

# **VISION 2025**

## *Perspective Plan*

**KRISHI VIGYAN KENDRA, CHANDEL**

**ICAR-RC, MANIPUR CENTRE, LAMPHELPAT**

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## EXECUTIVE SUMMARY

The Krishi Vigyan Kendra, Chandel was established in the year 2006 at Monsang Pantha, with a staff position of 6 Subject Matter Specialists and a Programme Coordinator.

The KVK popularized backyard poultry (*Vanaraja* and *Giriraja*) and pig rearing. The KVK also developed several farming system models to suit the varying models and also to suit the varying agro-ecological situations of the region. Introduction of Seed Village concept, HQPM-1 Maize, Zero-Tillage-Mustard, demonstration on oilseeds and pulses and introduction of hybrid cabbage under village adoption programme regarding the transfer of technology are the main highlight or the activities of the organization.

Since the region employs a large population of women population, women Self Help Groups (SHGs) and the farmers' Clubs were formed, assisted and trained for income generation in the fields of mushroom cultivation, commercial fruits & vegetables cultivation, food processing and embroidery. To reduce the infant mortality rate, weaning diets and diet charts too were provided to lactating mothers and infants. Also, introduction of backyard Nutritional Gardening is also a very promising venture for the hill farm families.

Besides identifying the suitable crops for the region, the KVK also introduced protected cultivation techniques based on low cost poly house design.

Based on the matrix ranking from the survey, the various technologies and information generated by the Institute are disseminated to the farmers through various programmes like on-farm trial, front-line-demonstration, Kishan Melas and KVK-village linkage programmes. Training programmes are regularly organized for training various end users including farmers, officials of line departments, NGOs, Self Help Groups (SHGs), etc for capacity building and skill development.

Around 10% of the area is under lowland and midland and the remaining 80% is occupied by the high hill topography. The system is characterized by the low cropping intensity(101%), subsistence level with rice as a sole crop in the low and mid lands (monocropping) and predominantly as a shifting cultivation practices in the high topography. Average land-holding size is 2 ha compared to the national average of 0.69 ha. Although the landholding appears to be higher, the entire holding cannot be used for agricultural purposes due to topographical disadvantages. Land-use-pattern is relatively faulty for which annual losses of top soil is much higher(46t/ha) than the all india average of 16t/ha. Similarly due to lack of proper water arvesting measures, there is no reliable source of irrigation in the entire district. Fertilizer consumption in the district id relatively low as compared to the state and the all india average.

In the light of the above scenario, the present vision document have been prepared and manuscript keeping in view the strength, weakness, opportunities and threat of the various agro-ecological situation of the district to support the the agrarian population nad allied sector for their sustainability, profitability and

The temperature in the district ranges from 4°C to 36°C. The main type of soil is Red soil and total forest cover in the district is 2, 32,800 ha.

The region is marked by high inaccessibility, cultural heterogeneity, ethnicity and rich biodiversity. The society is agrarian and depends on agriculture and allied sector for livelihood and other support. The fertilization consumption in the district is very minimal and the agriculture is basically organic.

Since agriculture and allied activities are the main source of livelihood for the people of the district, any attempt to reduce poverty as well as to place the region in developmental paradigm shall have to have a base on system wide and eco-regional planning of agricultural sector development. While planning this, the strength of farming system approach to judicious utilization and conservation of natural resources of the region within concurrent policy and research back up to increase production, add value to the produce and their disposal/sale management shall be of paramount importance.

In the light of the above scenario, present vision document has been prepared keeping in view the strength, weaknesses, opportunities and threats to support the population dependent on agriculture and allied sector for their sustainability, profitability as well as poverty reduction.

### **Present Needs**

- ▶ Popularization programme regarding the Improved and HYVs breeds/ varieties and their scientific know-how for the livelihood, income generation and sustainable agriculture.
- ▶ Giving first-hand accounts regarding the commercial cultivation of the field crops.
- ▶ Overall development of agri-business sector based on the strength of the region.
- ▶ Technological package for agri-horti-animal-fish for facilitating enhanced productivity.

