



*Report No. 2 Year: March 2009
KVK, South Tripura Publication*

VISION 2020

PERSPECTIVE PLAN

(Agriculture & Allied Sectors)

District: South Tripura



**Krishi Vigyan Kendra
South Tripura**

ICAR Research Complex for NEH Region
Zonal Project Directorate, Zone-III



Citation:

KVK-South Tripura (2009), VISION 2020: Perspective Plan (Agriculture and Allied Sectors), South Tripura District. Krishi Vigyan Kendra, ICAR Research Complex for NEH Region, Birchandra Manu, South Tripura-799 144 (INDIA)

Prepared by:

Dr. A.K. Singh

Published by:

Programme Coordinator
Krishi Vigyan Kendra
ICAR Research Complex for NEH Region
Birchandra Manu, South Tripura-799 144 (INDIA)

TeleFax: +91-3823-252523

Email: kvksouthtripura@rediffmail.com

Website: www.kvksouthtripura.org.in

Contents

Foreword

Preface

| | | |
|----------|---|----|
| 1 | Preamble | 6 |
| 2 | Mandate | 7 |
| 3 | Activities of the KVK, South Tripura | 9 |
| 4 | District at a Glance | 28 |
| 5 | SWOT Analysis of The District | 32 |
| 6 | VISION 2020: Agriculture and Allied Sectors | 46 |
| 7 | Summary | 90 |

Foreword

Agriculture of North Eastern Region must continuously evolve to remain ever responsive to manage the change and to meet the growing and diversified needs of different stakeholders in the entire production to consumption chain. In order to capitalize on the opportunities and to convert weaknesses into opportunities, we, at the ICAR, hence attempted to visualize an alternate agricultural scenario from present to twenty years hence. Accordingly, the researchable issues are identified, strategies drawn and programmes indicated to have commensurate projects and relevant activities including transfer of technology through Krishi Vigyan Kendra.

South district of Tripura has the natural resources, suitable soil type and annual rainfall of more than 2000 mm plus a people with a strong work ethic, to make a diverse, thriving agriculture possible.

As KVK of South district of Tripura offer this vision for district agriculture and it's rural communities for 2020, there are many things we would like to accomplish. We want to identify ways to capitalize on our tremendous ability to produce commodity crops, livestock and fisheries, while identifying ways for smaller, more specialized agricultural operations to expand and thrive.

It has always been important to keep in mind that Krishi Vigyan Kendra is an umbrella for diverse groups, all with both a specific and a general vested interest in the development of district agriculture, and all with its own system for transfer of agriculture technology.

Acting together, I believe we can make agriculture and rural communities better in the district. I heartily congratulate Dr. A.K. Singh, Programme Coordinator and his team for this effort.

I wish all success to KVK-South Tripura.



Dr. S.V. Ngachan
Director

ICAR Research Complex for NEH Region
Umiam, Meghalaya
Date: 31st March 2009

Preface

Over the years, Krishi Vigyan Kendra (KVK) under the aegis of the Indian Council of Agricultural Research (ICAR) has served a very useful purpose in changing the mindset of farming community for faster development of agriculture in the country. Nevertheless, in the fast changing global context, we need to be forward looking and visible with transfer of appropriate agricultural technology in order to attain and sustain global advantages.

It is in this background, a perspective plan in agriculture & allied sectors with a visionary approach of South Tripura district has been prepared. The emerging challenges in areas like management of natural resources, diversification of agriculture to enhance farm income, management of agribusiness, post-harvest value addition, quality improvement and phyto-sanitary standardization of the farm produce in conformity with international market standards, sustainability in agricultural and horticultural production and maintaining dynamic relationship between agriculture and environment are the focal points in this perspective plan.

I thank all the concerned departments of the district, Scientist of ICAR, and SMS of KVK for providing valuable information and contributing in the preparation of the Perspective Plan. We are also very much thankful to the Dr. V. Venkatasubramanian, Zonal Project Director (Zone-III), Dr. S.V. Ngachan, Director and Dr. N.P. Singh, Joint Director (Tripura Centre), ICAR Research Complex for NEH Region for their full support in preparation of this document.

I feel that this document will help in accelerating extension programmes of the Krishi Vigyan Kendra (KVK) and meeting the challenges in agriculture and allied sectors in the South district of Tripura.

Dr. A.K. Singh
Programme Coordinator

Krishi Vigyan Kendra, South Tripura
Birchandra Manu
31st March 2009

About the Institutes

KVK, South Tripura

PREAMBLE

Progress in any sector cannot be achieved unless there is a target to reach with a perspective vision. A vision document unites various stakeholders of a district for a common cause, i.e. equitable and sustainable development with a promising future. It is a positive/constructive approach for sustainable development that virtually overcomes the present limitations/constraints through realistic strategies. It touches all important aspects of development of human- as well as natural resources along with adequate strategy for the optimum utilization of required resources. In nutshell, it is a guide towards the planning process of district and broadly outlines the goals to be achieved during the course of time.

The institution of Krishi Vigyan Kendra, since its very beginning in 1974, has proved to be an important mechanism in the process of planning and conducting need-based trainings, transfer of latest technologies, on farm research and thus, serving as the light house for overall agriculture development in the district. The KVK is an effective mechanism for technology assessment, technology refinement and technology demonstration keeping in mind its relevance to the needs and resource endowments of the farming community.

Realising the need for providing institutional support and scientific & technical assistance to the farmers of South district of Tripura, the KVK was established by the Indian Council of Agricultural Research (ICAR) at Birchchandramanu on 30th May 1984.

MANDATE

This institute mandate is to provide **need-based technical services** in the area of **agriculture and allied sectors** and work for capacity building for farmers, rural youths and extension functionaries of the district. In this direction, the institute is working under administrative control of ICAR Research Complex for NEH Region and having linkage with concerned central and state government organizations and departments.

The Krishi Vigyan Kendras (KVK) has the mandate of-

- Conducting “On-Farm Testing” (OFT) for identifying technologies in terms of location specific sustainable land use systems.
- Organizing training to update the extension personnel with emerging advances in agricultural research on regular basis.
- Organizing short and long term training courses in agriculture and allied disciplines for the farmers and rural youths with emphasis on “Learning by doing” for higher production on farms and generating self-employment.
- Organizing Front Line Demonstrations (FLDs) on various crops to generate production data and feed back information.

Pursuing the mandate of the KVK, following approach has been adopted for conducting various activities -

- Demonstration of the latest agricultural technologies to the farmers as well as extension workers of State Departments of Agriculture/Horticulture/ Fishery/ Animal Science/ NGOs with a view to reduce the time lag between the technology generation and its adoption.
- Test and verify the technologies in the socio-economic conditions of the farmers with a view to study the production

constraints and to modify the technologies to make them appropriate.

- Impart trainings to the practicing farmers/ farm women, rural youth and field level extension functionaries by following the methods of “Teaching by doing” and “Learning by doing”.
- Back-up with training and communication supports to the district level development departments viz; Agriculture/ Horticulture/ Fisheries/ Animal science and NGOs in their extension programmes

Mission

- Poverty alleviation through diversification of agriculture and self-employment.
- Promotion of low cost technology in agriculture, animal husbandry and fisheries.
- Soil and water conservation through Integrated Farming System.
- Encouraging Farms to grow fruit trees, other than rubber trees.
- Adoption of Integrated Nutrient and Water Management.
- Popularisation of Integrated Pest & Disease Management.
- Water harvesting for increased crop intensity & food production.
- Promotion of eco-friendly organic farming practices.
- Empowerment of farm women through Self Help Groups.
- Formation of Innovative Farmers' Interest Group & Development of Master Trainer
- Encouraging unemployed rural youth to divert their energy towards gainful employment.

Management of the KVK Activities

The *Scientific Advisory Committee* meetings are conducted to get necessary guidance and support to carry out the mandated activities of KVK in a more planned and scientific manner.

The KVK have constituted the Scientific Advisory Committee as per the guidelines of ICAR which comprises of representatives from ICAR institutes, State Agriculture University, Development departments of the District, Media personnel, Financial institutions and progressive farmers and farm women. Programme Coordinator is responsible for presenting the annual progress reports, action plans, annual accounts and all other relevant matters for approval to the committee as well as implementation of the recommendations of the committee.

The committee meets twice in a year.

Activities of the KVK

The important activities of the KVK (South Tripura) are to conduct training programmes for practicing farmers, rural youths and extension functionaries. FLDs on oilseeds, pulses and other crops, On-Farm Trials (OFTs) of location specific technologies, seed and planting material production activities for supply of quality seeds/planting materials to the farmers, establishment of various demonstration units, income generation training programmes, establishment of soil and water testing facilities, rain water harvesting structures etc.

On-Farm Trials (OFTs)

On-Farm Trial is a location specific trial in farming system perspective involving agronomic crops, horticulture, livestock, fisheries etc. Subject Matter Specialist (SMS) of KVK collaborate with local farming communities in the assessment, refinement and documentation of technologies for generating location specific sustainable technologies. Based on the assessment of technology at farmers' fields, recommendation is made for large scale adoption which can enhance productivity, profitability, feasible with local farming systems and sustainable in conservation of natural resources.

KVK is conducting OFTs in the following areas:

1. Integrated Nutrient Management (INM)
2. Integrated Disease Management (IDM)
3. Integrated Pest Management (IPM)
4. Introduction of high yielding varieties (HYV) of crops
5. Off season vegetables
6. Organic farming
7. Scientific rearing of livestock and poultry
8. Captive breeding of fish

Front Line Demonstration (FLDs)

Front Line Demonstration (FLD) is one of the tools to popularize the technologies through participatory mode with local people. Field demonstration is a long term educational activity conducted in a systematic manner in farmers' fields to show worth of a new practice/technology. "Seeing is believing" is the basic philosophy of field demonstrations. Field demonstrations educate farmers through results

obtained in terms of, for instance, varieties resistant to disease and pest, quality of the grains and overall higher yields. In addition, it also educates the farmers in term of input-output ratio and economic gains in terms of net returns.

KVK is conducting FLDs in following areas:

- Improved variety of rice, maize, pulses, oilseeds and vegetables
- Pests and disease management in cereals, pulses, oilseeds and vegetables.
- Integrated Pig-cum-Fish farming
- Homestead Farming System
- Scientific Backyard Aquaculture
- HYV of vegetables
- Improved Dual Purpose Poultry Birds
- Improved Cross Breed of Pig

Training Programmes

Training of farmers, rural leaders and extension personnel is a must to face the challenges posed by the changing technological and economical scenario. One of the important duties of the SMS of KVK is to communicate the research findings, new innovations and technologies to the farmers and needy people.

KVK is conducting trainings for farmers, Farm Women, Rural Youth and Extension Personnel in the following thematic subjects:

(A) FARMERS & FARM WOMEN

Crop Production: Weed Management, Nutrient Management, Cropping Systems, Crop Diversification, Integrated Farming systems, Water management, Seed production, Nursery management, Fodder production, Production of organic inputs.

Horticulture: Production of low volume and high value crops, Off-season vegetables, Nursery raising, Exotic vegetables production, Training and Pruning of fruit plants, Layout and Management of Orchards, Cultivation of Fruit crops, Management of young plants/orchards, Rejuvenation of old orchards, Cultivation of export potential fruits, Plant propagation techniques, Nursery Management of Ornamental Plants, Management of potted plants, Propagation techniques of Ornamental Plants, Production and Management technology of Plantation Crops, Production and Management technology of spices, etc.

Soil Health and Fertility Management: Soil fertility management, Soil and Water Conservation, Integrated Nutrient Management, Production and use of organic inputs, Management of Problematic soils, Micro nutrient deficiency in crops, Nutrient Use Efficiency, Soil and Water Testing

Livestock Production and Management: Dairy Management, Poultry Management, Piggery Management, Disease Management, Feed management, Production of quality animal products

Plant Protection: Integrated Pest Management, Disease Management, Bio-control of pests and diseases, Production of bio-control agents and bio pesticides

Fisheries: Integrated fish farming, Carp breeding and hatchery management, Carp fry and fingerling rearing, Composite fish culture, Hatchery management and culture of freshwater prawn, Portable plastic carp hatchery, Pen culture of fish and prawn, Fish processing and value addition

Production of Inputs at site: Seed Production, Planting material production, Bio-agents production, Vermicompost production, Other Organic manures production, Production of fry and fingerlings, Production of Bee-colonies and wax sheets, Production of livestock feed and fodder, Production of Fish feed

Capacity Building and Group Dynamics: Leadership development in villages, Managing Group dynamics, Formation and Management of SHGs, Mobilization of social capital in villages, Entrepreneurial development of farmers/youths, WTO and IPR issues

Agro-forestry: Production technologies, Nursery management, Integrated Farming Systems

(B) RURAL YOUTH

Mushroom Production, Bee-keeping, Integrated farming, Seed production, Production of organic inputs, Integrated Farming, Planting material production, Vermiculture, Sericulture, Protected cultivation of vegetable crops, Commercial fruit production, Nursery Management of Horticulture crops, Training and pruning of orchards, Production of quality animal products, Dairying, Sheep and goat rearing, Piggery, Rabbit farming, Poultry production, Training as Para vets, Training as Para extension workers, Composite fish culture, Freshwater prawn culture, Fish harvest and processing technology, Fry and fingerling rearing, Small scale processing, Post Harvest Technology

(C) EXTENSION PERSONNEL

Productivity enhancement in field crops, Integrated Pest Management, Integrated Nutrient management, Rejuvenation of old orchards, Protected cultivation technology, Formation and Management of SHGs, Group Dynamics and farmers organizations, Information networking among farmers, Capacity building for ICT application, WTO and IPR issues, Management in farm animals, Livestock feed and fodder production

Extension Activities through Group Approach

KVK has initiated the concept of group approach during the year 2009 for technology assessment, refinement and dissemination. Earlier an individual approach with farmers was also utilized by the KVK during the initial years, but owing to its limited advantages, other constraints of time, labour and cost, and Vision 2025 of the ICAR in NER region, the KVK-South Tripura has adopted a group approach to address the emerging problems and needs of the farming community.

i) Formation of Group. The KVK is making effort to establish Innovative Farmers Interest Group to innovate and modify the technology at the farmers' field level. The approach will help to evolve a feedback mechanism that can be extended to the research and development department regarding the technology. The KVK is taking

the help of NABARD for strengthening of Farmers Clubs at village level.

The basic objective behind formulation of Farmers Interest Group is to achieve the dissemination of technology at macro and micro level. The KVK has also initiated to strengthen existing Self Help Groups (SHGs) at micro level to involve the women in the agriculture development programmes. During the technology dissemination process through group organization, the KVK is going to form a three-tier model for technology assessment, refinement and dissemination.

