KVK: Perspective Plan & Vision 2050

KRISHI VIGYAN KENDRA, MAMIT DISTRICT

Department of Agriculture (Research & Education)

Govt. of Mizoram.

CONTENTS

KVK: Perspective Plan & Vision 2050

1 Introduction

The idea of Krishi Vigyan Kendra (KVK) was evolved by the Second Education Commission (1946-66), under the chairmanship of Dr. D.S. Kothari. This Agricultural Science Center or Farm Science Center was established as a vocational training institute to cater the training needs of the practicing farmers, school drop outs and field extension functionaries. This concept of vocational training in agriculture grew substantially with the increase in demand for improved agricultural technology by the farmers. The farmers require knowledge of the technologies and at the same time they are also keen for various skills about complex agricultural techniques to adopt on their farms. So, KVK plays important role in delivering these requirements to the farmer. Further, KVK is doing on-farm testing and front-line demonstration on major agricultural technologies to make the training location specific, need based and resource oriented.

KVK plays important role in technological diffusion for the empowerment of farmers and extension functionaries. It imparts knowledge through work experience by applying the principles of 'Teaching by Doing' and 'Learning by Doing'. The training programmes are designed as per local needs and requirements in agriculture and allied enterprises to the farmers, farm women, and farm youths including school drop-outs in the rural areas. The courses are selected based on the local farming system and farming situation to ensure profitability, sustainability and commercial and economical viability of enterprises in which they are trained. In KVK no formal certificate or diploma is awarded, irrespective of the duration of the courses. The vocational training is organized to make the rural youths economically self-reliant and to sustain livelihood.

The goal of KVK is to achieve the technological led agricultural growth for the district.

With this attempt the first KVK was established in 1974 at Pondicherry under the administrative control of Tamil Nadu Agricultural University (TNAU), Coimbatore based on the recommendation of Dr. Mohan Singh Mehta on pilot basis. Presently it is acting as extension wing of Indian Council of Agriculture Research (ICAR) system and it has established a wide network of KVKs in the country aiming at assessment, refinement and demonstration and training on new technology/products.

2 Mandates of KVK

In the beginning, the mandate of KVK was only to provide skill based training to the farmers, farm women and rural youth in the field of agriculture and allied. During the VIII th Five Year Plan, the mandates of the KVK was reviewed and revised to take up on-farm testing, long term vocational training, in service training for grass root extension workers and front line demonstrations on major cereal, oilseed and pulse crops and other enterprises. The revised mandates of KVKs are

1. To conduct "On-farm Testing" for identifying technologies in terms of location specific sustainable land use systems.
2. To organize frontline demonstrations on various crops to generate production data and feedback information.
3. To organize training to update the extension personal with emerging advances in agricultural research on regular basis.
4. To organize short and long term vocational training courses in agriculture and allied vocations for the farmers and rural youths with emphasis on "learning by doing" for higher production on farms and generating self employment.

3 Objectives of KVK

To fulfill the mandates, the KVK needs to perform following functions

1. To identify the technological and training needs of the farming community of the operational area. This may be carried out with the help of Participatory Rural Appraisal (PRA) tools or conducting scientific survey, group interviews and personal visits.
2. To compile all relevant recommendations/package of practices for the district to be meaningfully utilized in the training programmes and the follow-up extension activities.
3. To plan and conduct production oriented and need based short and long duration training courses both on and off campus for various target groups.
4. To develop and maintain campus farms and demonstration units on scientific lines.
5. To develop and maintain functional relationship with the allied institutions.
6. To provide added training facilities in the area of home making and nutrition education for rural communities. Afterwards, enlarging this facilities to encompass other important areas such as home/rural crafts and cottage industries with the requirements of the integrated rural development in collaboration with the concerned organizations.

7. To undertake on-farm testing of the technologies developed by the National Agricultural Research System (NARS) in the field of agriculture an allied for their suitability and problem identification.
8. To demonstrate the potentialities of various technologies and recommended for their adoption in maximizing yield/income per unit of time and area under different resource conditions.

4 Concept of KVK

The functions of KVKs are changing with time to time to meet the newer challenges in the field of agriculture and allied. Dr. P. Das (2007), former Deputy Director General (Extension) defined KVK as "KVKs are grass root level organizations meant for application of technology through assessment, refinement and demonstration of proven technologies under different 'micro farming' situations in a district". This definition made it clear that the transfer of technology is not the primary function of the KVK. It is the responsibility of the state departments. But the KVKs on the other hand will assess and refine the newly released technologies, demonstrate the proven technology and train farmers and extension functionaries on the same.

5 Principles of KVK

The Committee further suggested that the success of Kendra will depend upon adherence to the following three basic principles.

a. Accelerating, agricultural and allied productions in the operational area of the Kendra should be the prime goal.
b. Experiential learning *i.e.* "Teaching by doing" and "Learning by doing" should be the principle methods of imparting skill training.
c. Training effort should not be made to make economically good people better but the poor ones good so as to raise the living conditions of the poorest the poor.

6 Unique features of KVK

- KVK brings the technologies from research organizations to the farmer's field.
- KVK is an organization of multidisciplinary scientist and tries to develop an area from every possible aspects of agriculture and allied with the help of its multidisciplinary team.
- KVK enjoys strong technology support from host institutes and other research organizations.

- KVK provides the platform and linkages between different agencies and organizations (financial institutes, cooperatives, NGOs, farmers groups etc.), working in the field of agriculture and allied
- KVK acts as knowledge center for the district. It addresses and delivers the knowledge on resource conservation, climate change, ecological imbalance, sanitation and health, zoonosis, ICT in agriculture etc.