### **Mandate**

- ▶ Conducting front line demonstration on the proven technology for wide scale dissemination/adoption of the technology
- ▶ On-Farm-Testing in the location specific area for adaptability confirmation of the technology
- ▶ Organizing and conducting trainings for farmers, rural youth and Extension functionaries and
- ▶ Facilitating Production of quality planting materials for sustainable agriculture.

## GROWTH

The KVK is still in the initial stage of development and has specialists in the following disciplines:

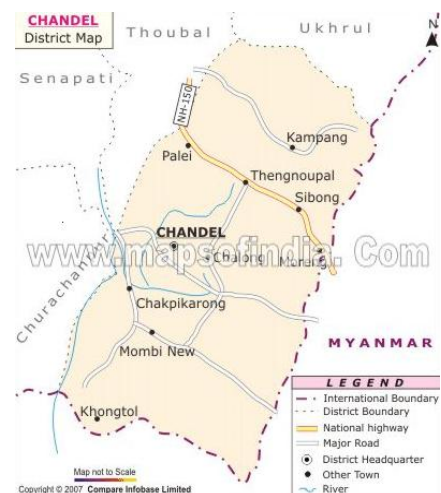
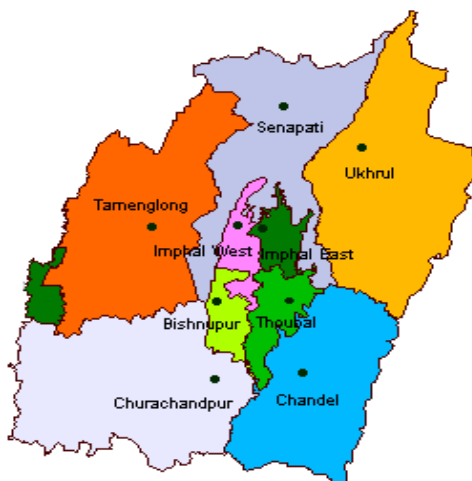
- ▶ **Agronomy**
- ▶ **Plant Breeding**
- ▶ **Horticulture**
- ▶ **Animal Science**
- ▶ **Home Science**
- ▶ **Agricultural Extension**
- ▶ **Agricultural Engineering**

It has a Programme Coordinator, 6 Subject Matter Specialists (SMSs), one Stenographer, two supporting staff and two drivers.

The office farm has mild to steep hill slopes. At present development plans for areas for each discipline is being prepared so that the entire farm could be developed on the basis of watershed development. Bench terracing on mild slopes, contour bunds and half moon terraces on steep hills are being developed for conservation of soil and water.

The Administrative Building is being constructed in full swing and the survey work and site selection for the staff quarter selection has already been done. An Agro-meteorological Observatory is installed. The office is well-equipped with computer, printer, photocopier, scanner and a landline telephone connection.

### Background Information about the District:



### General features of the District:

The Chandel district was born on 13<sup>th</sup> May, 1974. Earlier it was known as Tengnoupal sub-division. The district is located between 93°39' E to 94°E longitude and 23°56'N to 24°E longitude and 23°56'N to 24°41'N latitude.

It occupies a geographical area of 3, 313 sq.km constituting about 14.8% of the total area of the state of Manipur. It has a population of 1, 18,327 with a density of population of 36 per sq.km covering 361 villages as per 2001 census. The literacy rate of the district is 56.2 percent.

The district is under the sub-tropical climate with a minimum of 4°C to maximum of 36°C. The average rainfall is 1300 mm. the district is endowed with beautiful landscape. About 46% of the geographical area is under forest cover. The district is located a t a distance of about 65 kms away from Imphal, the state capital.