Table 1 Three Tier Systems

| | | | | |
|-----------------|--|------------------------|--|--|
| TIER-I | Innovative Farmers Interest Group | KVK Apex level | Technology Assessment and Refinement | a. Crop demonstration b. Field visit c. Experience sharing |
| TIER-II | Farmers Club | Village at macro level | Technology Dissemination | a. Formation of concept and commodity wise groups b. Development of village action plan c. Involved in selection, monitoring and implementation d. Feedback to KVK e. Strengthening of existing SHGs |
| TIER-III | Self Help Group | Village at micro level | Technology dissemination and credit Mobilisation | a. Utilisation of credit for technology adoption b. Promotion of farm and non-farm activities c. Entrepreneurship development |

Innovative Farmers Interest Group. KVK has very limited resources with which it is very difficult to attend the individual problems of the farming community. Therefore, KVK is trying to develop a new methodology in consultation and coordination with the farmers. Many farmers are continuously experimenting in their field using indigenous and exogenous techniques. The results obtained by them are not replicated to other farmers due to lack of group contact, lack of institutional support to these innovative farmers, poor interaction and communication between the farmers, poor input and infrastructure support.

Keeping all these aspects in view, the KVK is developing the concept of Innovative Farmers Interest Group (FIG) by involving all the innovative farmers. The farmers involved in the FIG will operate various enterprises like agriculture (40%), horticulture (25%), fisheries (20%) and animal husbandry (15%).

Objectives of the programme

1. To identify commodity wise problems and make available solutions through On Farm Trials (OFTs).
2. Assessment and refinement of technologies based on the farming situation.
3. To develop leadership among the farmers to carry out the work
4. To exchange information, ideas, skills, resources among each others.
5. To develop the feedback to research, development and input-service providers regarding the commodity.
6. To replicate the technology developed among the farmers through Front Line Demonstration (FLDs).

The members of *Innovative Farmer's Group* will from the different parts of the district having expertise in different commodities. These farmers are being identified and regular meetings of such farmers will be organized at KVK to share the experiences of their field of experiments. This will help to develop the technologies or refine the available technologies.

ii) Development of Master Trainers. Based on the technology available with the farmers, KVK will identify commodity-wise master trainers. These trainers will be provided the communication skill and exposure at different places so that they can be further developed in their field of interest. These master trainers can be used by the development department for further dissemination of technology. Similarly Farmers Clubs and SHGs shall also invite the master trainers to deliver the lecture.

Adequate number of master trainers will be developed in 12 technologies as identified and given in Table 2. These master trainers will be used in the design and implementation of FLDs and OFTs, so that the results obtained can be disseminated further. While development of master trainers, more focus will be given on the high value crops, pig, goat, dairy and fish culture management. The technologies like fertigation, vermicomposting, biopesticides and biofertilizers, planting methods, soil management, export quality production, irrigation management and development of successful agro-based enterprises (mushroom, fruit preservation, etc.) will be disseminated through these master trainers.

iii) Working Pattern at Farmer's Club / FIG Members. The Farmers Club is being financially supported by NABARD and SBI. The responsibility of formation of Farmer Interest Group would be given to Chief Volunteer of the Farmers Club of the respective village after

KVK-Farmers meeting and interaction. To strengthen the various activities such as technology transfer, inputs, services, KVK will promote one club in each adopted village.

Table 2 Development of Master Trainer in the district

| | |
|------------------------------|--|
| Agriculture | Cereals (Rice and Maize), Pulses (Arhar, Green gram, Black gram), Oilseeds (Rapeseed, Groundnut), Cash crops (Potato), Fodder, Irrigation (Micro irrigation, Jal kund), Soil Fertility (INM, Organic), Plant protection (IPM, Organic), Weed Management |
| Horticulture & Agro-Forestry | Vegetables (Rabi and summer), Fruits (Mango, Litchi, Pineapple, Lemon, Papaya, Banana), Plantation crops (Coconut, Arecanut, Cashew nut), Spices (Ginger, Turmeric, Chillie, Black Pepper, Dalchini), Homestead farming, Nursery Management, Agro-forestry |
| Agriculture Enterprises | Mushroom, Vermicomposting, Apiculture, Composting, Fruit preservation |
| Fisheries | Aquaculture, Hatchery management, Carp Polyculture, Magur fish culture, Freshwater prawn culture |
| Animal husbandry | Piggery, Goatary, Poultry, Health management |

The main objectives behind formation of *Farmer's Interest Group* are:

- Proper utilization of credit to adopt the technologies for intensification and diversification of agriculture and allied enterprises.
- To develop thrift and saving habit among the members.
- Collective purchase, production, development of resources and marketing.
- To disseminate the technologies around the success stories.

Table 3 New Initiatives introduced by KVK through FIG

| Commodity | Technology | Services |
|---|--|--|
| 1. Groundnut 2. Rapeseed / Mustard 3. Vegetable 4. Tuber crop 5. Fodder 6. Mushroom 7. Spices 8. Backyard poultry 9. Stall fed goat rearing 10. Magur production 11. Freshwater prawn culture | 1. System of Rice Intensification (SRI) 2. Use of bio-control agents 3. Staggering in pineapple 4. Planting and grafting method in mango 5. Homestead farming 6. Micro-irrigation and Jalkund 7. Up-gradation of local poultry, duckery, dairy and pig 8. Pig-cum-fish farming 9. Composite fish culture 10. Carp polyculture | 1. Farmers service center 2. Soil testing center 3. Seeds and Seedlings 4. Products of bio-agents 5. Vermicompost & Earthworms 6. ICT for agriculture |

Working Pattern at the KVK Level

- Develop federal structure
- Review meetings
- Season-wise interface between Chief Volunteers, Scientist and other stakeholders
- Need based training programme for Farmer's Club and FIG members on improvement of productivity and value addition.
- HRD of the interested members in specific crop.
- Involvement of rural youth, female members in the vocational skill oriented trainings for employment generation.
- Half yearly review workshops.

Working pattern at village Level. Members of the Farmers Club and FIG i.e. Technology Transfer Clubs (TTC) shall conduct meetings and other programmes based on their needs. Communication network among themselves will be developed through which exchange of ideas, inputs, services and resources will be done by them. KVK conducts quarterly meetings to develop the plan and review the work of the clubs.

Expected outcome

- Faster assessment and refinement through the members of this group for development of location specific technology.
- The adoption of the technologies should be more than 50 per cent in the KVK adopted villages that is to be spread in the other parts of the district also.
- The members of this group can be involved by many departments to implement various activities in the villages.

Women Empowerment through Self Help Groups

KVK has to work intensively for the upliftment of rural community i.e. farmers, farm women and rural youths by providing diverse technical knowledge and skills so that the production in agriculture and self-employment can be improved. The response of farmers and rural youths has been encouraging since beginning. However, the response from farm women in all the agriculture development and technology dissemination process was very less. Therefore, KVK has to try a distinct concept to involve more women in the KVK activities. As SWOT analysis, it was found that majority of farm women are not coming forward to seek the technology for adoption at their field. This is mainly due to poor literacy, exposure and inadequate knowledge

about the problem and solutions available, lack of availability of credit/ financial support to adopt the technology and poor involvement in decision making process.

In view of all the facts, KVK has developed the vision to empower the farm women socio-economically so that they can support the livelihood security of their family. With this vision, there is need to start a mission approach of strengthening of Self Help Groups (SHGs) of women so that they can be actively involved in the programmes conducted by the KVK as well as other agencies also.

Objective of strengthening of SHGs

- To share the information, knowledge and skill mutually for improving production and self-employment generation.
- To create the common infrastructure or facilities as per the needs.
- To mobilize the credit for increasing the adoption of new technology/enterprise.
- To improve the socio-economic status of the farmwomen

To increase the participation of the women in the process of the technology transfer, the SHGs will work through three-tier extension model being developed by the KVK. *Technology dissemination* and *Credit mobilization* are basic objectives of these SHGs. KVK is conducting training, demonstration, technology assessment and refinement as well as dissemination. In all these activities, SHGs can be actively involved directly or indirectly. Due to their group

approach, the participation of women in different programmes can be increased significantly.

After formation of SHGs, KVK will give first priority for need assessment. The technical programme and credit linkages will be designed as per need assessment. The KVK will monitor their activities and motivate them by participating in the meetings. Similarly, the KVK need to get the feedback from such meetings to improve the activities. Every year two meetings i.e. pre-kharif and pre-rabi will be conducted so that programme planning can be carried out for them. All the process will be totally participatory and be based on bottom up planning so that it can give a favourable response.

Technological empowerment. The KVK is continuously making efforts to impart the skill in various agriculture and non-agricultural enterprises for improving productivity and employment generation. With the technical intervention by KVK and credit available with SHGs, numerous enterprises can be started with KVK's technical support as per need of that area. For conducting any programme like training, demonstrations, FLDs or any other programme, the SHGs can be involved from the selection of the beneficiaries up to result recording and feedback, which will give good impact on technology adoption and diffusion. Experience sharing among the groups, annual gathering of SHGs to showcase their activities through exhibitions, organization of theme based monthly programme to SHG members, etc. provide the general entrepreneurship skill and organization of the various activities to motivate the farmwomen which help to increase the response of the women to various activities.

Farm Services

1. The farmers or any person or organization related to agriculture can avail the services of the Krishi Vigyan Kendra.
2. Participation in the Trainings: Interested farmers may register their names with the Krishi Vigyan Kendra either personally or through Phone for the training he /she wish to attend. The Krishi Vigyan Kendra can also arrange an off campus training on desired topics in farmer's village if more than 20 farmers from the same village want to participate.
3. Participate in Krishi Vigyan Kendra's extension programmes such as Kisan Gosthi, Exposure visits, Field days by registering.
4. Interact with the Scientists at the Krishi Vigyan Kendra and get consultancy on issues related to agriculture & allied fields & information on advanced technological options.
5. Farmers can have demonstrations and trials on their fields that Krishi Vigyan Kendra arranges every year.
6. Farmers on study tour can see our farm and demonstration units on vermicompost, greenhouses, nursery, and the museum of agriculture implements.
7. Farmers can buy from the farm service center following inputs -
 - a. Grafts of improved varieties of fruit plants.
 - b. Seed of latest varieties of cereals, pulses and oilseeds
 - c. Vermicompost and earthworms
 - d. Mushroom spawn
8. Farmers can get their soil samples tested at reasonable rates in our soil testing laboratory.
9. Farmers can request SMS of Krishi Vigyan Kendra to pay diagnostic visits to their problematic fields for getting curative & diagnostic recommendations.

Farm Advisory Services

1. The Kendra has recently started farm advisory services. The SMS from KVK would offer technical guidance to the farmers of the villages of South Tripura district.
2. The KVK joins hands with the animal husbandry department in organising animal health camps at villages. Vaccination and deworming are the major work done during these camps, besides treating animals for ailments like infertility and repeat breeder.
3. **Technology Information Spread:** To keep the farmers well informed of the programmes and for quick dissemination of technologies, Farmers' Discussion Groups can be organised at the village level to debate on the agriculture related issues and to approach KVK in sorting them out.
4. **Training Programmes at KVK:** Training programmes are offered by KVK in the fields of agriculture, horticulture, animal husbandry, fisheries and extension education. The programmes are planned in advance of the ensuing agricultural season taking into consideration the cropping pattern and farming system.
5. **Front Line Demonstrations:** The Front Line Demonstrations on Oilseeds and Pulses have been in implementation since last decades, aiming at increasing the productivity of crops like groundnut, green gram, black gram, cowpea and red gram by way of introducing low-cost technologies including introduction of new varieties/hybrids.
6. **On Farm Testing:** To refine the generated technologies to suit the local situations, "On Farm Testing" is carried out with farmers' participation. Every year 8-10 acres of land is covered under this programme to serve as a result demonstration plot.
7. **Dissemination of Knowledge:** Rapid dissemination of knowledge and skill is a must as technologies generated on the previous day become obsolete the next day. Therefore, the SMS of KVK take the help of trained farmers in transferring the technologies to each and every farmer.

Farm Input Supply

The Kendra had established its own demonstrational units for grafted fruit planting materials, seed production, vermiculture and mushroom production. The KVK supplying following farm inputs at Birchandramanu Farm.

1. Quality saplings to the farming community from within and outside the district.
2. Seed production of latest varieties of cereals, pulses and oilseeds are also initiated.
3. Earthworms for vermicomposting are being reared at KVK Farm and are available for farmers of the district.
4. Mushroom spawn are being cultured and being supply to SHG members.

Farm Health Services

1. **Soil Health:** KVK is establishing "Soil Testing Laboratory" to check the soil health of the farmer's field. Farmers can get their soil samples tested at soil testing laboratory.
2. **Animal and Plant Health:** Subject matter Specialist (SMS) of KVK are providing diagnostic visits to problematic agriculture fields, seek animals, poultry and fisheries for getting curative & diagnostic recommendations.