7 Role of KVK in agriculture extension

Research and extension has played a major role in increasing production and productivity in Indian agriculture and allied sectors in the past. Agriculture Extension in India is largely controlled by the government organizations. KVKs are managed by both government and non-government organizations. Generally, KVK develops the knowledge base on agriculture and allied that is useful for the whole district. Indian agriculture is changing with time and situation at the advent of WTO regime and in the context of changing global agricultural scenario. Therefore, farmer needs to move with time and need to take different decision than the past. In this respect KVK functionary with its competent multidisciplinary Subject Matter Specialists supports farmer in decision making in the field of agriculture and allied. They help in proper utilization of man-made and natural resources, diversification of agriculture system and adoption of need and market based farming system. They develop and promote group or collective approaches and integration of farming systems to reduce the risk and educate them about trade treaties and preparedness required for the change.

8 Background of KVK Mamit District

The KVK was sanctioned in 2005 under the Directorate of Agriculture (Research and Education), Government of Mizoram and it was formally inaugurated on 31st May 2008 at Lengpui, Mamit district, Mizoram-796410. The staff of the KVK was recruited freshly on May 2008. The KVK has got two demonstration farms, one is near office building and another one is 2 km away from the main building. Out of the total area under the KVK (27 ha), demonstration farm covers an area of 25 ha. Presently it is performing its job fully and successfully with well developed farms.

8.1 OUR VISION

Our Mission:

- Create opportunities at the door steps of the villagers
- Continuous self-improvement in the quality of their lives

- Generating their leadership in solving their problems & utilizing their resources most effective

Our Vision:

To transform 83 inhabited villages of 3 R.D. Blocks of District, viz. Reiek, West Phaileng and Zawlnuam into model villages in such a way that all able bodied persons are gainfully employed, that substantive improvements in the state of literacy, health and economic sustenance take place.

8.2 Manpower

Sl. No.	Name	Designation	Discipline
1	Vanlalhruaia Hnamte	Programme Coordinator	Agroforestry
2	Henry Saplalrinliana	Subject Matter Specialist	Soil Science
3	Md Mintul Ali	Subject Matter Specialist	Fishery Extension
4	Lalrinsangi	Subject Matter Specialist	Agroforestry
5	Vanlalhruaia	Subject Matter Specialist	Plant Protection
6	Dr. C. Rinawma	Subject Matter Specialist	Animal Science & Veterinary
7	Dr. Rohit Shukla	Subject Matter Specialist	Horticulture
8	K. Zohmingliani	Farm Manager	Agroforestry
9	Biakhlupuii Chenkual	Programme Assistant (Home Sc.)	Home Science
10	Lalrinchhana	Office Superintendent cum Accountant	Commerce
11	C. Ramdinsanga	Computer Programmer	NA
12	B. Laldinpuii	Stenographer	NA
13	Lalchungnunga	Driver cum Mechanic	NA
14	Lalchuailova	Driver cum Mechanic	NA
15	Lallawmkima	Supporting staff	NA
16	P. C. Lalthanpuii	Supporting staff	NA

9 Thrust Area of KVK, Mamit District

In the prevailing situation the following thrust areas were identified for the Mamit district for the development of agriculture and allied in accordance to the mandates of the KVK:

i. To change the knowledge, skill and attitude of the farmers towards scientific agricultural practices for improving the agriculture and allied productivity.
ii. Providing a multidisciplinary and whole farm approach to develop farm family.
iii. Promoting fish production through composite fish culture practices for optimum utilization of a water body.
iv. Integrating fish farming with birds/livestock/crops to minimize the input cost and to sustain fish farming both economically and ecologically.
v. Popularizing ornamental fish farming among resource poor fish farmers for employment generation.
vi. Production of quality seeds and planting materials for the area under KVK's jurisdiction.
vii. Increasing food supply through agroforestry and terrace cultivation.
viii. Promoting Integrated Pest Management (IPM), Integrated Nutrient Management (INM) and Integrated Water Management (IWM).
ix. Popularizing methods of soil and water conservation among the farmers.
x. Maintenance of soil productivity through Integrated Plant Nutrient Management (IPNM).
xi. Promoting floriculture and vegetable production.
xii. Improvement of indigenous livestock and poultry.
xiii. Exploration of non-conventional feeds and fodder resources for reducing cost of production of animals.
xiv. Dissemination of improved livestock rearing technology.
xv. Organize effective awareness campaign about timely vaccinations of animals and early diagnosis and treatment of diseases.
xvi. Identification, documentation and characterization of indigenous technical knowledge in agriculture and allied.
xvii. Dissemination of post harvest technology and value addition of agricultural produces.
xviii. Study and establishment of marketing channels and credit linkages.
xix. Maintaining functional collaboration with the line departments/institutions/organizations/ agencies.
xx. Promoting transfer of technology through mass media (radio, telephone, television etc.).
xxi. Infrastructure development in the field of agriculture and allied.

xxii. Vocational Trainings for rural youth on mushroom cultivation, apiculture, vermi composting, use of biofertilizers, production of farmers own seed and plant material, poultry rearing, pig cum fish farming etc.

xxiii. Farm Advisory service and establishment of equipped plant/animal clinic.

10 Focus areas of KVK, Mamit District

The focus area of the KVK, Mamit district are

i. Study of the area with the help of different statistical tools like Participatory Rural Appraisal (PRA), Rapid Rural Appraisal (RRA), group discussion, interview, personal visit, farm visit, etc.

ii. Study of indigenous technical knowledge and socio-economic status of farmer of the district.

iii. Development of farmers' database

iv. Development of extension literatures like newsletter, leaflet, pamphlet, posters, diagram, flip chart, flash card, bulletin board etc.

v. Training infrastructure development of the KVK such as library, training hall, demonstration unit an information unit.

vi. Development of participatory training approach modules based on the local situations and needs.

vii. Laboratory infrastructure development of the KVK for testing soil, water, seed, plant etc.

viii. Conducting on-farm testing to assess the suitability of the technologies.

ix. Conducting frontline demonstration on proven technologies for generation of production data and feedback information.

x. Training and demonstration for increasing agricultural production and socio-economic improvement.

xi. Adopting progressive farmers at different localities to set examples within the farming community.