### Administrative Set-Up:

There are 4 (four) sub-divisions in Chandel District. They are:

- 1) Chandel
- 2) Chakpikarong
- 3) Tengnoupal
- 4) Machi

However, there are 5 (five) T.D. blocks in the district. They are Chandel, Chakpikarong, Moreh (Tengnoupal), Machi and Khengjoi. The district HQ is at Chandel.

Table : Showing a brief statistics of the District:

Sl. No.	Name of the Sub-Division	Area (sq. km)	Population (as per 2001 census)		
			Male	Female	Total
1	Chandel	687	13,025	13,252	26,276
2	Chakpikarong & Khengjoi	1413	21,846	21,356	43,202
3	Machi	438	8728	8358	17,087
4	Moreh	775	16,142	15,620	31,762

### Information Regarding the Spread of Agro-Ecological Situation:

The Agro-Ecological Situations of district were identified through discussions with the district level officers of the line Departments on climate, rainfall variation in temperature, topography, irrigation, soil type and its depth affected by the erosion and how these factors affected the farming system within the district. After sound discussion, the district was divided into three Agro-Ecological Situations (ASEs) in the district is shown in the Table below:

Sl. No.	Name of the Agro-Ecological Situation (AES)	Blocks covered	Representative Village
1	AES-I Temp/High hill steep/Red/Alluvial/Laterite/Rainfed	Machi & Tengnoupal	Machi
2	AES-II Sub-tropical/Medium-low land/Loamy/Alluvial/Rainfed	Chandel & Chakpikarong	Purum Tampak & Purum Lainingkhul
3	AES-III Plain-temp/Sub-Tropical/Medium & low land/Red/Alluvial/Rainfed	Khenjoi	Moltu

### Demographic Information:

Total area and the population of the district are 3,313 sq km and 1, 18,327 respectively. It is a tribal dominated district. The district belongs to ST. however there is a few population of SC (2001 census) and their population is very low.

### Information on Operational and Holdings and land-Use pattern:

Operational land Holdings (Number)				
Cultivator	Small & Marginal	Agril. labour	Cottage land	Other workers
63869	14610	14750	14920	10178

### Table Showing Information on Land Use Pattern in the District (area in ha)

Geographical area	Cultivable area	Cultivated area	Cultivable waste	Current fallow
331300	42400	26770	7320	340

Forest		Pasture	Land put to non agril use	Land under misc. plantation (Horticulture crop)	Barren & unculturable land (waste land)
Reserved	Open	-	-	-	-
-	-				
63400	169400	7048	4500	3402	6720

Table Information on Occurrence of Drought/Floods:

Sl. No.	Name of the block	Occurrence of the drought/flood/cyclone	Year in which affected (last 10 years)	Severity M/S or VS	% Cropped area affected	Livestock mortality (No. of animals)	% of farm families affected
1	Chandel	Drought	2004, 2008	M	35%, 25%	Nil	40% 45%
2	Khengjoi	Drought	2004	M	25% 20%	Nil	30% 20%
3	Chakpikarong	Drought	2004	M	30% 20%	Nil	35% 25%
4	Machi	Drought	2004	M	35% 25%	Nil	30% 20%
5	Tengnoupal	Drought	2004	M	30% 20%	Nil	25% 20%

\* M=Mild; S= Severe; VS= Very Severe

### Information on Soils and Irrigation

The district has a plethora of different kinds viz. alluvial, loamy, laterite soils and red soils. Maximum areas come under red soils. The soils of the District are acidic in nature. The soils are low in available phosphate content and highly susceptible to soil erosion. Due to shifting cultivation mass movement of soils and land slides are common problems/issues in the district.

Information on soils for the district (Area in ha):

Sl. No.	Black Clay loam		Red soil		Sandy soil		Alluvial		Sand loams		Others (laterite)	
	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
1	-	-	201910	60.4	-	-	99390	30	-	-	30000	9.1

There is no much problem soil in the district. However due to non-judicious use of chemical fertilizers the soils have become acidic.