KVK, South Tripura at a Glance

| | |
|---|--|
| Total Farm Area | 31.54 Acre |
| Crop sequence | <u>Agronomy Farm</u> Upland Rice/Maize-Pulses-Toria-Sesamum <u>Horticultural Farm</u> Okra-Cowpea-Tomato/Cole crops/Chilli <u>Horticulture Orchard</u> Mango, Litchi, Sapota, Lemon, Papaya and Banana |
| Source of seeds & inputs | KVK, ICAR, State and Central Government |
| Plant protection measures | Cultural, biological and chemical practices |
| Agricultural implements | Tractor, Power tiller, small farm implements |
| Irrigational facilities | Ponds and Tube wells |
| Availability of seeds, fertilisers and pesticides | a) Seed, Vermicompost, Bio-organic extract, FYM, etc. from ICAR & KVK. b) Biopesticides and biofertiliser from state government source |
| Dairy/Poultry/Piggery/Duckary | Pig: 4 nos., Ducks: 20 nos. |
| Fisheries | Fisheries Pond: 0.25 ha |
| Production Unit | a) Vermicomposting unit - 1 no. b) Mushroom production unit - 1 no. |
| Agromet | ISRO Automatic Weather Station |
| Existing Infrastructure | Existing i) Administrative Building : Assam Type (Temp) ii) Staff Quarters : <i>Type-I : One</i> <i>Type-II : One</i> |
| Manpower | <ul style="list-style-type: none"> • Programme Coordinator - 1 no. • Subject Matter Specialist - 6 nos. • Programme Assistant - 2 nos. • Stenographer (Grade-III) - 1 no. • Drivers - 2 nos. • Office supporting Staffs - 2 nos. |

**Proposed Infrastructure Development of KVK
(11th Five Year Plan)**

| Sl. No. | Description of Works. | Quantity / Area |
|---------|-------------------------------------|----------------------|
| 1. | Administrative Building | 550 sqm. |
| 2. | Farmers Hostel | 305 sqm. |
| 3. | Staff Quarters (16 Nos). | 400 sqm |
| 4. | Demonstration Unit | |
| | i. Demonstration Unit (Cattle) | 40 sqm |
| | ii. Demonstration Unit (Goat) | 40 sqm |
| | iii. Demonstration Unit (Poultry-I) | 40 sqm |
| | iv. Demonstration Unit (Poultry-II) | 40 sqm |
| 5. | Fencing | |
| | i. Chain Link Fencing | 2200 m |
| | ii. Compound Wall | 780 m |
| | iii. Construction of M.S. Gate | 5 Nos. |
| 6. | Farm Development | |
| | i. Land Levelling | 6.35 ha |
| | ii. Road Formation | 1.05 km |
| | iii. Bore Well | 03 Nos. |
| | iv. Threshing and Drying Yard | 200 sqm |
| | v. Farm Ponds | 01 No (30 X 30 m) |
| | vi. Irrigation System | |
| | i. Sprinkler System | 7.3 ha |
| | ii. Drip Irrigation | 3 ha |
| | iii. Storage | 1000 sqm |

About the District

South Tripura

DISTRICT AT A GLANCE (South Tripura)

South Tripura District is one of the four districts of the state of Tripura. The district is bounded on the North by Dhalai and West Tripura districts and in east, west and south by the International border with Bangladesh. The district headquarter (Udaipur) is 52 Kms from Agartala by road. The nearest railway station is Agartala.

The district is divided into 5 sub-divisions viz. Amarpur, Subroom, Belonia, Santirbazar, and Udaipur. There are 11 Rural Development Blocks, 264 Revenue Moujas, 322 Gram Panchayats & Villages and 4 Nagar Panchayats in the district. Bokafa is the biggest blocks covering about 18% area each in the district. Kakrabon (4 %) is the smallest block of the district area. The district's population is predominantly engaged in the agriculture & allied activities and traditional crafts sectors. There is no resource in the district other than agriculture, horticulture, livestock, fisheries, etc.



Figure Map of South Tripura

The other information of the district is given below:

| | |
|----------------------------------|--|
| Geographical Area | 2,86,801 ha |
| Location (Latitude/Longitude) | 91° 19' and 91° 53' E 22° 57' and 23° 45' N |
| Agro Climatic Zone | i. Humid dissected mount and valleys ii. Sub humid denuded hills |
| Agro- Ecological Situation (AES) | AES – I : 38 % AES - II : 62 % (Spread of AES in respect of geographical area) |
| Average Rainfall | 2000-2200mm |
| Soil | <i>Soil type:</i> Red Soil & Alluvial Soil <i>Texture:</i> Sandy Loam to Clay loam <i>pH:</i> 5.0 to 6.2 (Strongly Acidic) <i>Fertility:</i> Low in organic carbon, phosphorous and potassium content |
| Demography | |
| Population | 7.67 lakh (ST: 40.35 % SC: 16.38 % Others: 43.26%) |
| Population Density | 234 |
| Sex Ratio | 947 |
| Agricultural labour | 30% |
| Non-Agri labour | 25.4% |
| Cultivators | 29% |
| Entrepreneurs | 8.5% |
| Service (Govt. & Pvt.) | 8.56% |
| Total Literacy Rate | 67.44% |
| Major Enterprise | Agriculture, Horticulture, Animal Husbandry, Fishery, Handicrafts, Rubber etc |
| Land Use | |
| Net Cropped Area | 84,101 ha |
| a) Single Cropped Area | 45,271 ha |
| b) Double Cropped Area | 30,902 ha |
| c) Tripple Cropped Area | 7,928 ha |

| | |
|-------------------------------------|--|
| Current Fallow | 1,224 ha |
| Forest land | 1,40,899 ha |
| Pasture | 1,064 ha |
| Land put to non-agriculture use | 36,940 ha |
| Barren & Unculturable land | 4100 ha |
| Agriculture | |
| Major Agricultural Crops | Paddy, Maize, Jhum Crops, Pulses |
| Major Horticultural Crops | Vegetables, Potato, Betelvine, Banana, Pineapple, Cashew nut, Jackfruit. |
| Cash crops | Potato, Tea, Rubber, Jute |
| Net area under cultivation | 84,101 ha |
| Jhum cultivation area | 16062 ha |
| Cropping Intensity | 172 % |
| Land under Irrigation | 23646 ha |
| Percentage of Irrigation | 28 % |
| Cold Storage | One (at Baikhora) |
| Fertilizer consumption | Urea: 30 kg/ha Super Phosphate: 31 kg/ha Potash: 11 kg/ha |
| Main Seed stores | 6 |
| Agriculture farms | 8 |
| Fruit Orchards | 22 |
| Number of Farmers | 1,03,256 Nos Marginal (<1 ha): 78307 Nos. Small (1-2 ha): 18866 Nos. Semi Medium(>2 ha) : 4237 Nos. |
| Fisheries | |
| Total water area under Pisciculture | 6456 hectare |
| Total fish production | 10843 MT |
| Culture Fisheries | 10033 MT |
| Capture Fisheries | 812 MT |
| Demand of Fish | 9868 MT |
| New area available for fisheries | 1115.4 hectare |

| Animal Health Services | |
|------------------------------------|---|
| District Veterinary hospital | 1 |
| Veterinary Hospital | 4 |
| Veterinary Dispensaries | 16 |
| Artificial Insemination Centre | 3 |
| District poultry farm | 1 |
| Powers and Road | |
| Total power production | 9 MW |
| Hamlets connected with power | 1277 |
| National Highway | 112 km |
| State Highways | 125.6 km |
| Classified Village Roads | 813.5 km |
| PWD Roads | 1743 km |
| Block Roads | 9086 km |
| Katcha Roads | 7120 km |
| Forest Roads | 91.5 Km |
| Public Health Services | |
| District Hospital | 1 |
| Sub Divisional Hospital | 3 |
| Public Health Centre (PHC) | 17 |
| Public Health Sub Centers | 154 |
| Education | |
| Total No. of Schools | 1250 (Primary: 980 Middle:119 High: 97 H.S.:54) |
| General Degree Colleges | 4 |
| Professional Vocational Institutes | 2 |
| Financial Institutions | |
| State Bank of India (SBI) | 8 |
| United Bank of India (UBI) | 10 |
| Tripura Gramin Bank (TGB) | 28 |
| Tripura State Co-operative Bank | 10 |

SWOT ANALYSIS OF THE DISTRICT

Based upon the data of agriculture and allied sectors, the existing farming systems were analysed in a comparative manner and the gaps were identified for each sector separately, keeping in view the trends of SWOT analysis.

Farming System

Strengths

- Favourable agro-climatic condition and high rainfall during Kharif season
- Soil are quick to reach Field Capacity after irrigation or rain, facilitating timely sowing of the crops
- Around 28 per cent area under cultivation is irrigated
- Water table is fairly high and is favourable for lift Irrigation and other minor irrigation projects
- Good transport facilities through road
- Dairy/goatary/piggery/poultry as an integral component of farming system
- Well developed grain and vegetable markets in the district /adjoining areas
- Financial support through banks available
- Farm machineries available at subsidized rates
- A good network of extension services from KVK, State development department, Central Govt. Organisations, NGOs, etc.

Weaknesses

- Large number of small and marginal holdings
- Erratic rainfall distribution
- No availability of canal water

- Coarse and light textured soils with poor retention of water and nutrients
- Poor fertility soils, low in available nitrogen (70%) and phosphorus (80%)
- Expansion of rubber plantation in the land suitable for agriculture and horticulture
- Mono cropping sequence (Rice-Rice-Rice) is dominant
- Poor management of cow dung and crop residues
- Poor breeding, feeding and management of livestock practices
- Technological gaps in practices of some crops
- Lack of water harvesting and management practices
- Rapid diversion of cultivated lands for non-agriculture uses
- Inadequate input supply through private sector
- Unavailability of labour during peak period of farm operations
- Inadequate farm machineries and lack of Processing and Storage facilities
- Key role of middle men in controlling the market price

Opportunities

- Suitable agro-climatic and edaphic conditions congenial for toria, groundnut, arhar and mesta
- Crop residues and by-product available in abundance which can be recycled as compost/ vermi-compost for improving soil health
- Network of co-operatives
- Good marketing infrastructure
- Good information and communication system
- Excellent road connectivity
- Rising demand for milk and milk products, vegetables and animal products
- Scope for HYV seed production and seed replacement for better farm production and income.

- Available irrigation potential can be exploited.
- Scope for organic farming in selected export oriented crops.
- Scope for popularisation of IPM / INM/Rain Water harvesting concept
- Scope for processing and value addition in pulses, oilseeds, vegetables and fruits.
- Scope for establishment of good horticulture nursery

Threats

- Non-judicious use of water and agricultural chemicals leading towards water bankruptcy and poor soil health.
- Intensive mono cropping without INM impairing soil health
- New weeds, insects and diseases due to mono cropping year after year
- Decreasing availability of green fodder

A. Management of Agricultural Crops**Strengths**

- Light and coarser soils easy to work
- More than 28 % of cultivated area is irrigated
- Suitable climate for production of toria, groundnut, arhar, lentil, green/black gram and mesta
- Improved varieties and well developed packages for most of the crops

Weaknesses

- Inadequate soils health management practices
- Fine textured soils with poor retention of water and nutrients
- Poor fertility soils, low in nitrogen and phosphorus
- Soils affected with varying degree of acidity
- Improper and inefficient water management
- Critical technological gaps in specific areas of crop production viz. seed treatment, balance fertilization and insect, pest and disease management.

- Poor adoption level of FYM, green manuring, vermi-composting and crop /farm residue management
- Lack of post harvest processing and storage

Opportunities

- Immense scope for mixed / multiple cropping with higher income and employment generations.
- Vast opportunities for profitable diversification of existing cropping pattern and farming system
- Technologies available for sustaining natural resources with increased efficiency
- Establishment of regulated marketing, agro-processing and warehousing / godown facilities in and around the district.

Threats

- Degrading soil fertility especially with declining status of nitrogen and phosphorus.
- Declining factor productivity and rising cost of cultivation
- Increasing farmers' inability to invest in agricultural production system (majority being marginal and small land holders and resource poor)
- Rising problem of insect-pest and disease complex
- Weeds and insects thriving on common lands and government lands

B. Management of Fruits and Vegetable Production**Strengths**

- Favourable climate for production of different quality fruit (especially mango, litchi, citrus, ber, pineapple, drumstick, papaya, cashew nut, jackfruit) and vegetable crops
- Good road connectivity
- Homestead farming accommodating many horticultural crops

Weaknesses

- Lesser availability of quality seeds and planting material in time
- Non-availability of sufficient labour especially at crucial stages
- Lack of proper knowledge of farmers of modern production techniques, post harvest handling and marketing practices
- High transportation cost

Opportunities

- Growing marketing opportunities for fresh & processed fruits/vegetables to the regional and inter-national markets
- Increasing urbanization and changing food habits with preferences towards fruits and vegetables and agro products
- Scope for organic farming
- Wasteland and undulating land suitable for horticulture can be brought under mixed orchard
- Development of water harvesting and micro-irrigation facility

Threats

- Inefficient and less transparent marketing with monopoly of traders and multiple level of intermediation
- Weaker post harvest management, modern marketing facilities like cold storages/chains, pre-cooling and waxing centres
- Wide fluctuation in prices
- Increased incidence of pests and diseases

C. Management of Natural Resources**Strengths**

- Abundance of solar energy round the year
- Light soils, easy to work
- Rich bio-diversity
- Climate and soils suitable for growing quality crops

Weaknesses

- Coarse and light textured soils with poor nutrient and water retention capacities

- Degradation of soil fertility due to continuous cropping without adequate soil health management practices
- Acidic soils
- Infestation of weeds, insect-pest and disease complex
- Lack of integrated approach on NRM, INM and IPM by the farmers

Opportunities

- Untapped solar energy for agriculture use
- Unexplored bio-diversity with respect to vegetables and other crops
- Biomass available from livestock, crop and farm residue for maintaining proper soil health
- Technology available for increased yields and productivity with enhanced efficiency of natural resources and other inputs
- Immense scope exists to tackle resources degradation through integrated approaches of IFM, NRM, INM & IPM.

