50			1	1.50
		Haripur			1	1.50			1	1.50
		Borakona					1	1.50	1	1.50
SHG Workshed		Shyamsundar			1	8.00			1	8.00
Fermers Training Centre		Gopalpur					1	10.00	1	1.00
Seed Processing Unit		Bujrukdighi					1	20.00	1	20.00
Total										**79.50**

M. Activity wise Physical and Financial Outlay of Co-operation Department- Raina-I

Name of activity/programme/ scheme	Name of block	Name of SKUS	Physical and financial outlay							
			2017-18		**2018-19**		**2019-20**		Total (Rs. In lakhs)	
			Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Municipal Circle	Purba Bardhaman policeline consumer co-op. stores ltd.	1	1.50					1	**1.50**

Grand total budget for Agril. Credit & cooperation: Rs. 2143.00 lakhs

DISTRICT PLAN

6.1. Introduction

A major revival package is essential for the growth and development of the agriculture and allied sector linked to higher investment and strategies to make agriculture attractive and profitable. Different strategies in combination with technology, credit, marketing, risk management and institutional support would be required to revitalize the agricultural economy of the district. Among the sub-sectors, a major increase has been proposed for crop husbandry, animal husbandry, fisheries and agricultural research. Enhancement of food grain production, supplementary income sources through livestock and fish production have been given thrust in the plan from 2017-18 to 2019-20 based on the broad framework framed by NITI Aayog for doubling of farmers income by 2022.

6.2. Growth drivers

The growth drivers to fulfill the vision are as follows,

Agriculture

- Soil reclamation and preserving soil quality for sustainable crop production
- Increasing cropping intensity with suitable intervention. Promotion of pulse crops to be largely enhanced
- Productivity augmentation through judicious fertilizer and pest management. Introduction of improved cultivars, dissemination of promising technologies, seed treatment, farm mechanisation
- Capacity building of extension workers for efficient dessimination of technologies
- Implementing strategies for producing more per quanta of land and water through judicious use of resources. Adoption of integrated farming methodologies wherever applicable for enhancing farmers income is called for.
- Correction of soil acidity by using Dolomites, basic slugs, ash etc should be undertaken judiciously so that the effect should be sustainable. Fly ash from the thermal power stations in Purba Bardhaman can be purchased in a very low price and can be distributed among the farmers in place of Dolomite. This will ensure more procurement and less expenditure on transport and procurement.
- Production of quality seed material through participatory approach
- Adoption of climate resilient technologies to cope up with climate change which is imminent
- More emphasis on red and lateritic zone for agriculture intensification through creation of water harvesting structures, watersheds etc.

- Value addition to agricultural produce to be given emphasis. SHGs, common interest groups, JLGs to be

Horticulture Sector

- Strengthening of horticultural department in the line of agriculture, ARD and fisheries department with block level officials and support staff
- Capacity building of farmers and extension workers for speedy development of horticulture in the district
- Protected cultivation techniques to be much strengthened
- Potential for horticulture development in the red and lateritic region is to be exploited. Extension of horticultural activities in this zone by supply of saplings (fruits and tree species) and undertaking plantation activities should be taken up. Plantation of *Arjun* in the lateritic zone can help the poor farmers, basically tribals by introducing Tasar cultivation in collaboration with Sericulture department.
- Emphasis to be given on production as well as marketing of high value horticultural crops
- Attention to be given on management of water resource through establishment of micro irrigation for fruit, plantation and vegetable crops.
- Entrepreneurship development through value addition to horticultural produces is to be pressed

Animal husbandry

- Breed up-gradation of livestock and poultry
- Capacity building of extension workers/ animal raisers for efficient dissemination of technologies
- Augmentation of productivity of livestock and poultry
- Emphasis on infrastructure of Artificial insemination
- Strengthening of animal feed resource through production of green fodder, preparation of home made concentrate feed and complete feed block
- Availability of medicines through *Pranibandhus* at the doorstep
- Provision for insurance and credit facility
- Strengthening of Post harvest operation including value addition of animal products
- Unorganised market should be converted into organised market linkages
- Removal of technological gap in nutrition, management and housing of poultry birds

Fishery

- Ensuring ready supply of quality fingerling in the district.
- Aquaculture based integrated farming modules to be implemented in all the excavated pond under MGNREGA scheme
- Entrepreneurship development in the area of fingerling production.
- Capacity building of fish farmers for improved techniques of fish production, including pond management, feed management, stocking species and density, multiple tire carp

farming etc.
- Efficient marketing chain development through feasible cold chain establishment
- Entrepreneurship development in ornamental fish culture.
- Exploiting potential for fishery development in canals, enclosed large water bodies etc.

Agricultural marketing
- Partnership farming
- SHG/JLG/CIG mediated marketing strategy
- Infrastructural support for SHG/JLG/CIGs involved in production and marketing of agricultural produce

Credit & Cooperation
- Storage system for vegetables, followers etc. - Veg. godown & multipurpose godown is needed.
- Efficient linkage to be established between produced crops and marketing mainly for non-conventional crops.
- Farmers' club, adequate training, using modern – scientific technique for production of crops is needed.
- All the S.K.U.S.s should have well metal road connection for fertiliser business & other various purposed.
- Agro processing unit to form by Joint venture with S.K.U.S.s – if possible.
- PACS in the district should be promoted for all kinds of agricultural based activities, including production of seeds, distribution of fertilisers etc
- Credit linkages should be increased for the farmers so that they can market their products and a handsome amount

Irrigation
- Increase in minor as well as micro irrigation
- Construction of rain water harvesting structures
- Renovation of sub-canals

6.3. District plan

Table 6. 1. Estimated outlay for district plan during 2017-18 to 2019-20

Sector	Proposed broad activities	2017-18	2018-19	2019-20	Total outlay (in lakh)
Agriculture	Reclamation and Development of acid soil	1613.00	3224.00	3224.00	8057.00
	Training Facilities infrastructure	24.00	250.00	250.00	524.00
	Capacity building of farmers	332.52	448.11	992.01	1772.64
	IPM Demonstrations	98.88	118.50	130.25	347.63
	INM Demonstrations	149.36	178.75	196.79	524.9
	Varietal Demonstration	605.00	666.00	732.00	2003
	Farmers' Field School	102.00	117.00	123.00	342.00
	Additional activities for production growth	20.24	44.80	44.80	109.84
	Additional activities for infrastructure and assets	50.50	1553.00	971.50	2575
	Innovative programme	50.00	750.00	421.40	1221.40
	Agri Irrigation	7015.4	8355.65	8893.79	24264.84
	Strengthening of Krishi Vigyan Kendra, Bud	10.04	100.00	100.000	210.04

	Bud				
	Sub Total	**10070.9**	**15805.80**	**16079.50**	**41952.30**
Allied sectors	Horticulture	678.00	727.20	873.00	2278.20
	Animal Husbandry	1044.75	736.02	658.3	2439.07
	Fishery	823.16	924.05	974.56	2721.77
	Ag. Marketing	353.00	353.00	353.00	1059.00
	Ag. Cooperation	143.00	1000.00	1000.00	2143.00
	Sub Total	**3041.91**	**3740.27**	**3858.86**	**10641**
	Grand Total	**13112.80**	**19546.10**	**19938.40**	**52593.30**