11 Road map of KVK Mamit district

i. Survey to study prevailing agricultural farming systems, agricultural enterprises, farming situations and farmers.

ii. Identification of training needs, technological needs, production constraints of the area and their possible intervention requirements.

iii. Collection of secondary data of the district and documentation of existing indigenous farming practices, production technologies and cropping patterns.

iv. Meteorological study of the district in respect of agriculture.
v. Study of the soil and water and strategy development for its efficient use for more food supply.
vi. Resource mapping of the district.
vii. Identification and selection of potential crops in the field of agriculture and allied for the district.
viii. Infrastructure development for production of quality planting materials, seeds etc.
ix. Adaptive research (OFT) on various crops in the field of agriculture and allied to develop recommendations and to solve problems of the farmers.
x. Frontline demonstration to disseminate new crop production technology and generation of production data and feedback information.
xi. Identification of insect pests, diseases, etc. and their preventive measures in the field of agriculture and allied.
xii. To select, demonstrate, promote viable eco-friendly agricultural techniques for managing nutrients, pests, diseases and weeds for better productivity.
xiii. Entrepreneurship development and employment generation in various agricultural and allied enterprises.
xiv. Development of marketing channels and credit linkages.
xv. Promotion of farm mechanization to reduce drudgery.
xvi. Development of sustainable agricultural service delivery and extension models based on local situation.
xvii. Utilization of mass media to make agriculture interesting and motivating.

12 SWOT ANALYSIS

12.1.1 SWOT Analysis of Agriculture Sector of Mamit District

Strength

1. Availability of potential and fertile land resources.
2. Favourable agro-climatic condition for growing various agricultural crops.
3. Availability of manpower.
4. Existence of supportive line departments.
5. Strong rural community organization.

Weakness

1. Shifting cultivation.
2. Low rate of adoption of new agriculture technologies.

3. Poor communication and transportation system.
4. Lack of irrigation facilities.
5. Lack of proper marketing channels.
6. Lack of knowledge on post harvest technologies.
7. Lack of good storage facilities.
8. Inadequate extension services.
9. Gap in knowledge of improved technologies on

    a) Balanced use of chemical fertilizers.

    b) IPM, INM, and IWM technologies.

    c) Adoption of high yielding and improved varieties.

    d) Practice of crop rotation.

Opportunity

1. Promotion of organic farming.
2. Scope of establishment of community nurseries for quality seed production.
3. Construction of community tanks for water harvesting.
4. Cold storage and small scale agro-processing unit.
5. Cottage industries and .agro-based processing unit can be established
6. Terrace cultivation for improving food supply.
7. Creation of specialized collection centre and marketing linkages.
8. Application of post harvest technology, bio-technology and information technology.

Threats

1. Changing weather and climatic condition.
2. Soil erosion and landslide due to heavy rainfall.
3. Late onset of Monsoon.
4. Crop damage by rodents especially during Bamboo flowering period.
5. Fluctuation in Market prices of agri-commodities.

12.1.2 Technological matrix of agricultural sector of Mamit district

Sl. No.	**Crop**	**Problems**	**Interventions**

1.	Rice	1.High infestation of pest (Rice leaf folder and Gundhi bug) 2. Imbalance use of synthetic fertilizers 3. Poor yield	1. Integrated Pest Management (IPM) i. Release of Tricho card (*Trichogramma japonicum*) @20,000/ha/week. ii. Clipping of leafs tip at the time of transplanting. iii. Application of neem oil @ 3 ml/lt at weekly interval. iv. Conservation of natural enemies in the rice field. v. Application of Malathion @5 % dust at the time of tillering. 2. Integrated Nutrient Management (INM) i. Formulating area specific Intergrated Nutrient Management practices ii. Detailed soil studies for longitivity of soil fertility with proper INM follow up 3. Integrated Water Management (IWM) i. Introduction of less water requiring rice farming system like SRI. ii. Construction of cheap rain water harvesting structures based on local practices. iii. Combining local knowledge of water management with recent scientific advances.
2.	Maize	1. Does not follow recommended packages of practice	1. Training and demonstration of recommended packages of practice. 2. Development of suitable maize production

		2. Low production due to poor soil fertility	practices for the district. 3. Introduction of suitable maize variety through OFT. 4. Recommendation of fertilizer doses area specifically. 5. Formulizing and modifying Integrated Nutrient Management practices on need base pattern.
3.	Pulses (Cowpea/ Soybean/ Gram/Bean/)	1. Low productivity of the crop. Mostly grown as mixed crop in *jhum*	1.Field demonstration on *Rhizobium* culture inoculation 2. Awareness for promoting pulses production to enhance soil fertility. 3. Identification and documentation of indigenous pulses crop grown in *jhum*.
4.	Potato	1. High disease infestation (early and late blight) 2. Does not follow recommended agronomic practices 3. Lack of proper storage	1.Integrated Pest Management (IPM) i. Seed treatment with *Trichoderma* sp. Before sowing. ii. potato crop should be planted in rotation with tomato, brinjal or chilly. iii. It should be sprayed either with Zineb or Dithane Z-78 @ 2 gm/liter of water at fortnightly interval. 2. Training and demonstration of recommended packages of practice. 3. Establishment of community storage. 4. Training on value addition and post harvest technology.

12. 2 SWOT Analysis of Soil Science Sector of Mamit District

Strength

1. Farmers' co-operation.
2. Small land holdings of farmers, hence survey is easy.
3. Cultivated land is less compared to forest/virgin land therefore detailed diagnosis is possible.
4. Co-operation from other line departments.
5. Government policies for organic farming.