Threats

- Imbalanced fertilizer use creating soil health problem and decrease in productivity
- Shifting cultivation without any check in soil and water erosion

D) Management of Animal Husbandry**Strengths**

- Traditional expertise in cattle, pig, goat and duck rearing
- Presence of viable milk marketing network through co-operative societies, private agencies and individual milk traders
- Ample marketing avenues of animal based products and by products in and around the district
- Government backed disease management and breed up-gradation services

- Expanding poultry enterprise with promising income generation
- Cattle, goat and pig rearing, a popular enterprise among landless and poor sections of society

Weakness

- Poor stock with high mortality and poor growth in calves
- Infertility and delayed calving
- High susceptibility of diseases in improved / cross breed
- Low milk yield in cows
- Lack of proper management and feeding practices
- High costs of feed, medicines/vaccines and chicks
- Absence of Cooperative movement
- Poor insemination network and infrastructural development

Opportunity

- Scope exists for bridging yield gaps
- Growing demand for milk and other animal based products offers ready markets with higher returns and additional employment generation.
- Scope to rise on farm employment, income and increased availability of organic manure by substituting area under field crops in favour of fodder crops and thereby raising dairy on same area.
- Scope for post harvest processing of animal product and establishment of Hatchery / Breeding farms

Threats

- Non-descript poor graded bulls being used for natural insemination
- Increasing urbanization and high population pressure on land leads to less acreage under fodder production
- Shrinking pasture lands
- Frequent occurrence of diseases in cattle and pig

- Disease outbreak (even in far off places) causes the panic in consumers and producers suffer on account of crash in markets especially of poultry
- Poultry industry growth dependent on availability of feed and their competitive prices as feed cost is nearly 70% of total cost

E) Management of Fisheries

Strengths

- Overall fish production, productivity and acreage increasing steadily over years
- Vast unfulfilled demand for fish with easy market accessibility
- Technical, financial and marketing assistance by Government agencies for promotion of this sector
- Greater people participation and generation of employment opportunities especially for landless and marginal farmers

Weakness

- Weak infrastructure for fish seed production and genetic upgradation.
- Lack of farmer oriented activities e.g. trainings, demonstrations, exposure visits, awareness camps etc. to upgrade farmers' practices of fish production and management
- Inadequate quality seed availability of high yielding fresh water prawn
- Poor maintenance of common or panchayat pond

Opportunity

- Immense scope for fish seed (fingerlings) production to cater to the needs of fish farmers of the state
- Ample scope for mobilizing untapped water resources for aquaculture
- Good pig and cattle population releasing organic manures in pounds help in growth of natural food for fish

- Greater opportunities for diversification of traditional fish culture and agriculture to culture of high value fish species such as mangur, koi, singhi, prawn and ornamental fish
- Provision of financial assistance for popularizing integrated fish farming with agriculture, horticulture, dairying, poultry, piggery and duckery

Threats

- High mortality in juvenile and adult fish
- Lack of value addition and post harvest management practices by farmers
- Poor facilities for soil and water sample testing, disease diagnosis and post harvest infrastructures

F. Reasons for backwardness and issues impeding growth

The major obstacles affecting the progress and productivity of different crops and enterprises of the district as identified by participatory approach are listed hereunder:

Rice

- Prevalence of high temperature at maturity
- Poor adoption of seed treatment
- Increasing infestation of *leaf folder*, *Stem borer*, *Blast* and *Brown spot*
- Imbalanced fertilizer use

Mustard/Toria

- Poor adoption of S fertilization
- Aphid and shaw fly attack
- Imbalance application of P fertilizer
- No use of irrigation
- Higher planting density at narrow spacing

Groundnut

- Poor adoption of fertilizer
- Infestation of termite, aphid, red ants, stem rot, wilt and tikka disease

Horticultural Crops

- Poor planting material for fruits crops
- Non-availability of hybrid seeds from public sector
- Poor marketing infrastructure
- Fluctuating market prices

Animals**Cows**

- Local cows are not preferred by the farmers due to poor milk yield
- High age at first calving and longer inter-calving period
- Repeat breeding in crossbred cows due to poor nutrition and uterine infection.
- Poor results of artificial insemination due to lack of quality/proven bulls for natural service resulting in services by non-descript bulls
- Poor supplementation of mineral mixture and balanced ration
- Mechanization of agriculture led to poor demand of male calves
- Inadequate green fodder supply throughout the year.

Goat

- Indiscriminate breeding practices led to poor weight gain and low production
- Shrinking pastures / grazing lands or natural habitat
- Lack of good quality feed and fodder
- Unhygienic housing management

Pig

- Poor availability of improved cross breeds
- Inadequate breeding facilities
- Poor supplementation of mineral mixture and balanced feed
- Disease outbreak (especially Swine fever) causes the panic in consumers and producers suffer on account of crash in markets

Poultry

- Non-availability of improved breeds led to poor weight gain and low production
- High mortality due to disease outbreak like *Ranikhet* and *Avian Influenza* in chickens and plague in duck
- Poor poultry health services

Accommodating SWOT

- ⇒ Scientific dissemination of technical know-how
- ⇒ Mass awareness and involvement of farmer on use of soil health card
- ⇒ Encouraging the farmer for seed replacement through use of recently released improved and pest-disease resistance varieties
- ⇒ Intensification of credit facilities through the financial institution
- ⇒ Popularization of organic farming through use of bio-inputs
- ⇒ Popularization of Homestead farming and IFS/INM/IPM
- ⇒ Encouraging production of seeds including planting materials through seed village programme
- ⇒ Popularization of crop diversification by integrating field crops with horticulture and plantation crops
- ⇒ Promotion of agricultural implements/ farm tools
- ⇒ Dissemination of post harvest and processing technology

- ⇒ Development of marketing network
- ⇒ Extension of crop insurance for all crops
- ⇒ Establishment of horticultural nursery in the district
- ⇒ Supply of improved/ cross breed of animal and fish
- ⇒ Maintenance of existing water bodies
- ⇒ Streamlining the fish culture activities of village pond
- ⇒ Diversification of aquaculture to integrated farming
- ⇒ Popularization of fodder cultivation
- ⇒ Awareness on cluster approach

Growth drivers of the District

- ⇒ Visit and training of farmers and officials on modern farm management technology
- ⇒ Formation of Farmer's Interest Group (FIG) in agriculture and allied sectors
- ⇒ Organisation of Farmer's Field School
- ⇒ Development of existing marketing network
- ⇒ Strengthening the credit support
- ⇒ Development of rain water harvesting ponds
- ⇒ Adoption of bio-village for organic farming and certification
- ⇒ Development of production unit of vermicompost, mushroom and apiculture
- ⇒ Certification approach in seed and animal/fish feed quality
- ⇒ Assistance for popularization on use of modern farm implements
- ⇒ Bring more area under assured irrigation and introduction of micro-irrigation in horticultural and plantation crops
- ⇒ Establishment of cold storages
- ⇒ Establishment of processing and preservation plant of milk, fruits betel vine and animal products

- ⇒ Demonstration on liming to neutralize the soil and balance fertilization for maintenance of soil health
- ⇒ Encouraging farmer for production of certified/ hybrid seeds including planting materials
- ⇒ Strengthening storage facility and market infrastructure
- ⇒ Development of forestry and wasteland through bamboo and Jatropha plantation
- ⇒ Extensive awareness for prevention of disease in animals and poultry

Vision 2020

Agriculture & Allied Sectors

KVK, South Tripura

VISION 2020

Agriculture and Allied Sectors

Technological Prospective

The green, white and blue revolutions gave us food security. The high yielding varieties and new technologies were webbed with chemical farming. Even today we have critical gaps existing in productivity of agriculture by use of technology and those produced at traditional farmer's field. The unscientific farming system resulted in the soil degradation, water pollution, soil erosions and low productivity. Reduced soil depth has resulted into low productivity, increases soil runoffs and drought like conditions.

The technological gaps between research yields and farmer's yields are wide. The location specific, crop and soil specific innovations to farmer's practices are few. Our integrated and mixed farming practiced by our farmer's needs improvements which are not forthcoming. Our traditional agriculture system still exists in remote areas encompasses the use of old crop varieties, unscientific nutrient and pest management, etc.

Decision Support System. The globalization of agriculture marketing has put forth new challenges. It is not only the yield which matters, but the benefit/cost ratio. The economic viability of an agricultural product has now more importance. The product even if economic and globally competitive has to pass quality tests. The international phyto-sanitation standards are going to be tougher. The emergence of diseases like Mad cow disease or even SAARS being linked to animal cultures and other diseases from Agricultural and Livestock products warrants safe agricultural produce. The decision has to be supported

with information not only on marketing, international safety standards but also on a law regulating agencies and regulations too. Unawareness of this support system could lead us to bankruptcy. Thus a strong case for tools and information management comes into force. The computer networking and communication systems alone could help in decision making for appropriate and economic viable agricultural production.

Intelligent Agriculture Management. Now we do talk of ecologically based nutrient and pest management instead of Integrated Nutrient Management (INM) or Integrated Pest Management (IPM). The buzz word for future in this regard is Intelligent Nutrient or Pest Management (INM/IPM). As the system now advocated is not the blanket application of fertilizers or sprays of chemical pesticides but intelligent and well computed programmes of nutrient and pest management, which incorporates their safe and long term application, economic viability and safety of products. A well documented interaction between farmers, extension education workers, researchers and policy makers is necessary. This would take years if communication methodology of video-conferencing, internet, mobile phone services and related satellite technological advancement in communication is not used.

Precision Agriculture. Precision Agriculture focused on site-specific data collection for soil, crop management, field operations and automated data recording. The application of precision agriculture need to be introduced and clubbed with information and communication networking to harvest the gains and to improve productivity. This network may consist of an open software platform, which can be operated by the farmer himself. For efficient communication internet and mobile telecommunication have been

identified as important components. The development of an information and communication network integrating modern software technologies in a new user friendly manner is necessary to achieve better acceptance of technologies and improved productivity.

Satellite data as source of communication. Use of satellite data helped time-critical dependant applications. The remote sensing can introduce a new service to provide satellite data for near real time applications. This system provides Satellite data on critical applications, like crop yield modeling, pre-harvest crop production forecasting, detecting crop diseases, monitoring crop stress, pest infestation, floods, fires and oil-spills. Advance studies with high applications for increasing agricultural production needs quick dissemination.

Technology Transfer

Technology transfer is easy. We can announce technology practices or even demonstrate them. The key issue is its adoption. Our yields too are low to compete with others. Thus, transfer of technology has not to be limited to man methods, publication, leaflets, folders, bulletins, newsletters, journals, magazine, newspaper publication, rural farm broadcasts or television interviews but has to be supplemented with massive awareness campaigns. The propaganda, publicity and persuasion has to be supplied with communication skills like rural journalism, popular participation, motivation and more so through management of information systems. The farm visits, farmers calls, letters have to be intensified. Farmers need information on markets, standards and marketing research and networking mechanisms.

The rapid evolution of information science demands quick and speedy transfer of technologies, awareness and even subject reviews to farmer's for speedy application. The productivity would be better if

technological advances are adopted and their impact is known. A new concept of Farmer's Field School (FFS) with communication system can resolve 70% problems of farmers on spot.

Communication Vs Agriculture Production. In Kenya, use of advanced information and communication technologies reduced gaps in yields of Agricultural crops between research and farmer's fields. A district or state where 70% population is connected with agriculture for livelihood directly or indirectly, reduction in yield gaps through effective use of information and communication technology will have a significant impact. Similarly in Maharashtra, the low productivity in Soybean was found due to partial adoption of production recommendations by farmers. The low yield factors were analyzed. Economic constraints, situational factors and communication gaps on crop production, protection, seed treatment and fertilizer application were found responsible for it. The modernization of the material and technical information base can help farmer to increase agricultural production and rural development on a pilot basis.

There is need to use more technology based cropping system to increase productivity per unit land. Horizontal expansion is not possible. Imports of food grains, an anomaly over past decade, needs problem-cause-analysis. Similarly, the land degradation, mineral depletion and environmental pollution demands new mechanism to boost productivity. Farmer has to make adjustments in their farming system so as to integrate agriculture, aquaculture, water conservation and livestock rearing with new technology driven profit earning enterprises. Technology awareness and application is must to produce more per unit of land.

Our Vision

Over 65% of farmers in South Tripura district are small holders. The small holders have not only limited hold on land but on information too. Their case is further complicated as they do other work additionally as the small holdings is not sufficient to sustain them. They have limited access to knowledge. Farmer has to be well versed with objectives, problem, targets and implementation process. He has to make situation analysis and avoid group clashes in the villages. Thus, the knowledge and experiences of farmers, psychological values, expectations, needs and attitudes are to be organized. This organization and evaluation is not possible without use of modern and applicable communication methods. Welding communication with Agriculture technology is the need of the hour.

Food Production in South Tripura (2007-08)

| Commodity | South Tripura District | | | Tripura State | | |
|--------------------------|------------------------|-----------------|---------------|---------------|-----------------|---------------|
| | Area (ha) | Production (MT) | Yield (Kg/ha) | Area (ha) | Production (MT) | Yield (Kg/ha) |
| Rice | 83304 | 222472 | 2671 | 252897 | 640422 | 2532 |
| Maize | 718 | 764 | 1064 | 2123 | 2125 | 1001 |
| Wheat | 322 | 567 | 1761 | 1023 | 1859 | 1847 |
| Total Food Grains | 84344 | 223803 | 5496 | 256043 | 644406 | 5380 |
| Pulses (Others) | 1897 | 1351 | 719 | 5361 | 3496 | 652 |
| Arhar | 312 | 205 | 657 | 1221 | 892 | 722 |
| Total Pulses | 2209 | 1556 | 1376 | 6582 | 4388 | 1374 |
| Groundnut | 118 | 107 | 907 | 679 | 687 | 1012 |
| Sesamum | 560 | 323 | 595 | 1776 | 896 | 505 |
| Rapeseed/Mustard | 483 | 373 | 772 | 1451 | 1062 | 732 |
| Total Oilseeds | 1161 | 803 | 2274 | 3906 | 2645 | 2249 |
| Sugarcane | 468 | 23068 | 49291 | 959 | 46678 | 48674 |
| Potato | 2559 | 37361 | 14705 | 5800 | 84563 | 14380 |
| Cash Crops | 3027 | 60429 | 63996 | 6759 | 131241 | 63054 |
| Mesta | 297 | 1996 | 6.72 | 949 | 6810 | 7.18 |
| Cotton | 267 | 334 | 1.25 | 1109 | 1504 | 1.36 |
| Jute | 160 | 1270 | 7.94 | 458 | 3734 | 8.15 |
| Total Fibre | 724 | 3600 | 15.91 | 2516 | 12048 | 16.69 |

Source: Economic Review 2007-08, Directorate of Economics & Statistics, Govt. of Tripura

Area, production and productivity of horticultural crops in South Tripura (2007-08)

| Crops | Area (ha) | Production (MT) | Productivity (MT/ha) |
|------------|-----------|-----------------|----------------------|
| Fruits | 10264 | 142344.35 | 13.87 |
| Vegetables | 6604.50 | 75651 | 11.45 |
| Nut | 6469.85 | 7516 | 1.16 |
| Spices | 2231.51 | 8446.47 | 3.79 |
| Potato | 2560 | 38272 | 14.95 |

Source: Department of Horticulture, South Tripura

Requirement of Agriculture Commodity by 2020 in South Tripura

| Year | 2007 | 2012 | 2017 | 2020 |
|-------------------------|---------------|---------------|---------------|----------------|
| Human Population | 844125 | 913851 | 989336 | 1037588 |
| Cereal(MT) | 371415 | 402094 | 435308 | 456539 |
| Pulses(MT) | 50647 | 54831 | 59360 | 62255.3 |
| Oilseed(MT) | 40518 | 43865 | 47488 | 49804.2 |
| Vegetables (MT) | 151942 | 164493 | 178080 | 186766 |
| Fruits (MT) | 75971 | 82247 | 89040 | 93382.9 |
| Sugarcane (MT) | 33765 | 36554 | 39573 | 41503.5 |
| Fish (MT) | 10425 | 11286 | 12218 | 12814.2 |
| Milk (MT) | 126619 | 137078 | 148400 | 155638 |
| Meat (MT) | 71751 | 77677 | 84094 | 88195 |
| Eggs (No. in lakh) | 211.03 | 228.46 | 247.33 | 259.397 |

Mixed Farm Culture. Higher productivity gains can be achieved through application of technology and production recommendations at farmer's fields. We have more than 65% small and marginal farmers whose awareness potential is low. The production system prevailing with these farmers is a mixed farming or composite farming. In contrast to USA and European agriculture our necessity is to increase "crop-livestock-fish-plant integrated production system with multiple livelihood opportunities". Quick and fast measures are needed to unify our extension system, involving all agriculture and allied disciplines, industries, corporate sectors and farmer's institution.