### Information on Problem Soils in the District

Sl No.	Problem soil	Area in ha	Extent of severity		
			Very severe	Severe	Mild
1	Saline	-	-	-	-
2	Alkaline	-	-	-	-
3	Acidic	331300	-	-	Mild
4	Soil erosion	350	-	-	Mild
5	Iron toxicity	-	-	-	-
6	Micro-nutrients deficiency	NA	NA	NA	NA
7	Water logged condition	200	-	-	Mild



## **Information Regarding Organic Inputs used in the District**

Organic farming is a common practice in the homestead gardens. But there is no commercial production of crops under organic farming. No chemical fertilizers are used in the cultivation of vegetables and other crops. Locally available FYM are used extensively. Use of organic inputs like vermin-compost, bio-fertilizers and bio-pesticides are in the initial stage. However, awareness has been created among the farmers on the use of organic farming.

### **Information on Medicinal, Aromatic and other minor Forest Produce**

Being a hilly region, there is a great potential for cultivation of aromatic and medicinal plants. Exploitation of natural resources for identification and cultivation of medicinal and aromatic plants will be necessary to create potentials for cultivation. Farmers are given awareness through Manipur Small Farmers' Agri-business-Consortium, Sanjenthong, Imphal and have started cultivation of aromatic and medicinal plants in the district and needs to be encouraged for expansion.

Under minor forest produce, different types of bamboos are extensively cultivated in the district. Income can be generated from the bamboo cultivation. Awareness is created among the farmers by the forest department on the cultivation of bamboo in Kwatha, a peculiar SC village in the district. Bamboo shoots and fermented bamboo shoot locally known as Ushoi is famous for such bamboo products.

### **Information on Rainfed and Irrigated areas in the District**

Agricultural operations are largely rainfed. So, the total cultivated area in the district, are under rainfed. The district is having a lot of potential for creating irrigation facilities. Minor irrigation Projects are coming up at Machi, Chandel and Chakpikarong blocks where maximum area can be brought under irrigation.

### **Cropping Pattern**

The net agricultural area of the district is around 26, 770 ha. The main crop is paddy both *jhum* and wet land paddy. Other important crops grown in the district are maize, mustard, pea, bean, soybean, sugarcane, sesamum, groundnut etc. The cropping pattern is mainly kharif dominated and monocropping is largely practiced. Chillis, king chillies (U-morok), cucurbits, lime/lemon, passion fruit, hatkora, ginger/turmeric, potato, banan, arum are important horticultural crops. Agricultural operations in the district are mainly rain fed. Information regarding cropping system along with production and productivity of important commodities for each ASEs are given below:

Blocks	Major crops						Cropping pattern
	Name	Area (ha)	Name	Area (ha)	Name	Area (ha)	
Chandel	Paddy	2200	-	-	-	-	Monocropping
	Kharif Pulse	200	Maize	280	-	-	Multiple cropping
	Banana	2200	Cole crops	100	Ginger/Turmeric	1000	Multiple cropping
			Rabi Pulse	200	-	-	Multiple cropping
			Mustard	78	Maize	200	-
						Multiple cropping	
Chakpikarong	Paddy	40000	-	-	-	-	Monocropping
	Kharif Pulse		Rabi	70	Ginger/	500	Multiple cropping
	Banana	70	Pulse	100	Turmeric		-do-
			Cole crops	100	Maize	100	-do-
			Potato	250	Potato	250	-do-
			Mustard	150	-	-	-
Tengnoupal	Paddy	1500	-	-	-	-	Mono cropping
	Kharif Pulse	100	Banana	3000			
			Rabi pulse	55	Maize	400	Multiple cropping
			Mustard	420	Groundnut	500	-do-
Machi	Paddy	800	-	-	-	-	Mono cropping
	Kharif Pulse	120	Mustard	300			Multiple cropping
	Beans	300	Rabi pulse	55	Maize	400	-do-
	Banana	800	Cole crops	250	Groundnut	500	-do-
Khengjoi	Paddy	1800	-	-	-	-	Mono cropping
	Kharif Pulse	250	Mustard	760			Multiple cropping
	Beans	1100	Potato	1600	Turmeric	450	-do-