Weakness

1. Unpopularity of soil testing activities.
2. Undulating terrain and other extreme geographical characters.
3. Improper land use patterns.
4. *Jhumming* system.

Opportunities

1. Technical manpower utilization for converting conventional land use pattern with scientific approaches.
2. Exposure of farmers to soil conservation measures like terracing, counter-trench farming, contour terracing, etc in other currently practicing states.
3. Adoption of organic manures and formulizing area specific procedures.

Threat

1. Excessive rainfall resulting in leaching-off of top fertile soil.
2. Unknown imports of chemical fertilizers from other states.
3. Excessive burning of forest land for cultivation.
4. Unwisely use of fertilizers implicating soil degradation.

12.3.1 SWOT Analysis of Animal Husbandry Sector of Mamit District

Strength

1. Mamit District has zones ranging from sub-tropical to temperate, which supports rearing of various livestock.
2. Rich and diverse natural resources.
3. Meat based protein has a potential market demand.
4. Good cooperation with line departments

Weakness

1. Communication constraints (road, telecommunication) in the district hinder growth in livestock sector.
2. Animal feed production ratio compared with feed produced for human consumption is very low.
3. Non-availability of sufficient superior germplasm for replacement.
4. Weak Veterinary healthcare services and no facilities for vaccine production.
5. Inadequate credit system.
6. Poor involvement of corporate sectors in the livestock industries.

Opportunity

1. Good demand for meat based protein.
2. No taboos of native population regarding consumption pork and beef.
3. Biotechnological applications for superior germplasm conservation and propagation.
4. Opportunity for formation of farmers group towards value addition of livestock produce's and creating marketing channels.

Threats

1. Climate change.
2. Rising inflation of food ingredients and other inputs.
3. Import threat from neighboring states and countries.
4. Natural calamities.

12.3.2Technological matrix for animal husbandry in Mamit district

Constraints	Technologies		
	Cattle	Pig	Poultry
Low productivity	1. Selective breeding 2. Cross breeding in selected areas.	1. Upgrading and cross breeding in selected locations.	1. Introduction of improved birds.
High mortality of young ones	1. Deworming of dam during 3rd trimester 2. Cleanliness and proper feeding of calf	1. Iron supplement 2. Hand feeding of orphaned piglets	1. Proper brooding
Inadequate breeding males	1. A.I	1. Distribution of breeding boars 2. A.I	-

12.4.1 SWOT Analysis of Horticulture Sector of Mamit District

Strength

1. Favourable mild subtropical to tropical Agro-climatic condition for growing all type of horticultural crop except some temperate and arid regions crops.
2. Potential area available for growing of horticultural crops
3. Darlak and Dialdawk valley areas and other WRC areas are potential area for cultivation of vegetables during *rabi* season.
4. Nearness to air port (Lengpui Airport) also provides opportunity for export of flowers and other valuable horticultural produce to distant markets.
5. District also a natural home of many horticultural crops and their wild relatives.

Weakness

1. Poor transportation and communication facilities
2. Old and senile orchards and plantation
3. Inadequate availability of quality planting materials
4. Lack of awareness about scientific and technical knowledge and their approaches
5. Inadequate/ lack of post harvest infrastructure and limited marketability of horticultural produce.
6. Flood in low lying areas during rainy season

Opportunity

1. Agro climatic condition of district provide opportunity for cultivation of wide range of horticultural crops
2. Large scale fruit processing
3. Export oriented production of floricultural product and other horticultural crops.
4. *Jhum* can be converted into settled horticultural plantation.
5. Lot of scope for growing high value and low volume crops.

Threat

1. Imbalance in eco system and loss of variability due to continuous *jhuming*.
2. Severe incidence crop damage due to diseases and pests.
3. Severe loss of soil fertility, soil texture and suitability for subsequent use of horticultural crops.

12.4.2 Technology matrix of Horticultural crops

Item	Reasons for gap	Technology Suggested
1. Banana		
Planting time	Lack of knowledge of ideal planting time	Awareness and training about ideal planting time
Planting material	Lack of awareness	Training and demonstration on identification of right planting material,
Spacing	Lack of knowledge about ideal planting spacing	2.0 X 2.0 m (Dwarf Cavendish) 2.5 X 2.5 m (Giant Cavendish) 3.0 X 3.0 m (Poovan) Trials and demonstration
Nutrient management	Lack of knowledge	Training and demonstration on INM in banana
Water management	Lack of knowledge and facility	To Encourage water harvesting, drip irrigation and other micro irrigation system.
Weed management	Lack of knowledge	Manual, 0.4% glycel spray, Mulching. Training and demonstration
Desuckering, Propping, Denavelling	Lack of knowledge	Desuckering once in 2-3month. when three- fourths of plants in the orchard are in flowering, one sucker is allowed
Pest management	Lack of knowledge	Training and demonstration on integrated pest management
Harvesting	Lack of awareness	Training and demonstration of proper identification of maturity

		time of banana with maturity index like- matured (round), immature (angular)
Post harvest management	Lack of awareness	Packing of fruits in polythene or in corrugated box.
2. Khasi mandarin		
Planting material	Lack of Quality disease free elite planting material	Training and demonstration on production of disease free quality planting material
Spacing	Lack of awareness	Training and demonstration on standard /ideal spacing(5m X 5 m)
Nutrient management	Lack of awareness	Integrated Nutrient Management
Water management	No irrigation facilities	To Encourage water harvesting, drip irrigation and other micro irrigation system.
Weed management	Lack of awareness	Manual weeding, Use of herbicides , mulching to manage weed population
Plant protection	Lack of knowledge about IPM	Integrated pest Management
Harvesting	Lack of awareness	Training and demonstration of proper harvesting technique.
Yield	Non adoption of recommended practices	Use of fruit harvester and harvesting during early morning and evening
Post harvest management	Lack of awareness	Training and demonstration
3. Pineapple		
Planting time	Lack of knowledge of ideal	OFT on ideal planting time