Higher Productivity Concerns. Indian Agricultural pride years of green revolution (post 1968) saw reduction in food grain imports and subsequently white, blue and other revolutions sustained our population pressures and agriculture growth. Our agricultural growth rate (AGR) need to be equal if not more to population growth rate (PGR). Our AGR target ought to be double the PGR. This is important as consumption rates, purchasing power and employment prospects increase. An estimated food grain may need to be doubled in next 10 years. We have to achieve high targets of productivity by vertical expansion as horizontal land expansion is just not possible. The climatic disasters, earthquakes, floods; have effected our agricultural production in the past and additional requirements needs to be kept in mind while planning food security. We need to increase per capita consumption expenditures of Rs.600 per month. We need to bridge the gaps between potential and actual yields at farmer's level. Thus refined technology, participatory research and educational modules are needed. The new pressures of global marketing, world trade and tariff regulations have to be accommodated.

To achieve the objective of sufficient food production, good soil health, crop diversity, global marketing and multiple livelihood opportunities in sustainable manner, following vision has been worked out by Krishi Vigyan Kendra in South Tripura district:

a) Making the district self sufficient in food

- Commercialization of food production in a cluster approach through seed production (crop, animal and fish) and production maximization.
- Fertility restoration of degraded and wastelands through alternate land use technology delivery systems.

- Resorting to balanced input agricultural production in the valley ecosystem of the region.
- Facilitating natural resource conservation and their optimum use.
- Increasing cropping intensity from the present average of 176% to 226%.

Strategies to achieve the above goal

- Demonstrating agro-climate specific varieties and packages in a participatory mode involving farmers in selection process of such varieties to achieve an average production of 2.2 t/ha.
- Introducing double cropping in valley land area.
- To promote micro-irrigation system and consumptive use of water.
- To demonstrate suitable varieties and packages for other cereals namely maize and pulses crops like pigeon pea and green gram to achieve an additional food grain production.
- Seed production for the developed varieties of ICAR, SAU, etc. through Youth groups shall be constituted for seed production and delivery systems.

b) Fruit and vegetable sector development

- To raise fruit's productivity to the national average of 11.98 t/ha.
- To promote horizontal expansion of area of fruits and vegetables.

Strategies to achieve the above goal

- Gradual replacement of low producing varieties with high yielding varieties screened for different vegetable and fruit crops for different areas of the district.

- Production of required number of planting material both under field and protected conditions through training and demonstration, preparing master trainers from among the producers, awareness, etc.
- Arranging stake holder workshops/trainings to propagate orchard management packages to support production and maximize yield.
- In order to cover the additional areas, following initiative shall be taken –
 - establishment of nurseries and production sites for organic compost/vermicompost to support organic nutrient management.
 - training and introduction of integrated nutrient management, integrated pest and disease management concepts in the identified pockets.
 - training and introduction of *Jalkund* (water storage structure), micro-irrigation and other water harvesting devices for life saving irrigation.
- Facilitating procurement, processing and value addition to the produce at block/district level.

c) Spices and plantation crop sector development

- To increase the area and productivity of chilly and ginger.
- To explore processing, packaging and marketing both for domestic and export market.

Strategies to achieve the above goal

- Ginger and chilly varieties having processing qualities shall be evaluated by for propagation and production maximization.

- Facilitating private-public partnership for processing, value addition and marketing.
- Facilitating local production of inputs for large scale production.
- Development of mango nurseries for production of high yield varieties for distribution of seedlings.

d) Post Harvest handling of the produce

Post harvest losses of almost all the farm produce in the region is very high due to near zero facility for their handling, processing, value addition, packaging and even organized marketing. It is an irony that though the district produces good quality of ginger, pineapple, orange, mango, sapota, cashew nut etc., there is no processing unit for any of these crops. Due to transportation bottleneck restricting timely linkage between production site and the market, post harvest losses particularly for fruits and vegetable crops becomes very high ranging between 30 and 60%. Adequate measures therefore are very essential to reduce these losses which, if achieved, would add towards production enhancement.

Strategies to achieve the above goal

- Skill up gradation of both public and private operators in post harvest processing.
- Promotion of small and medium scale processing units in the line of cottage industry at village level.
- Tie up with corporate houses engaged in processing and marketing of agri-horti products facilitating procurement of small scale produces from the farmer's door and feeding the corporate houses in bulk quantities.

This is a sector where lot of employment opportunities for the unemployed youths exists.

e) Placing the district in the organic food production map

- To initiate development of organic food production process in selected crops with a view to enlisting the district in the organic food production map of the country.
- To convert shifting cultivation areas into organic zone.
- To disseminate technology for organic food production

Strategies to achieve the above goal

- Training and demonstration programmes will be conducted to field functionaries, farmers, NGOs and SHGs for promoting organic food production especially in upland and shifting cultivation areas.
- To provide technological backup in collaboration with NCOF, NABARD, research and institutions for production of inputs like seed, organic compost, biocontrol agents etc.
- Employment potential to rural youth shall also be generated by way of identifying seed, other input production villages to support the cause of organic agriculture.
- System mode production of organic food, their storage, processing, value addition and marketing shall create job opportunities for unemployed youth.

f) Precision farming

In the emerging world of precision planning to counter wastes and make the enterprises cost effective for taking a share in the

international trade, it has become imperative to develop technology for precision agriculture so as to utilize the scarce resources judiciously and effectively. It would be desirable from the research agencies to provide exact quantity of water and other input requirements to the farmers for each crop on per hectare basis so that farmer not only can plan for its requirement but also create such facilities to store them in advance. The vision therefore is:

- Inclusion of precision farming in KVK's programmes initially on selected crops on demand as per location specific strength.
- All necessary supports to the farmers for weather forecasting, measured application of nutrient for each crop and planning replenishment accordingly.

g) Production and health aspect of animals

Strategies to achieve the production and health aspects of animals:

- At least 1-2 villages in tribal dominated blocks are to be identified as pig village with the mandate of multiplying the cross bred pigs of 75% exotic inheritance for distribution to fattener farmer.
- At least three farmers' club be mobilised to take care of service delivery namely, animal health inputs, feed inputs and procurement of finisher pigs from the producers from their door step for the purpose of slaughter at the abattoirs so established. Each club shall be trained on the specified areas.
- Promotion of goat, rabbit and duckary farming to get additional income to rural youth and farmers.
- Choosing progressive farmers as future trainers and training them for modern management practices for rearing of dairy animals.

- Using para-vets or educated unemployed local village youth for AI service and veterinary first aid.

h) Pond aquaculture

- Quality fish seed and their timely availability have been identified to be the main cause of low productivity. Utilization of all the available pond resources of the district for carp polyculture will improve the yield rate of fish.
- Unwanted/undesirable fishing practices like poisoning, dynamiting and juvenile fishing are also rampant resulting in decline in fish stock and habitat alterations. This calls for an urgent need to bring in awareness among the fisher folk so that the rivers are optimally exploited, protecting the habitat.

Strategies to achieve the above goal

- On-farm demonstrations and training on carp culture through master trainers.
- Popularization of eco-hatcheries for self sufficiency in quality fish seeds.
- Awareness for establishment of fish producer's co-operative society/ farmer's club with the concept of fish business centers to act as information and service delivery centers.
- Partnering of village panchayats with agriculture departments implementing watershed development project in the district to harness the benefit of water harvesting structures created under the project for pond fish culture.

- Conducting awareness programme on ill effect of undesirable fishing practices like poisoning, dynamiting etc.
- Creating facilities for fish seed production.
- Popularizing raised and sunken bed technology to utilize marshy land areas for paddy-cum-fish culture.
- Popularization of diversified and integrated fish culture.

i) Intensive integrated farming system

In order to address the challenge of natural resource conservation, necessity to bring in improvement/suitable modification in shifting cultivation practices, support to organic agriculture movement, harnessing the benefit from crop-animal-fish complementarities as well as to ensure household food and nutritional security for the poor of the region, the vision is to promote in a massive way the concept of intensive integrated farming system

Strategies to achieve this goal

- Water harvesting structure so created shall be used for fish production depending on altitudinal advantage which will be supported by animal component in an integrated manner.
- The animal waste like dung and urine shall be used for vermicomposting, liquid manuring etc.
- Integration shall further be supported by agri-horticultural crop in the lower and upper terraces as well as through raised and sunken beds technology wherever marshy land exists.
- *In situ* production of farm inputs shall be attempted including soil health rejuvenation through hedge row system in the bunch. The IFS models already developed shall be demonstrated in the identified village.

j) Homestead farming

- Considering the shrinking average land holding and also the requirement of *in situ* conservation of bio-resources, particularly the integration of horticulture, animals, poultry and other agriculture enterprises with low-cost technologies through commercial means is envisioned.

Strategies to achieve the above goal

- Diagnostic survey and evaluation of existing homestead farming systems through survey to append information on existing practices, crop and animal varieties, area under HFS, family size, species richness and diversity of the plant species, ITKs related to plant and animals management, source of water, inputs, production and productivity, economic returns, etc.
- Evaluation of present HFS from the point of view of economics and conservation of resources and their documentation.
- Introduction of subsidiary source of income such as mushroom cultivation, apiculture, vermin-culture, introduction of new strains for crops, goatary and poultry in existing HFS.
- Quantification of water requirement and water use efficiency for integrated fish and livestock farming system in HFS.
- Standardization of design of water harvesting system and tapping of rain waters.
- Development of crop and animal calendar for their efficient management in HFS.

- Skill enhancement through imparting training on preservation value addition to the produce.
- Replication of potential HFS in participatory mode in different farming system.

i) Utilization of agricultural waste

Eco-friendly utilization of domestic and agricultural farm waste in a manner that they are converted into source of nutrients to the crop/animal through established and emerging systems of bio-conversion.

Strategies to achieve the above goal

- Soil amelioration and fertility enrichment through utilization of agricultural waste-
 - Convergence efficiency of crop residues/domestic/animal waste through indigenous/exotic earthworm species.
 - Standardization of techniques for nutrients enrichment of agricultural waste.
 - Changes in soil physico-chemical and bio-fertility as influenced by recycle waste material.
 - Quantification of waste compost requirement for various crops on cropping sequence basis.
 - Identification and quantification of waste material for amelioration of acidic soil.
- Utilization of waste material to meet out the domestic energy requirement :
 - Identification of various waste materials for biogas production.

- Screening and efficiency of various crop residues for making charcoal.
- Recycling of agricultural waste for mushroom production
 - Testing of different crop residues for low cost mushroom production.
 - Proximate analysis of mushrooms and spent substrates and compost to use as cattle feed, manure and vermicompost etc.
- Use of crop and domestic waste as feed to livestock and poultry
 - Survey and exploration of agricultural and domestic waste potential for their economical use as feed for animal and poultry.
 - Nutritive values analysis of waste materials for enhancement/support to animals and poultry production.

J) Validating ITKs in agriculture and allied sector

- Farmers in the remote areas have been depending on the ITKs developed by their forefathers for diseases/ pests/ parasites control, crop rotation, natural resource conservation and utilization, seed storage etc. Validation and scientific intervention in this system will be planned for developing eco-friendly and sustainable production systems particularly in the fragile ecosystem of the district.

Strategies to achieve the above goal

- Identification of major ITKs for IPM and soil and water conservation by conducting survey by a multidisciplinary

team of SMS and identification of the major ITKs through participatory means based on applicability and economic viability.

- Documentation of major ITKs.
- Scientific validation of selected ITKs by studying their technical feasibility, compatibility with socio-cultural system, compatibility with agro-ecosystem and economic viability.
- Refinement and integration of ITKs through comparing the performance with that of farmer's field from where ITKs have been identified. Selected ITKs would then go through scientific refinement and testing by integration of ITKs in the farming system.
- Popularization of validated and refined ITKs through Demonstration/ verification trials in the farmers' field, mass media campaign and orientation programmes with the help of NGOs and SHGs.

k) Sanitary and phytosanitary measures

Sanitary and phytosanitary measures are important aspect to tap export market potential through good agricultural practices (GAP) and organic farming.

Strategies to achieve the above goal

- Monitoring of diseases and pests to prevent probable transmission during post harvest processing, packaging and transportation of animal and plants products
- Creating awareness to follow HACCP and GMP standards for export marketing.

- Chemical and antibiotic residue testing in produces, detection of hazardous chemicals and environment pollutants in soil, livestock and plant and their products.
- Developing methodology and protocols for monitoring of organic farms for certification.
- Training and awareness to promote organic agriculture.
- Providing a mechanism for monitoring and surveillance of pathogens, input utilization mechanism, management practices, etc. for organic certification.

1) Strengthening knowledge base of women involved in agriculture

Women work force in the district is also the decision makers. However, advanced knowledge is normally given to the men work force for which the knowledge is left unutilized. By 2020, knowledge base of the women work force is planned to be increased through training and various other human resource development programmes. Training is also planned to be reoriented for addressing the women related problems in agriculture and allied sector with a view to increasing overall production by increasing the efficiency of women partners.

Strategies to achieve the above goal:

- Addressing lack of education, training, women specific technologies and entrepreneurs among women arranging Scientist-Extension agency- Women interfaced to identify women related issues in agriculture.
- Skill up gradation through training and demonstration.
- Mobilisation of women SHGs and building their technical competency.
- Organising film etc. shows on success stories of women movement in agriculture.

m) Disseminating evolved technologies for enhancing production

For assessment, refinement and dissemination of evolved technologies in a focused manner, one model village for each of the important crop and animal is also planned to be established to spread the message of the benefit from improved technologies. Each adopted village shall be facilitated by both public and private the extension machineries.

Strategies to achieve the above goal

- Enhancing the pace of adoption of modern agricultural technologies.
- Concentrated efforts will be made to develop two to three model villages in the district for demonstration of modern technologies and for providing consultation to farmers for extracting maximum benefit from new technologies. Assessment and refinement of evolved technologies too will be carried out in a partnership approach to suit farmers' need.
- To facilitate the input and credit supply in agriculture and agro-based industries a platform for interface between farmers and financial institutions will be provided. Financial institutions will also be provided information about probable benefits of investing in frontline agricultural technologies for which the region has an advantage over rest of the country.
- Skill upgradation on what to produce, how to produce, how much to produce, how to store, process and add value and how to market.

n) Using Information Technology in agriculture

Studies on market dynamics and intelligence through IT-based technologies are planned to be carried out together with developing E-villages both for feeding market information, agricultural input services and weather-based information and produce delivery systems. Collaboration with Space Research Organization, Community Information Centers, marketing wings of State Government and other financing bodies, IGNOU and self help groups is planned to achieve this.