**Production and Productivity of important Commodities in the district**

Sl. No.	Name of the commodity	1995			2000			2005			2008		
		A	P	Y	A	P	Y	A	P	Y	A	P	Y
1	Paddy (Jhum)	6.5	5.2	0.80	6.6	5.61	0.85	6.8	5.19	0.87	7	6.23	0.89
2	Paddy (Rainfed)	3	3	1.00	3.1	3.19	1.03	3.2	3.36	1.05	3.3	3.59	1.09
3	Maize	1.8	2.97	1.65	1.9	3.23	1.70	2	3.60	1.80	2.48	4.57	1.84
4	Mustard	1.7	1.44	0.85	1.9	1.71	0.90	2	1.86	0.93	2.27	2.17	0.96
5	Groundnut	0.70	1.12	1.6	0.9	1.62	1.8	0.90	1.71	1.90	1.00	2	2
6	Soybean	0.20	0.54	2.7	0.25	0.70	2.8	0.27	0.81	3	0.30	0.90	3
7	Pea	0.40	0.24	0.6	0.42	0.29	0.7	0.45	0.36	0.8	0.50	0.40	0.80
8	Rice beans	1.60	6.80	0.5	1.7	0.85	0.5	1.8	1.08	0.8	2.00	1.2	0.6
9	Sesamum	0.25	0.087	0.35	0.27	0.097	0.36	0.28	0.10	0.37	0.30	0.11	0.38
10	Sugarcane	0.15	6.75	45	0.18	8.28	46	0.20	9.40	47	0.22	10.53	47.86
11	Cole crops	0.30	2.55	8.5	0.35	3.15	9	0.40	4	10	0.45	4.50	10
12	Potato	1.20	9	7.50	1.3	10.01	7.7	1.5	11.7	7.8	1.63	13	7.98
13	Chilli	3.30	5.94	1.8	3.4	5.98	1.9	3.5	7	2	3.60	7.2	2
14	Turmeric	0.80	3.04	3.8	0.9	3.51	3.9	1	4	4	1	4	4
15	Ginger	1.50	5.7	3.8	1.6	6.28	3.9	1.7	6.8	4	1.8	7	4
16	Squash	0.15	0.85	5.7	0.17	0.98	5.8	0.18	1.06	6	0.20	1.20	6
17	Hth kora	0.10	0.45	4.5	0.2	0.96	4.8	0.25	1.25	5	0.30	1.50	5
18	Coriander	0.50	1.75	3.5	0.7	2.8	4	0.9	4.05	4.5	0.10	5	5
19	Arium	0.46	19.76	43	0.47	20.68	44	0.48	21.6	45	0.50	22.5	45
20	Citrus	0.15	0.55	3.7	0.2	0.76	3.8	0.23	0.92	4	0.25	1	4
21	Banana	7	91	13	7.5	97.5	13	8	112	14	8.20	123	15
22	Passion fruit	2	6	3	3	9.9	3.3	3.5	12.25	3.5	4	14	3.5

A-Area in '000 ha; P-Production '000m. tonnes; Y-Yield (Productivity) in Mt/ha

## SWOT analysis of AES

SWOT analysis of each of the AESs was carried out during the PRA exercise. These are presented here under:

### a) SWOT analysis of AES I

<p><b>Strength</b></p> <ul style="list-style-type: none"> <li>• Naturally fertile soil</li> <li>• Soil climate and topography suitable for agri &amp; horti crops i.e. paddy, fruits, vegetable, oilseeds etc.</li> <li>• High availability of natural grazing services</li> </ul>	<p><b>Weakness</b></p> <ul style="list-style-type: none"> <li>• Economically backward</li> <li>• Lack of proper road to crop fields</li> <li>• Low literacy</li> <li>• Marketing problems</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Expansion of area under temperate fruits like stone fruits and passion fruits and off season vegetables like cole crops etc.</li> <li>• Intensification of commercial cultivation of medicinal plants and spices.</li> <li>• Advantages of organic farming</li> <li>• Availability of KVK extension services</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Destroying of filed crops by animals</li> <li>• Unstable price of vegetables and fruits</li> <li>• Epidemics of animals and diseases of crops</li> </ul>