	planting time	
Planting material	Lack of awareness	Use of suckers and slips
Spacing	Lack of knowledge about ideal planting spacing	On farm Trial and demonstration on proper plant spacing
Variety	Lack of knowledge	Demonstration on cultivation of ideal variety (Kew, Queen)
Nutrient management	Lack of knowledge	OFT , Demonstration and training on INM
Water management	Lack of knowledge and facility	1. To Encourage water harvesting, drip irrigation and other micro irrigation system.
Weed management	Lack of knowledge	Mulching, pre- emergence application Bromacil + diuran @2.0 kg /ha and repeated again with half dose, five month after planting.
Pest management	Lack of knowledge	IPM
Harvesting	Lack of awareness (Hand picking any time)	Picking with sharp knife morning and evening , during May-August
Post harvest management	Lack of awareness	Stored in quality size corrugated boxes in cold place.
4. Areca nut		
Planting material	Lack of Quality disease free elite planting material	1. Training and demonstration on production of disease free quality planting material. 2. Establishment nurseries for supply of quality planting material.
Spacing	Lack of knowledge	2.7 X 2.7 m north south line

		should be deflected 35^0 toward west
Variety	Lack of awareness	Training , demonstration and OFT for suitable variety for the district
Nutrient management	Lack of knowledge	INM
Water management	Lack of knowledge and facility	1. To Encourage water harvesting, drip irrigation and other micro irrigation system.
Weed management	Lack of awareness	Integrated weed management
Multiple cropping and intercropping	Lack of awareness	Banana, pineapple, elephant –foot yam, tapioca, dioscorea, sweet potato, ginger, and turmeric ideal inter crop
Pest management	Lack of knowledge	IPM
Post harvest management	Lack of knowledge	Dried ripe nut in sun for 35-40 days for kotapak
5. Ginger		
Seed treatment	Lack of awareness (No seed treatment)	Dithtane M-45 @3g/l or Carbendazim @2g/l or Trichoderma @5g/l for 30 minutes
Spacing	Lack of awareness (Improper spacing)	30 X25 cm planting spacing
Nutrient management	Lack of awareness (No nutrient management)	INM
Weed management	Lack of awareness	Two weeding and mulching. Earthing up should done after weeding

Pest management	Lack of awareness	IPM
Post harvest management	Lack of knowledge	After washing sun dried for a week. Stored in a pit of convenient size (2 X1 m) and covered with plank fitted with 2-3 holes for aereation
6. Turmeric		
Seed treatment	Lack of awareness	Dithtane M-45 @3g/l or Carbendazim @2g/l or Trichoderma @5g/l and Ekalux (0.2%) for 30 minutes
Spacing	Lack of awareness	30 X15-20 cm planting distance
Variety	Lack of awareness	RCT-1, Lakadong, Sugandham, alleppey, Wynad
Nutrient management	Lack of awareness	INM
Weed management	Lack of awareness	Two weeding and mulching. Earthing up should done after weeding
Pest management	Lack of awareness	IPM

12.5.1 SWOT Analysis of Fishery Sector of Mamit District

Strength

1. The climate of the district is subtropical humid which is suitable for fish culture.
2. Rich and diverse water resources.
3. Basic traditional knowledge of cultivating fish.
4. Resources are available for diversified fish culture.
5. Availability of labour where hill farmers are naturally hard worker.

6. The market demand for both raw and processed fish products is high as the population of the district is non-vegetarian.
7. Existence of supportive line departments.

Weakness

1. Difficult terrain, inaccessibility and communication constrains are the major weakness for the growth of fishery sector.
2. Fishery is always regarded as subsidiary income without any pond management activities.
3. Availability of fish seed both in terms of quantity and quality.
4. Lack of knowledge on scientific fish farming.
5. Non availability of fish feed and other inputs within farmers reach and in time.
6. Poor credit linkage.
7. Lack of extension activities.
8. Farmers are not enthusiastic for agriculture and allied except shifting cultivation.
9. Lack entrepreneurial mind in fisheries sector.
10. Unorganized marketing channels.

Opportunity

1. The demand for fish is very high as there exist wide gap between demand and supply.
2. The subtropical climate of the district is very suitable for fish production.
3. Entrepreneurship can be developed in ornamental fish farming sector.
4. Backyard bird/livestock production is very common in the district which can easily be integrated with fishery.
5. Opportunity for formation of farmers group for value addition of fishery products and creating marketing channels.
6. Availability of training infrastructure.
7. Application of post-harvest technology, bio-technology and information technology.

Threats

1. Increasing dependency on migratory labours.
2. Climate change and natural calamities.
3. Shrinkage of land for fish cultivation.
4. Declining natural fish genetic resource base due to destructive fishing.

12.5.2 Technological matrix of fishery sector of Mamit district

Sl. No.	Problems	Interventions
1.	Fish seed availability	1. Establishment of eco-hatchery. 2. Small scale hatchery for small farmers. 3. Training and demonstration to farmers on seed production.
2.	Inadequate documentation and conservation of fish	1. Survey and documentation of fish resources of district
		2. Conservation of rare and economic fish resources of the district
2.	Technology dissemination and awareness about fish culture	1. Fishery extension service should be strengthened
		2. Training programmes for farmers
		3. Fishermen's organization
3.	Destructive fishing	1. Awareness/ motivation camps against use of toxic substance in fishing
		2. Restriction of irrational fishing during breeding and spawning season
6.	Financial constraints at both government and private sector	1. Infrastructure creation and awareness programme
		2. Subsidy schemes for the progressive farmers
		3. Financial linkage support for providing credits for fisheries development
		4. Encouraging fish farming on commercial line (fish cum pig, fish cum paddy etc.)