Strategies to achieve the above goal

- Enhancing farmer's knowledge base through development of suitable decision support systems based on technologies and resource analysis to help farmers in decision making. This decision support system will be a two part system. The first part, based mainly on market intelligence and resource availability information would help farmers to decide what to grow, when to grow, how much should be the production target and where to sell. In addition, it will also contain information on credit availability, source of seed/planting material/breed, insurance facilities etc. collected from various agencies. Financial institutions, suppliers, SHGs will be consulted to develop this part of the system. The second part will be based on technical information like crop cultivation/animal husbandry decisions, health care, implements, storage systems, processing systems, etc.
- Development of forewarning system for crop/animal/fish production by collecting and analyzing weather based information and dissemination of agro-advisories through

mass media and communication network to minimize losses occurring due to natural calamities.

- To strengthen the information flow among various players, collection of market information such as arrivals and prices of agricultural produce, input prices and availability and make them available to farmers after proper synthesis. Efforts will be made to develop a communication network in collaboration with NIC, ISRO, financial institutions, state and central agencies up to Block level.
- One model E-village in the district shall be created to monitor the impact and refinement of information dissemination system. Some persons from each model village will be trained to man systems in villages and SHGs will be created to extend benefit of the systems at village level.
- A farmer's help line will be created for providing timely help to farmers in far flung areas.
- A sound database on agri-horti-animal-fish and bio-resources of the district shall be developed. Information network through automation and other means shall be widened for single window information delivery system.

o) Block level Agri Business Centres

Agribusiness has facilitated movement of farm produce from neighbouring countries. Disparities in prices of the commodities are mind boggling. For example, if ladies finger is available at production site at Rs.0.50/kg, the price of the same at capital township is around Rs. 15/kg. Main reason for this scenario is the dominant role of middle

man and lack of information on prices etc at village/block level. The vision therefore is to promote agri-business centre involving the unemployed youths who have become the soft targets for recruitment by the extremist organization due mainly to industrial backwardness and non-lucrative business avenue in agriculture sector.

Strategies to achieve the above goal

- Youth groups at block level are to be mobilized to take the benefit of various Central/ State Govt. schemes for agriculture and rural development.
- To organize skill up gradation programme and capacity building including development of master trainers on organic farming, good agricultural practices, productivity improvement, post harvest handling, processing, value addition and marketing.
- Awareness programme to establish rural godown for storage and processing of the produce to be collected from individual household paying prices commensurating with market price. Alternatively, such agri-business centers shall work as collection centers of farm produce.
- Helping in establishment of agri-clinic in this center by unemployed agricultural/veterinary graduates to provide door to door services for plant/animal health protection.
- Each centre is to be equipped with information technology backup for arranging information dissemination at block/village level through the concept of E-Chaupals (ITC).

- Each centre to be also equipped with facilities for seed/planting material production (green house technology), medium scale processing and packaging units and community training hall/centers.
- A small group of such centre shall take up the responsibility to create awareness among the masses on education, health, sanitary issues, WTO and IPR issues. This group will also maintain forward and backward linkages with experts and the client group, respectively.

p) Addressing the constraints in deliverables

- In order to address the constraints like cold/heat tolerance, flood tolerant, disease and pest resistant varieties with higher production potential, adequate support through research backup shall be provided in the form of resistant/tolerant varieties, weather-based disease and pest forecasting models for both crop and animals.
- Cost effective technological backup shall be provided for countering soil acidity, and toxicity to sustain the fertility status of the soil for optimum production besides solution for countering the problem of nutrient deficiencies.
- The constraints of animal feed availability shall be attempted to address through the development of suitable feed formula based on locally available feed ingredients.
- Production constraint due to lack of improved farm tools and machineries shall be addressed through the demonstration of improved tools and machineries by blending traditional and modern knowledge.

- The constraint of seed storage, post harvest handling and processing of the produce shall be addressed through development of appropriate technologies.
- Water scarcity problem particularly during winter shall be countered through the development of cost effective rain/roof water harvesting modules like 'jalkund'.
- Precise requirement of water and organic/inorganic fertilizers for different crops on per hectare basis shall be assessed through precision farming for facilitating spread of contract farming concept.

q) Managing the effect of Global Warming

To minimizing the increase in global temperature which is predicted to rise by 1.4°C by 2030, studies on carbon sequestration, reduced emission of greenhouse gases etc. from the agriculture and allied sector fields and commodities may be undertaken.

Strategies to achieve the above goal:

- Introducing high producing animals to reduce the methane production by 45%. This will serve a three-pronged purpose i.e. efficient utilization of feed resources, increase in the quantum of animal produce and reduction in methane emission.
- Changing feeding practices by altering the current feeding by-
 - replacing part of grasses with legume forages
 - reducing particle size of feeds by chopping, fine grinding etc.

- feeding complete diets to animals by mixing ground roughages and concentrates
- Dissemination of suitable water management practices in lowland paddy fields to create intermittent aerobic conditions to reduce methane and N₂O production.
- Anaerobic fermentation of excreta to yield biogas without sacrificing its manuring value so as to reduce the direct addition of CH₄ and N₂O to the atmosphere.
- Reducing the use of nitrogenous fertilizers through INM system to check the nitrogen losses from the soil and N₂O.
- Controlling the biomass burning and proper measure of agricultural waste disposal and management.
- Carbon sequestration through enriching the organic carbon in soil through crop residue incorporation, manure addition including green manuring, adopting conservation tillage practices and suitable crop rotations and growing cover crops.

Vision for Food Production of Cereals, Pulses, Oilseeds, Vegetables, Fruits, Milk, Meat, Eggs and Fish in South Tripura district during 2007-2020

1. Cereals

| Food: Cereals | Base Data (2007-08) | | | Strategies and Expected Production of Cereals | | | | | | | | |
|---|---------------------|-----------------|----------------------|--|-----------------|----------------------|--|-----------------|----------------------|---|-----------------|----------------------|
| | | | | 2012 | | | 2017 | | | 2020 | | |
| Projected Population | 844124 | | | 913850 | | | 989335 | | | 1037587 | | |
| | Area (ha) | Production (MT) | Productivity (MT/Ha) | Area (ha) | Production (MT) | Productivity (MT/Ha) | Area (ha) | Production (MT) | Productivity (MT/Ha) | Area (ha) | Production (MT) | Productivity (MT/Ha) |
| Requirement | - | 371415 | - | - | 402094 | - | - | 435308 | - | - | 456539 | - |
| Projected Production | 84344 | 223803 | 2.65 | 96996 | 387982 | 4 | 101845 | 458304 | 4.5 | 106938 | 534688 | 5 |
| Expected per capita availability (gm) | 265 | | | 425 | | | 463 | | | 515 | | |
| Surplus (+)/Deficit (-) | 147612 (-) | | | 14112 (-) | | | 22996 (+) | | | 78149 (+) | | |
| Vision Strategies 440g/head/day | | | | <ul style="list-style-type: none"> Increase in area by 15 % from the base year 2007 Target production 73.35 %. Increase in yield per unit area through double cropping By growing short duration paddy varieties Promotion of SRI during Rabi season Maintenance of soil sustainability through INM Efficient management of soil and water Introduction of HYV/hybrid Rice and Maize | | | <ul style="list-style-type: none"> Increase in area by 5 % from the year 2012 as base Target production 18.2 %. Adoption of INM & IPM Adoption of water harvesting technologies Soil conservation through jhum land development | | | <ul style="list-style-type: none"> Increase in area by 5 % from the year 2017 as base Target production 16.7 %. Expansion of area under irrigation Upgradation of human resources through extension activities Land development and farm mechanisation | | |

2. Pulses

| Food: Pulses | Base Data (2007-08) | | | Strategies and Expected Production of Pulses | | | | | | | | |
|--|---------------------|-----------------|----------------------|--|-----------------|----------------------|---|-----------------|----------------------|---|-----------------|----------------------|
| | | | | 2012 | | | 2017 | | | 2020 | | |
| Projected Population | 844124 | | | 913850 | | | 989335 | | | 1037587 | | |
| | Area (ha) | Production (MT) | Productivity (MT/Ha) | Area (ha) | Production (MT) | Productivity (MT/Ha) | Area (ha) | Production (MT) | Productivity (MT/Ha) | Area (ha) | Production (MT) | Productivity (MT/Ha) |
| Requirement | - | 50647 | - | - | 54831 | - | - | 59360 | - | - | 62255 | - |
| Projected Production | 2209 | 1556 | 0.7 | 5523 | 11045 | 2 | 11045 | 27613 | 2.5 | 22090 | 66270 | 3 |
| Expected per capita availability (gm) | 2 | | | 12 | | | 28 | | | 64 | | |
| Surplus (+)/Deficit (-) | 49091 (-) | | | 43786 (-) | | | 31748 (-) | | | 4015 (+) | | |
| Vision Strategies 60g/head/day | | | | <ul style="list-style-type: none"> Increase in area by 150 % from the base year 2007 Adoption of HYV Adoption of INM & IPM Introduction of non-traditional pulse crops like Arhar, Green gram, Field Pea, Soybeans, etc. Efficient management of soil and water Promotion of seed production | | | <ul style="list-style-type: none"> Increase in area by 100 % from the year 2012 as base Maximize area under HYV Creating infrastructure for promotion of processing and value addition Upgradation of human resources through extension activities Promotion of seed production unit and certification | | | <ul style="list-style-type: none"> Increase in area by 100 % from the year 2017 as base Expansion of area under irrigation Promotion of high technology commercial farming Creating marketing network | | |

3. Oilseeds

| Food: Oilseeds | Base Data (2007-08) | | | Strategies and Expected Production of Oilseeds | | | | | | | | |
|--|---------------------|-----------------|----------------------|---|-----------------|----------------------|--|-----------------|----------------------|---|-----------------|----------------------|
| | | | | 2012 | | | 2017 | | | 2020 | | |
| Projected Population | 844124 | | | 913850 | | | 989335 | | | 1037587 | | |
| | Area (ha) | Production (MT) | Productivity (MT/Ha) | Area (ha) | Production (MT) | Productivity (MT/Ha) | Area (ha) | Production (MT) | Productivity (MT/Ha) | Area (ha) | Production (MT) | Productivity (MT/Ha) |
| Requirement | - | 40518 | - | - | 43865 | - | - | 47488 | - | - | 49804.2 | - |
| Projected Production | 1161 | 803 | 0.69 | 3483 | 5225 | 1.5 | 9578 | 19157 | 2 | 26340 | 52680 | 2 |
| Expected per capita availability (gm) | 1 | | | 6 | | | 19 | | | 51 | | |
| Surplus (+)/Deficit (-) | 39715 (-) | | | 38641 (-) | | | 28332(-) | | | 2876 (+) | | |
| Vision Strategies 50g/head/day | | | | <ul style="list-style-type: none"> Increase in area by 200 % from the base year 2007 Adoption of HYV Double cropping of groundnut Adoption of INM & IPM Efficient management of soil and water Promotion of seed production | | | <ul style="list-style-type: none"> Increase in area by 175 % from the year 2012 as base Maximize area under HYV Creating infrastructure for promotion of processing and value addition Upgradation of human resources through extension activities Promotion of seed production and certification | | | <ul style="list-style-type: none"> Increase in area by 175 % from the year 2017 as base Expansion of area under irrigation Promotion of high technology commercial farming Creating marketing network | | |

4. Vegetables

| Food: Vegetables | Base Data (2007-08) | | | Strategies and Expected Production of Vegetables | | | | | | | | |
|---|---------------------|-----------------|----------------------|--|-----------------|----------------------|---|-----------------|----------------------|--|-----------------|----------------------|
| | | | | 2012 | | | 2017 | | | 2020 | | |
| | Area (ha) | Production (MT) | Productivity (MT/Ha) | Area (ha) | Production (MT) | Productivity (MT/Ha) | Area (ha) | Production (MT) | Productivity (MT/Ha) | Area (ha) | Production (MT) | Productivity (MT/Ha) |
| Projected Population | 844124 | | | 913850 | | | 989335 | | | 1037587 | | |
| Requirement | - | 151942 | - | - | 164493 | - | - | 178080 | - | - | 186766 | - |
| Projected Production | 6604.5 | 75651 | 11.45 | 7595 | 113928 | 15 | 8734 | 157220 | 18 | 9608 | 192158 | 20 |
| Expected per capita availability (gm) | 90 | | | 125 | | | 159 | | | 185 | | |
| Surplus (+)/Deficit (-) | 76291 (-) | | | 50565 (-) | | | 20860 (-) | | | 5392 (+) | | |
| Vision Strategies 180g/head/day | | | | <ul style="list-style-type: none"> Increase in area by 20 % from the base year 2007 Target production of 50 % Popularisation of improved and HYV Adoption of INM & IPM Efficient management of soil and water through Integrated Farming System Promote Vermicomposting and Water Harvesting Tank Promote post-harvest technology | | | <ul style="list-style-type: none"> Increase in area by 10 % from the year 2012 as base Target production of 37 % Increase area under Off-season vegetables Popularisation of INM & IPM Promotion of processing and value addition Upgradation of human resources through extension activities | | | <ul style="list-style-type: none"> Increase in area by 10 % from the year 2017 as base Target production of 22.22 % Expansion of area under irrigation Promotion of high technology commercial farming Creating marketing network | | |

5. Fruits

| Food: Fruits | Base Data (2007-08) | | | Strategies and Expected Production of Fruits | | | | | | | | |
|--|---------------------|-----------------|----------------------|---|-----------------|----------------------|--|-----------------|----------------------|---|-----------------|----------------------|
| | | | | 2012 | | | 2017 | | | 2020 | | |
| Projected Population | 844124 | | | 913850 | | | 989335 | | | 1037587 | | |
| | Area (ha) | Production (MT) | Productivity (MT/Ha) | Area (ha) | Production (MT) | Productivity (MT/Ha) | Area (ha) | Production (MT) | Productivity (MT/Ha) | Area (ha) | Production (MT) | Productivity (MT/Ha) |
| Requirement | - | 75971 | - | - | 82247 | - | - | 89040 | - | - | 93382.9 | - |
| Projected Production | 16858 | 155988 | 7.81 | 18544 | 278157 | 15 | 19471 | 350478 | 18 | 20445 | 408891 | 20 |
| Expected per capita availability (gm) | 185 | | | 304 | | | 354 | | | 394 | | |
| Surplus (+)/Deficit (-) | 80017 (+) | | | 195910 (+) | | | 261438 (+) | | | 315508 (+) | | |
| Vision Strategies 90g/head/day | | | | <ul style="list-style-type: none"> Increase in area by 10 % from the base year 2007 Target production of 50 % Rejuvenation of old existing orchards Use of quality planting materials Promotion of intercropping Promote Vermicomposting and Water Harvesting Tank Promote post-harvest technology | | | <ul style="list-style-type: none"> Increase in area by 5 % from the year 2012 as base Target production of 37 % Introducing prolific fruit bearing varieties Establishment of processing units at strategic areas Promotion of processing and value addition Upgradation of human resources through extension activities | | | <ul style="list-style-type: none"> Increase in area by 5 % from the year 2017 as base Target production of 22.22 % Adoption of micro-irrigation Promotion of high technology commercial farming Creating marketing network Establishment of Cold storage facilities | | |