12.6 SWOT Analysis of Forestry Sector of Mamit District

Strength

1. Availability of potential land resources for forestry.
2. Suitable and favourable agro-climatic condition for production of different types of trees.
3. Mamit district is covered with hills and it has rich and diverse indigenous genetic resources for agroforestry which is suitable for growing in the district.
4. Traditional knowledge for agroforestry sector.

Weakness

1. Practice of shifting cultivation.
2. Lack of knowledge and interest on agroforestry among a large section of society.
3. Lack of research and extension activities.
4. Availability of quality planting materials.
5. Cutting of shoots and young trees for fire-wood, fodder, small timber etc.
6. Transportation and communication hindrances.
7. Market linkages are not well developed.
8. Poor credit linkage.

Opportunity

1. There exists very good scope for the growth of forestry sector as there is quite high demand for forestry products.
2. The climatic condition is very congenial for growing wide range of agroforestry crops.
3. Entrepreneurship can be developed using available forestry models.
4. Opportunity for formation of farmers group for value addition of forestry products and creating marketing channels.
5. Application of post-harvest technology, bio-technology and information technology.

Threat

1. Ecological imbalance and biodiversity loss due to shifting cultivation.
2. Diseases and pests incidence.
3. Soil erosion and loss of soil fertility for agroforestry crops.
4. Climate change.

13: Projected human population and food requirements of Mamit district till 2050

Year	Population	Requirement (ton)				Fish (ton)	Meat (ton)	Milk (ton)	Egg (000 nos.)
		Cereals (440gm/ person/ day)	Pulses (60gm/ person/ day)	Vegetable (300gm/ person/ day)	Fruits (120gm/ person/ day)				
2011	85757	13772.6	1878.1	9390.4	3756.2	943.3	2658.5	4695.2	15436
2012	88895	14276.5	1946.8	9734.0	3893.6	977.8	2755.7	4867.0	16001
2013	92033	14780.5	2015.5	10077.6	4031.0	1012.4	2853.0	5038.8	16566
2014	95171	15284.5	2084.2	10421.2	4168.5	1046.9	2950.3	5210.6	17131
2015	98309	15788.4	2153.0	10764.8	4305.9	1081.4	3047.6	5382.4	17696
2016	101447	16292.4	2221.7	11108.4	4443.4	1115.9	3144.9	5554.2	18260
2017	104585	16796.4	2290.4	11452.1	4580.8	1150.4	3242.1	5726.0	18825
2018	107723	17300.3	2359.1	11795.7	4718.3	1185.0	3339.4	5897.8	19390
2019	110861	17804.3	2427.9	12139.3	4855.7	1219.5	3436.7	6069.6	19955
2020	113999	18308.2	2496.6	12482.9	4993.2	1254.0	3534.0	6241.4	20520
2021	117137	18812.2	2565.3	12826.5	5130.6	1288.5	3631.2	6413.3	21085
2022	120275	19316.2	2634.0	13170.1	5268.0	1323.0	3728.5	6585.1	21650
2023	123413	19820.1	2702.7	13513.7	5405.5	1357.5	3825.8	6756.9	22214
2024	126551	20324.1	2771.5	13857.3	5542.9	1392.1	3923.1	6928.7	22779
2025	129689	20828.1	2840.2	14200.9	5680.4	1426.6	4020.4	7100.5	23344
2026	132827	21332.0	2908.9	14544.6	5817.8	1461.1	4117.6	7272.3	23909
2027	135965	21836.0	2977.6	14888.2	5955.3	1495.6	4214.9	7444.1	24474
2028	139103	22339.9	3046.4	15231.8	6092.7	1530.1	4312.2	7615.9	25039
2029	142241	22843.9	3115.1	15575.4	6230.2	1564.7	4409.5	7787.7	25603
2030	145379	23347.9	3183.8	15919.0	6367.6	1599.2	4506.7	7959.5	26168
2031	148517	23851.8	3252.5	16262.6	6505.0	1633.7	4604.0	8131.3	26733
2032	151655	24355.8	3321.2	16606.2	6642.5	1668.2	4701.3	8303.1	27298
2033	154793	24859.8	3390.0	16949.8	6779.9	1702.7	4798.6	8474.9	27863
2034	157931	25363.7	3458.7	17293.4	6917.4	1737.2	4895.9	8646.7	28428
2035	161069	25867.7	3527.4	17637.1	7054.8	1771.8	4993.1	8818.5	28992
2036	164207	26371.6	3596.1	17980.7	7192.3	1806.3	5090.4	8990.3	29557
2037	167345	26875.6	3664.9	18324.3	7329.7	1840.8	5187.7	9162.1	30122
2038	170483	27379.6	3733.6	18667.9	7467.2	1875.3	5285.0	9333.9	30687
2039	173621	27883.5	3802.3	19011.5	7604.6	1909.8	5382.3	9505.7	31252
2040	176759	28387.5	3871.0	19355.1	7742.0	1944.3	5479.5	9677.6	31817
2041	179897	28891.5	3939.7	19698.7	7879.5	1978.9	5576.8	9849.4	32381
2042	183035	29395.4	4008.5	20042.3	8016.9	2013.4	5674.1	10021.2	32946
2043	186173	29899.4	4077.2	20385.9	8154.4	2047.9	5771.4	10193.0	33511
2044	189311	30403.3	4145.9	20729.6	8291.8	2082.4	5868.6	10364.8	34076
2045	192449	30907.3	4214.6	21073.2	8429.3	2116.9	5965.9	10536.6	34641
2046	195587	31411.3	4283.4	21416.8	8566.7	2151.5	6063.2	10708.4	35206
2047	198725	31915.2	4352.1	21760.4	8704.2	2186.0	6160.5	10880.2	35771
2048	201863	32419.2	4420.8	22104.0	8841.6	2220.5	6257.8	11052.0	36335
2049	205001	32923.2	4489.5	22447.6	8979.0	2255.0	6355.0	11223.8	36900
2050	208139	33427.1	4558.2	22791.2	9116.5	2289.5	6452.3	11395.6	37465