6. Milk

| Food: Milk | Base Data (2007-08) | Strategies and Expected Production of Milk | | |
|---|------------------------|---|---|---|
| | | 2012 | 2017 | 2020 |
| Projected Population | 844124 | 913850 | 989335 | 1037587 |
| | Production (MT) | Production (MT) | Production (MT) | Production (MT) |
| Requirement | 126619 | 137078 | 148400 | 155638 |
| Projected Production | 27073 | 48731 | 87717 | 157890 |
| Expected per capita availability (gm) | 32 | 53 | 89 | 152 |
| Surplus (+)/Deficit (-) | 99546 (-) | 88347 (-) | 60683 (-) | 2252 (+) |
| Vision Strategies 150g/head/day | | <ul style="list-style-type: none"> Replacing 10% of existing indigenous cattle with high yielding cross bred cattle Grading up of indigenous cattle Popularising milk based products Emphasis on mobile insemination and veterinary services Formation of Milk production based Farmers' Union Popularising cattle feed and fodder production | <ul style="list-style-type: none"> Replacing 30% of existing indigenous cattle with high yielding cross bred cattle Grading up of indigenous cattle Popularising milk based products Emphasis on mobile insemination and veterinary services Formation of Federation of milk based Farmers' Union Popularising cattle feed and fodder production Arranging Credit support Developing marketing facilities | <ul style="list-style-type: none"> Replacing 40% of existing indigenous cattle with high yielding cross bred cattle Grading up of indigenous cattle Emphasis on mobile insemination and veterinary services Developing marketing facilities |

7. Meat

| Food: Meat | Base Data (2007-08) | Strategies and Expected Production of Meat | | |
|--|---------------------|--|---|--|
| | | 2012 | 2017 | 2020 |
| Projected Population | 844124 | 913850 | 989335 | 1037587 |
| | Production (MT) | Production (MT) | Production (MT) | Production (MT) |
| Requirement | 71751 | 77677 | 84094 | 88195 |
| Projected Production | 70343 | 79488 | 89821 | 101498 |
| Expected per capita availability (gm) | 83 | 87 | 91 | 98 |
| Surplus (+)/Deficit (-) | 1408 (-) | 1811 (+) | 5727 (+) | 13303 (+) |
| Vision Strategies 85g/head/day | | <ul style="list-style-type: none"> Grading of Indigenous pigs Scientific feed management of pigs Introduction of dual purpose poultry like 'Grampriya' Formation of SHGs for Pig breeding Castration of male goat kids Intensification of artificial insemination Health care and veterinary service delivery | <ul style="list-style-type: none"> Proper feed and housing management Control of inbreeding Replacement of local piglets with improved breeds Introduction of high yielding germplasm of goats Integrated parasite management in animals Installation of hatchery Developing meat processing and packaging units | <ul style="list-style-type: none"> Proper feeding management Proper health management Value addition and by-product utilisation of livestock products |

8. Egg

| Food: Egg | Base Data (2007-08) | Strategies and Expected Production of Egg | | |
|--|------------------------|---|---|---|
| | | 2012 | 2017 | 2020 |
| Projected Population | 844124 | 913850 | 989335 | 1037587 |
| | Production (MT) | Production (MT) | Production (MT) | Production (MT) |
| Requirement (Number in lakhs) | 211 | 228 | 228 | 259 |
| Projected Production (Number in lakhs) | 344 | 351 | 358 | 365 |
| Expected per capita availability (number of eggs) | 2 | 3 | 3 | 3 |
| Surplus (+)/Deficit (-) | 133(+) | 123 (+) | 130 (+) | 106 (+) |
| Vision Strategies 0.25 egg/head/day | | <ul style="list-style-type: none"> • Increase in number of layers • Introduction of high yielding breeds like 'Grampriya' • Supplement of cheaper and quality feed under backyard system • Establishment of mini hatcheries • Emphasis on mobile vaccination and veterinary services | <ul style="list-style-type: none"> • Increase in number of layers • Supplement of quality feed • Establishment of mini hatcheries • Emphasis on mobile vaccination and veterinary services • Development of Marketing facilities | <ul style="list-style-type: none"> • Supplement of quality feed • Establishment of mini hatcheries • Emphasis on mobile vaccination and veterinary services • Development of Marketing facilities |

9. Fish

| Food: Fish | Base Data (2007-08) | Strategies and Expected Production of Fish | | |
|---|---------------------|--|---|---|
| | | 2012 | 2017 | 2020 |
| Projected Population | 844124 | 913850 | 989335 | 1037587 |
| | Production (MT) | Production (MT) | Production (MT) | Production (MT) |
| Requirement (MT) | 10425 | 11286 | 12218 | 12874 |
| Projected Production (MT) | 11094 | 13868 | 18028 | 25239 |
| Expected per capita availability (kg/head/year) | 13 | 15 | 18 | 24 |
| Surplus (+)/Deficit (-) | 669 (+) | 2582 (+) | 5810 (+) | 12365 (+) |
| Vision Strategies 13 kg/head/year | | <ul style="list-style-type: none"> Practice pre- and post-stocking system Establishment of mini hatchery by SHGs Supplement of cheaper and quality feed under backyard system Introduction of Integrated fish-cum-pig/poultry system | <ul style="list-style-type: none"> Extend pre- and post-stocking system Production of required fish seed production by SHGs Popularization of Integrated fish-cum-pig/poultry system Various value added fish product development | <ul style="list-style-type: none"> Adoption of Integrated fish-cum-pig/poultry system at large scale Marketing of value added fish products |

Vision for Infrastructure Development and Technical Activities of KVK, South Tripura during 2007-2020

1) Infrastructure development

| Year | Infrastructure Development |
|------|--|
| 2009 | Establishment of demonstration unit of Vermicompost, Mushroom, Fishery, Piggery, Duckary, Rainwater Harvesting ,etc. |
| 2010 | Establishment of Soil Testing Laboratory, Horticulture Nursery, New Fruit Orchard, Integrated Farming System Unit |
| 2011 | E-connectivity, Construction of Administrative-cum-Laboratory Building, Development of Seed Farm |
| 2012 | Development of small scale fruit and vegetable preservation and processing unit, Fish fingerling production unit |
| 2013 | Hatchery unit for poultry, Hi-tech horticulture nursery, Micro-irrigation unit |
| 2014 | Development of Bio-dynamic unit and farm crech |
| 2015 | Construction of Farmer's Hostel and Staff Quarters |
| 2016 | Development of Tissue Culture unit |
| 2017 | Development of Bio-fertiliser and Bio-pesticide unit |
| 2018 | Development of Eco-Farm, Floriculture Unit |
| 2019 | Development of Dairy and Goat unit |
| 2020 | Development of feed and fodder production unit |

2) Trainings

| Year | Training Programmes |
|---------|--|
| 2007-12 | <p><u>Agronomy:</u> Resource Conservation Technology, Integrated Crop Management, Soil Fertility Management, Nutrient Management.</p> <p><u>Horticulture:</u> Improved package of practices of vegetables, Production technology of off season vegetables, nursery raising of vegetable crops, production technology of tuber crops, integrated farming system, home stead farming.</p> <p><u>Plant Protection:</u> Integrated insect pests and diseases management (IPM and IDM) of Paddy, vegetables, fruit crops, pulses and oilseeds, Vermicomposting Technology, Scientific Mushroom Production Technology, Scientific bee keeping, Sericulture Farming.</p> <p><u>Fisheries:</u> Integrated fish farming, Carp breeding and hatchery management, Composite fish culture, Hatchery management and culture of freshwater prawn, Portable plastic carp hatchery</p> <p><u>Animal Science:</u> Pig farming, Rural Poultry, Scientific Feed and disease management, Fodder crops, Sheep and goat rearing, rabbit farming.</p> <p><u>Home Science:</u> Women and child care, Value addition, Kitchen gardening and nutrition gardening, Storage loss minimization techniques, Income generation activities for empowerment of rural women, Tailoring and stitching.</p> <p><u>Agril. Extension:</u> Group dynamics, Management of SHG groups, Entrepreneurial development, Gender mainstreaming through SHGs, WTO and IPR issues.</p> <p><u>Agril. Engineering:</u> Soil and water conservation, Use of plastics in farming practices, Care and maintenance of farm machinery and implements, Small scale processing and value addition, Post harvest technology, Protected cultivation, Micro-irrigation, Conjunctive use of water.</p> |
| 2012-17 | <p><u>Agronomy:</u> Soil and Water Conservation, Water management, Integrated Nutrient Management, Productivity enhancement in the field crops, Cropping system.</p> <p><u>Horticulture:</u> Production technology of low volume high value</p> |

| | |
|---------|---|
| | <p>vegetables, Integrated nutrient management in high value vegetables, nutrient management in spices, quality planting materials production of fruits, lay out and planting of orchard, high density planting of fruits.</p> <p>Plant Protection: Integrated insect pests and diseases management (IPM and IDM) of Paddy, vegetables, fruit crops, pulses and oilseeds, Vermicomposting Technology, Scientific Mushroom Production Technology, Scientific bee keeping, Sericulture Farming.</p> <p>Fisheries: Integrated fish farming, Composite fish culture, Hatchery management and culture of freshwater prawn, Portable plastic carp hatchery, Ornamental fisheries</p> <p>Animal Science: Pig farming, Rural Poultry, Scientific Feed and disease management, Fodder crops, Sheep and goat rearing, rabbit farming.</p> <p>Home Science: Women and child care, Value addition, Kitchen gardening and nutrition gardening, Storage loss minimization techniques, Income generation activities for empowerment of rural women, Tailoring and stitching.</p> <p>Agril. Extension: Group dynamics, Management of SHG groups, Entrepreneurial development, Gender mainstreaming through SHGs, WTO and IPR issues.</p> <p>Agril. Engineering: Soil and water conservation, Use of plastics in farming practices, Care and maintenance of farm machinery and implements, Small scale processing and value addition, Post harvest technology, Protected cultivation, Micro-irrigation, Conjunctive use of water.</p> |
| 2017-20 | <p>Agronomy: Integrated Farming System, Rainwater Harvesting, Crop Production, Crop Production, Soil Fertility Management.</p> <p>Horticulture: Care and maintenance of orchard, training and pruning of orchard, Integrated Nutrient Management in fruits, intercropping in fruit crops, mixed vegetable production technology, value addition in fruits and vegetables, post harvest technology of fruits and vegetables.</p> <p>Plant Protection: Integrated insect pests and diseases management (IPM and IDM) of Paddy, vegetables, fruit crops,</p> |

| | |
|--|--|
| | <p>pulses and oilseeds, Vermicomposting Technology, Scientific Mushroom Production Technology, Scientific bee keeping, Sericulture Farming.</p> <p>Fisheries: Integrated fish farming, Composite fish culture, Hatchery management and culture of freshwater prawn, Ornamental fisheries, Pen and cage culture, Fish processing</p> <p>Animal Science: Pig farming, Rural Poultry, Scientific feed and disease management, Fodder crops, Sheep and goat rearing, rabbit farming.</p> <p>Home Science: Women and child care, Value addition, Kitchen gardening and nutrition gardening, Storage loss minimization techniques, Income generation activities for empowerment of rural women, Tailoring and stitching.</p> <p>Agril. Extension: Group dynamics, Management of SHG groups, Entrepreneurial development, Gender mainstreaming through SHGs, WTO and IPR issues.</p> <p>Agril. Engineering: Soil and water conservation, Use of plastics in farming practices, Care and maintenance of farm machinery and implements, Small scale processing and value addition, Post harvest technology, Protected cultivation, Micro-irrigation, Conjunctive use of water.</p> |
|--|--|

No. of Trainings to be conducted

| Discipline | 2009-12 | | 2012-2017 | | 2017-2020 | | Grand Total | |
|--------------------------|----------------|----------------------|----------------|----------------------|----------------|----------------------|----------------|----------------------|
| | No. of courses | No. of beneficiaries |
| Crop Production | 45 | 900 | 60 | 1200 | 50 | 1000 | 165 | 3100 |
| Horticulture | 45 | 900 | 60 | 1200 | 50 | 1000 | 165 | 3100 |
| Plant Protection | 45 | 900 | 60 | 1200 | 50 | 1000 | 165 | 3100 |
| Fishery | 45 | 900 | 60 | 1200 | 50 | 1000 | 165 | 3100 |
| Agril. Ext. / Animal Sc. | 45 | 900 | 60 | 1200 | 50 | 1000 | 165 | 3100 |
| Home Sci. | 45 | 900 | 60 | 1200 | 50 | 1000 | 165 | 3100 |
| Agril. Engg. | 30 | 600 | 30 | 600 | 30 | 600 | 90 | 1800 |

3. On Farm Trials

| Year | On Farm Trials |
|---------|--|
| 2007-12 | INM in Mustard, INM in rice, Varietal assessment of pulses, Varietal trial in vegetables, cultivation of off season vegetables, INM in pineapple, Biological control of Rice leaf folder, IPM and IDM on Cole crops and Spices, Catfish culture, Integrated farming, Nutrition Gardening, Animal and poultry feed |
| 2012-17 | Soil and Water Conservation, Water management, Integrated Nutrient Management, Productivity enhancement in the field crops, Cropping system, High density planting of mango and banana, organic cultivation of seasonal vegetables, INM in spices, IPM and IDM on Groundnut, IPM and IDM on winter vegetables, IPM and IDM Potato, Formulation of cost effective feed to reduce input cost, Breeding of indigenous fish and its conservation (Fish genetic resources), Minimization of storage loss, Animal and poultry health |
| 2017-20 | Integrated Farming System, Rainwater Harvesting, Crop Production, Crop Production, Soil Fertility Management, INM in mango, banana, INM in tomato, brinjal, cauliflower, intercropping in fruits, cultivation of mixed vegetables, IPM on pod borer, IPM and IDM on Paddy, IPM and IDM on Banana, Culture/ rearing of ornamental fish, Fish product development, Value Addition (Home Sc.), Housing system of Livestock |