14 Issues and strategies

14.1 Streamlining the general constraints to meet the requirements

i. Communication constraints: Communication is the major bottleneck for the overall development of the area. Both the central and state government need to emphasis on reaching the each corner of the district.

ii. Infrastructure development for input support: Seed bank, nurseries, nucleus herd (pig, cattle, goat), fish seed hatchery, semen bank and semen preservation laboratory, vaccine production and storage depot, transportation van, feed and fodder block, machines and abattoirs.

iii. Infrastructure development for research support: Tissue culture laboratories, MOET laboratories, Analytical laboratories, Bio-control laboratories, Disease Forecasting Center, Meteorological Forecasting Center etc.

iv. Marketing infrastructures: Municipality regulated selling booths, refrigerated van, cold storage, SSE or MSE for fruit processing, rice mills, fish processing unit etc. organic certification of the local products and linkages with international exporters for acquiring premium prices.

v. Extension and training support: Strengthening of KVKs / ATMA with more manpower, modern scientific extension tools, advance training etc.

vi. Disaster management: Advanced warning system against natural calamities to take precaution measures. Satellite mapping of flood or landslide prone areas to find out amicable scientific solutions

14.2 Strategy to meet the food requirement

A. Cereals

20010-11 (Availability)				**Strategies and expected production of agricultural products**											
				2020			**2030**			**2040**			**2050**		
Projected population						113999			122874			143611			163147
Cereal	A	P	Pr	A	P	Pr	A	P	Pr	A	P	Pr	A	P	Pr
Projected requirement					16596.2			19733.6			23064.0			26201.4	
Projected production	4503	4503	1	6467	11640.6	1.8	8407	20176.8	2.4	10088	25220	2.5	10592.4	27540.2	2.6
Surplus		974			-			443.2			2156.0			1338.9	
Deficit					4955.6			-			-				
Vision strategy				1. Increasing the area by 50% and reduction of shifting cultivation area 2.Increasing productivity upto 18000 kg/ha by using HYV, IPM and INM 3. Conservation of water			1. Increasing area by 30% and bringing more and more area under settled cultivation 2.Increasing the productivity upto 2400 kg/ha by using HYV, IPM and INM 3. Intensive cropping pattern 4. Developing market for export			1.Increasing productivity upto 2500 kg/ha by HYV, IPM and INM 2. Increasing area coverage by 20% 3. Proper storage of grains to avoid storage loss			1. Increasing productivity upto 2600 kg/ha by HYV, IPM and INM 2. Increasing area coverage by 5% 3. Proper storage of grains to avoid storage loss		

A- Area in hectare, P-Production in MT and Pr- Productivity in MT/ha

B. Pulses

2010-11 (Availability)				Strategies and expected production of agricultural products											
				2020			2030			2040			2050		
Projected population					113999			122874			143611			163147	
Pulses	A	P	Pr	A	P	Pr	A	P	Pr	A	P	Pr	A	P	Pr
Projected requirement					2263.1			2690.9			3145.1			3572.9	
Projected production	193	158	0.82	772	1158	1.5	1158	2084.4	1.8	1505.4	3010.8	2	1655.94	3643.07	2.2
Surplus					-			-			-			70.2	
Deficit					1105.12			606.548			134.288			-	
Vision strategy				1. Increasing the area by 300% 2.Increasing productivity upto 1500 kg/ha by using HYV, IPM and INM 3. Conservation of water 4 Developing market for export			1. Increasing area by 50% from the base year 2020. 2. Increasing the productivity upto 1800 kg/ha by using HYV, IPM and INM 3. Intensive cropping pattern			1. Increasing area by 30% and application of HYV, IPM and INM 2.Increasing the productivity upto 2000 kg/ha by using HYV, IPM and INM 3. Proper storage of grains to avoid storage loss 4. Intensive cropping pattern			. Increasing area by 10% and application of HYV, IPM and INM 2.Increasing the productivity upto 2200 kg/ha by using HYV, IPM and INM 3. Proper storage of grains to avoid storage loss 4. Intensive cropping pattern		

A- Area in hectare, P-Production in MT and Pr- Productivity in MT/ha

C. Vegetables

2010-11 (Availability)				Strategies and expected production of agricultural products											
				2020			2030			2040			2050		
Projected population				113999			122874			143611			163147		
Vegetables	A	P	Pr	A	P	Pr	A	P	Pr	A	P	Pr	A	P	Pr
Projected requirement					11315.6			13454.7			15725.4			17864.6	
Projected production	2234	17300	7.74	2457.4	19659.2	8	2703.14	22976.7	8.5	2703.14	24328.3	9	2703.14	25679.8	9.5
Surplus					8343.6			9522.0			8602.9			7815.2	
Deficit								-			-			-	
Vision strategy				1. Increasing the area by 10% 2. Increasing productivity upto 8000kg/ha by using HYV, IPM and INM 3. Conservation of water 4. Proper post harvest handling and storage of vegetables to avoid post harvest loss			1. Increasing area by 10% 2. Increasing in productivity upto 7500 kg/ha by using HYV, INM and IPM 3. Intensive cropping pattern 4. Proper post harvest handling and storage of vegetables to avoid post harvest loss			1. Further increase in productivity upto 8000 kg/ ha 2. Proper post harvest handling and storage of vegetables to avoid post harvest loss			Further increase in productivity upto 9500 kg/ ha 2. Proper post harvest handling and storage of vegetables to avoid post harvest loss		