No. of OFTs to be conducted

| Discipline | 2009-12 | | 2012-2017 | | 2017-2020 | | Grand Total | |
|-----------------------------|-------------|----------------------|-------------|----------------------|-------------|----------------------|-------------|----------------------|
| | No. of OFTs | No. of beneficiaries |
| Crop Production | 3 | 30 | 5 | 50 | 5 | 50 | 13 | 130 |
| Horticulture | 3 | 30 | 5 | 50 | 5 | 50 | 13 | 130 |
| Plant Protection | 3 | 30 | 5 | 50 | 5 | 50 | 13 | 130 |
| Fisheries | 3 | 30 | 5 | 50 | 5 | 50 | 13 | 130 |
| Home Sci. | 3 | 30 | 5 | 50 | 5 | 50 | 13 | 130 |
| Agril. Extn/ Animal Sci. | 3 | 30 | 5 | 50 | 5 | 50 | 13 | 130 |
| Agril. Engg. | 3 | 30 | 5 | 50 | 5 | 50 | 13 | 130 |

4. Frontline Demonstration

| Year | Frontline Demonstration |
|---------|---|
| 2007-12 | INM in Mustard, INM in rice, Varietal assessment of pulses, HYV of French bean, pea, chilli, Nursery raising of vegetable crops, Off season vegetable cultivation practices, IPM on Rice insect pests, IDM on Groundnut, Scientific Mushroom Cultivation, Vermicomposting Technology, IPM and IDM on Oilseeds, Management of Diamond back moth in Cole crop, Scientific beekeeping, Polyculture of carps and freshwater prawn, Integrated fish farming technology, Polyculture, Integrated fish farming, Fry and fingerling rearing |
| 2012-17 | Introduction and yield assessment of baby corn, Cultivation of short duration wheat, Integrated Nutrient Management in Olitorious Jute, Varietal assessment of pulses, Nutrient management in turmeric, ginger, chilli, Organic vegetable cultivation, Nutrient management in tuber crops, Nursery raising of fruit plants, IPM and IDM Potato, Scientific Mushroom Cultivation, Vermicomposting Technology for organic farming, IPM and IDM on winter vegetables, IPM and IDM on Okra, Scientific Mushroom Cultivation, Vermicomposting Technology, IPM on Brinjal Fruit and Shoot borer, IPM and IDM on Spices, Scientific Mushroom Cultivation, Vermicomposting Technology, Management of rhizome rots of Ginger, Polyculture, Integrated fish farming, Fry and fingerling rearing, Hatchery management and culture of freshwater prawn, Ornamental fisheries - breeding and culture |
| 2017-20 | INM in pulses, Potash management in lentil, Weed management in boro rice, Varietal assessment of oilseed, Varietal assessment of pulses, Introduction of high value vegetables, INM in fruit orchards, cultivation of mixed vegetables, Inter cropping in orchards, IPM and IDM on Maize, Scientific Mushroom Cultivation, Vermicomposting Technology, IPM and IDM on Summers vegetables, IPM and IDM on Banana, Ornamental fisheries - breeding and culture Fish processing and value addition |

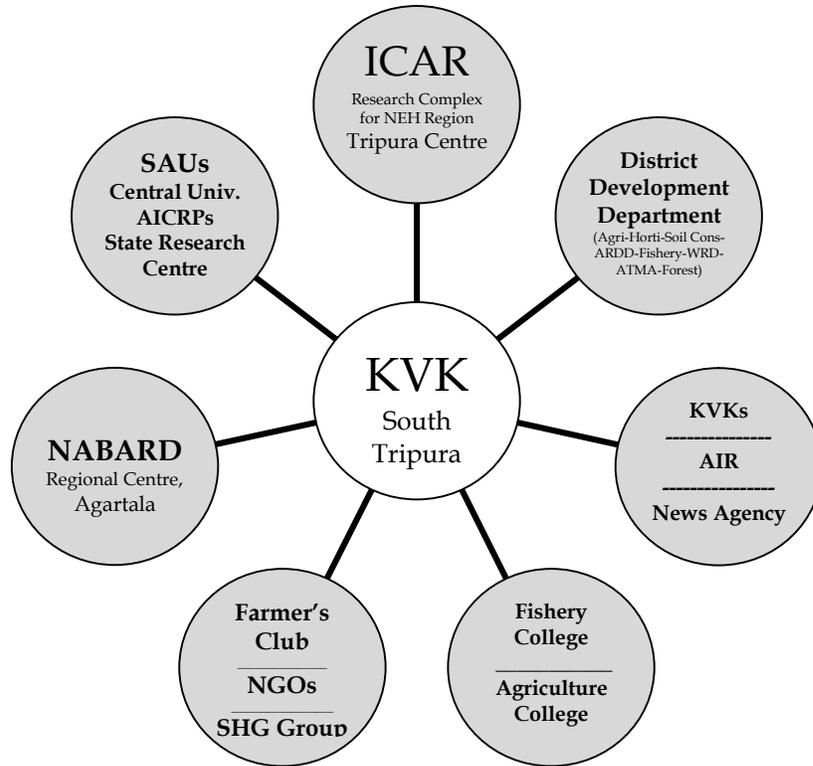
No. of FLDs to be conducted

| Discipline | 2009-12 | | 2012-2017 | | 2017-2020 | | Grand Total | |
|-----------------------------|-------------|----------------------|-------------|----------------------|-------------|----------------------|-------------|----------------------|
| | No. of FLDs | No. of beneficiaries |
| Crop Production | 6 | 180 | 10 | 250 | 6 | 180 | 22 | 610 |
| Horticulture | 8 | 240 | 12 | 360 | 8 | 240 | 28 | 840 |
| Plant Protection | 9 | 90 | 9 | 90 | 5 | 50 | 23 | 230 |
| Home Sc. | 2 | 30 | 5 | 75 | 3 | 45 | 10 | 150 |
| Agril Ext/ Engg/ An. Sc. | 2 | 30 | 5 | 75 | 3 | 45 | 10 | 150 |

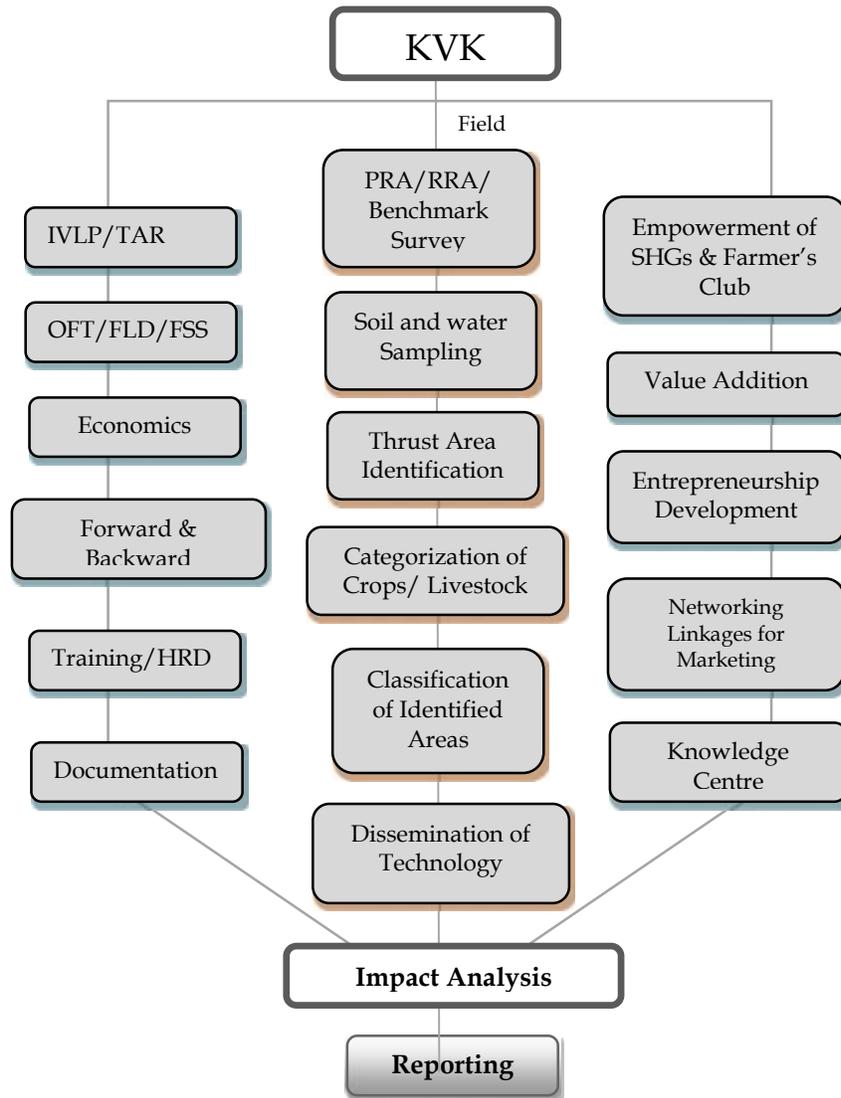
5. Extension Activities

| Discipline | 2009-12 | | 2012-2017 | | 2017-2020 | | Grand Total | |
|--------------------------------------|-----------------|----------------------|-----------------|----------------------|-----------------|----------------------|-----------------|----------------------|
| | No. of Activity | No. of beneficiaries |
| Field day | 30 | 1200 | 30 | 1200 | 30 | 1200 | 90 | 3600 |
| Film Show | 30 | 600 | 30 | 600 | 30 | 600 | 90 | 1800 |
| Lecture delivered as resource person | 15 | - | 15 | - | 15 | - | 45 | -- |
| Newspaper coverage | 20 | - | 20 | - | 20 | - | 60 | -- |
| Radio Talk | 20 | - | 20 | - | 20 | - | 60 | -- |
| TV Talk | 5 | - | 5 | - | 5 | - | 15 | -- |
| Popular article | 30 | - | 30 | - | 30 | - | 90 | -- |
| Extension literature | 30 | - | 30 | - | 30 | - | 90 | -- |
| Scientific visit to farmers field | 100 | 1000 | 100 | 1000 | 100 | 1000 | 300 | 3000 |
| Advisory services | 150 | 1500 | 150 | 1500 | 150 | 1500 | 450 | 4500 |
| Field day | 30 | 1200 | 30 | 1200 | 30 | 1200 | 90 | 3600 |

6. Linkages with other Institution



7. An Overview of Activities to be taken up



SUMMARY

South Tripura District is situated between longitude 91° 19' and 91° 53' E and between latitude 22° 57' and 23° 45' N. The total geographical area of the district is 2,868 square kilometers, which is about 35 percent of the total state area. The district is bounded on the North by Dhalai and West Tripura districts and in east, west and south by the International border with Bangladesh. The district is the second biggest district of the state in terms of population (Census 2001). The district has a total population of 7,67,440 persons. The tribals as well as the non-tribals residing in the district.

The district fall under Agro-climatic Zone-III, having humid dissected mounds and valleys with sub-humid denuded hills of varying altitudes. Climate of the district is characterized by a humid summer and a dry cool winter with high rainfall during July to October. The annual rainfall in the district ranges from 2000 to 2200 mm.

Agriculture is the main occupation. About 32 percent of the area is cultivable which is about 84,101 hectares. The holdings are small, and agriculture is mainly rainfed and at subsistence level. According to Agriculture census (2001), about 77 percent of farmers are marginal (less than one hectare) in nature. More than 49 percent of the total geographical area is under forest.

Paddy (rice) is the main food crop grown. Vegetables, Potato, sugarcane, mesta, jute, mustard, etc. are some other crops grown in the district. Jackfruit, banana, pineapple, orange, mango, tea, rubber, etc. are the major fruit and plantation crops. Amongst the livestock, cattle population predominate the area with 51.20% per cent of total livestock holding followed by goat, pig, buffaloes and sheep. Amongst

the poultry population, chicken population is the highest followed by duck. Fish as one of the most preferable food items where rice and fish form the basic diet of district. South Tripura district occupies nearly 28% of total water resources of the state and contributing nearly 35% state fish production.

Krishi Vigyan Kenra (KVK), ICAR Research Complex for NEH Region started in the year 1984 in South Tripura district with the objective to improve the production and productivity in agriculture and allied sectors like animal husbandry, fishery etc. To meet the productivity targets of agriculture and allied activities by rebalancing these as per demand, the emphasis would be on conserving the natural resources in an integrated diversified system with the aim of sustaining farm income at an increased level. In general, the district may achieve self sufficiency in food production by observing following strategies:

- a) Bridging yield gaps of crops, animals and other enterprises
- b) Improvement in water productivity and surface maintained residue
- c) Promotion of less water requiring crops like pulses, oilseeds including vegetables etc.
- d) Promotion of high value vegetables and floriculture under precision farming
- e) INM and accelerated adoption of vermicomposting
- f) Optimum use of irrigation water and rainwater harvesting
- g) Micro-irrigation in vegetable and fruit plants
- h) Popularizing integrated animal, fishery and poultry
- i) Income generating activities for rural masses.

Our Team**1. Zonal Project Directorate, Zone-III**

- Zonal Project Director (Zone-III)

2. ICAR Research Complex for NEH Region

- Director , ICAR Research Complex for NEH Region
- Joint Director, ICAR (RC) for NEH Region (Tripura Centre)
- Nodal Officer (ICAR-KVK)

3. Krishi Vigyam Kendra, South Tripura

- Dr. A.K. Singh, Programme Coordinator
- M. Chakraborti, SMS (Agronomy)
- D. Sharmah, SMS (Plant Protection)
- B. Debnath, SMS (Fisheries)
- Dr. S. Singh, SMS (Horticulture)
- Dr. P.K. Pathak, SMS (Animal Science)
- T.A. Khan, T-6 (Agril. Engg.)
- G.P. Kar, T-6 (Agril. Ext.)

- S.P. Deb, Stenographer
- C. DebBerma, Driver
- B. Majumdar, Driver
- Braja Gopal Acharjee
- G. Gowala



KVK Bringing farmers together

... for better farm input production & marketing



Published by

Dr. A.K. Singh

Programme Coordinator

Krishi Vigyan Kendra, South Tripura

ICAR Research Complex for NEH Region

Birchandra Manu, Manpathar, South Tripura-799 144, Tripura, INDIA

TeleFax:: +913823-252523 E-mail: kvksouthtripura@rediffmail.com

Website: kvksouthtripura.org.in