A- Area in hectare, P-Production in MT and Pr- Productivity in MT/ha

D. Fruits

2007-08 (Availability)				Strategies and expected production of agricultural products												
				2020			2030			2040			2050			
Projected population				113999			122874			143611			163147			
Fruits	A	P	Pr	A	P	Pr	A	P	Pr	A	P	Pr	A	P	Pr	
Projected requirement					4526.2			5381.9			6290.2			7145.8		
Projected production	3239	21133.4	6.52	3562.9	24940.3	7	3741.05	29928.4	8	3741.05	33669.4	9	3741.045	37410.5	10	
Surplus				10%	20414.1		5%	24546.5			27379.2			30264.6		
Deficit					-			-			-			-		
Vision strategy				1. Increasing the area by 10% to boost this productive sector 2. Increasing productivity upto 7000kg/ha by using HYV, IPM and INM 3. Conservation of water 4 Developing market for export			1. Further increase in total production by increasing area (5%) and productivity (8000kg/ha) with the application of HYV, IPM and INM 2. Intensive cropping pattern 3. Proper post harvest handling and storage of fruits to avoid post harvest loss			1. Increasing in productivity to boost economy upto 9000 kg/ha 2. Proper post harvest handling and storage of fruits to avoid post harvest loss			Increasing in productivity to boost economy upto 1000 kg/ha 2. Proper post harvest handling and storage of fruits to avoid post harvest loss		

A- Area in hectare, P-Production in MT and Pr- Productivity in MT/ha

E. Fish

2007-08 (Availability)				Strategies and expected production of agricultural products										
				2020			2030			2040			2050		
Projected population				113999			122874			143611			163147		
Fish	A	P	Pr	A	P	Pr	A	P	Pr	A	P	Pr	A	P	Pr
Projected requirement					1136.7			1351.6			1579.7			1794.6	
Projected production	529	320	0.6	634.8	952.2	1.5	761.7	1523.52	2	761.76	2285.2	3	761.7	2437.44	3.2
Surplus					-			171.9			705.5			642.8	
Deficit					184.5			-			-			-	
Vision strategy				1. increasing the area coverage under fish culture by 20% 2. Improvement in productivity upto 1500 kg/ha 3. Improving seed quality 4. Developing markets			1.Bringing more and more area under fish culture (20% increase) 2. fish productivity improvement upto 2000 kg/ha 3.Value addition and processing development 4. Developing markets			1. Concentrating more on productivity improvement upto 3000 kg/ha 2. Supply of quality inputs 3. Vigorous extension effort			1. Concentrating more on productivity improvement upto 3200 kg/ha 2. Supply of quality inputs 3. Vigorous extension effort		

A- Area in hectare, P-Production in MT and Pr- Productivity in MT/ha

F. Meat

2007-08 Availability		2020	2030	2040	2050
Projected population (nos.)	-	113999	122874	143611	163147
Requirement (MT)	2660.34	3203.5	3809.1	4452.0	5057.6
Projected meat production (MT)	432	1650.75	3987.02	5401.43	5941.573
Surplus	-	-	177.9	949.5	884.0
Deficit	2198.34	1552.8			
Vision Strategy		1. Introduction of dual purpose poultry 2. Grading up indigenous pigs 3. Better management of cattle 4. Introduction of high yielding germplasm of goat 5. Better feed management of animals 6. Emphasis on mobile veterinary service 7. Formation of SHGs in pig breeding	1. Proper feed management 2. Upgradation of local pigs 3. Control breeding 4. Setting up of hatchery 5. Developing processing units	1. Proper feeding management 2. Proper health management	1. Proper feeding management 2. Proper health management

G. Milk

2007-08 Availability		2020	2030	2040	2050
Projected population		113999	122874	143611	163147
Requirement (MT)	4683.7	5657.8	6727.4	7862.7	8932.3
Projected milk production (MT)	472	3819	5954	8709	9579.9
Surplus	-	-	-	846.3	647.6
Deficit	4211.7	1838.8	773.4	-	
Vision Strategy		1. Introduction of high yielding cattle variety 2. Replacement of 20% indigenous cattle with high yielding cross breed cattle 3. Grading up indigenous cattle 4. Introduction of milch type buffaloes 5. Popularization of cattle feed and fodder production 6. Better quality feed supplementation for backyard poultry farming 7. Emphasis on mobile veterinary service 7. Formation of SHGs in mlk production	1. Replacement of 20% indigenous cattle with high yielding cross breed cattle 2. Credit support 3. Popularizing milk based products 4.Entrepreneurship development in milk processing 5. Developing marketing facilities	1. Replacement of 40% indigenous cattle with high yielding cross breed cattle Increasing the numbers of layers 2. Proper feeding management 3. Proper health management 4. Market development	1. Replacement of 20% indigenous cattle with high yielding cross breed cattle Increasing the numbers of layers 2. Proper feeding management 3. Proper health management 4. Market development

H. Egg

2007-08 Availability		2020	2030	2040	2050
Projected population		113999	122874	143611	163147
Requirement (’000 nos.)	15398	18601	22117	25850	29366
Projected egg production (’000 nos.)	2900	9253	18227	31064	38830
Surplus	-	-	-	5214.0	9463.6
Deficit	12498	9348.0	3890.4	-	-
Vision Strategy		1. Introduction of high yielding poultry 2. Increasing the numbers of layers 3. Increasing the numbers of ducks 4. Establishment of mini hatcheries 5. Better quality feed supplementation for backyard poultry farming 6. Emphasis on mobile veterinary service 7. Formation of SHGs in egg production	1. Increasing the numbers of layers 2.Entrepreneurship development 3. Developing marketing facilities	1. Increasing the numbers of layers 2. Proper feeding management 3. Proper health management 4. Market development	1. Increasing the numbers of layers 2. Proper feeding management 3. Proper health management 4. Market development