### b) SWOT analysis of AES II

<p><b>Strength</b></p> <ul style="list-style-type: none"> <li>• Naturally fertile</li> <li>• Good climatic condition for cattle rearing</li> <li>• Natural grazing ground</li> <li>• Good road communication</li> </ul>	<p><b>Weakness</b></p> <ul style="list-style-type: none"> <li>• Economically backward</li> <li>• Increasing trend of acidity of soil</li> <li>• Poor marketing facility</li> <li>• Sudden flood and soil erosion</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Intensification of cattle rearing</li> <li>• Construction of water harvesting structure</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Problems of rodents and pests and disease</li> <li>• Loss of produce due to lack of storage and ready market</li> <li>• Stray cattle problem during rabi season</li> </ul>

**c) SWOT analysis of AES III**

<b>Strength</b> <ul style="list-style-type: none"><li>• Good climatic condition for horticultural crops</li><li>• Good road communication</li><li>• Suitable for rearing of animals</li><li>• Naturally fertile</li></ul>	<b>Weakness</b> <ul style="list-style-type: none"><li>• Low literacy rate</li><li>• Economically backward</li><li>• Poor marketing facility</li><li>• Steep slope-troublesome and laborious transportation of inputs and produce</li></ul>
<b>Opportunities</b> <ul style="list-style-type: none"><li>• Expansion of area under commercial cultivation of stone fruits, tree beans, turmeric, passion fruits and off season fruits</li><li>• Potential for rearing of Mithun</li><li>• Good scope for organic farming</li><li>• Abundant availability of virgin land</li></ul>	<b>Threats</b> <ul style="list-style-type: none"><li>• Problems of rodents and pests and diseases</li><li>• Stray cattle problem during all season</li></ul>

## SALIENT ACHIEVEMENTS

### Animal Husbandry

Under the present socio-economic and socio cultural conditions, the role of livestock and poultry farming in livelihood earning of farmers is enormous. Backyard pig and poultry rearing is very common in many of the households in the district.

For pigs, most of the local farmers use kitchen wastes and locally available feeds like colocasia leaves and stem, rice polish, rice bran etc. For poultry, the birds are fed with broken rice/ maize seeds. The birds are prone to diseases due to unhygienic conditions.



The KVK has introduced many improved varieties and breeds (e.g. *Vanaraja* and *Giriraja*) to the farmers and also ensured that the animals remain healthy and disease-free through regular check-ups and frequent vaccination programmes.

### Horticulture

The district of Chandel has a wide scope for growing vegetables and fruits. Vegetables like cabbage, mustard, varieties of gourds, beans etc are being cultivated in the district. Fruits like banana, guava and lemon are the major ones covering the district. Among the flowers, *Orchid* has the scope of being grown as a commercial crop.



Besides various training on cultivation of flowers and grafting of fruit crops/ roses, a model of poly house has been constructed.

## Agronomy

Besides the normal training programmes for the framers, FLDs and OFTs on Oilseeds and pulses are being conducted. Zero-tillage mustard has been introduced as rabi crop in the district. The farmers normally followed mono-cropping and the paddy fields of the district normally remain barren after the harvesting.

As an On-farm research for popularization of suitable varieties, various technologies are undergoing for the varietal evaluation of upland paddy.



With the intervention of the KVK and introduction of the zero-tillage mustard cultivation, the fields have been utilized and the farmers get immense economic benefit. With very low requirement of irrigation, this practice mainly relies on the left-over moisture in the soils of the paddy fields.

## Agricultural Engineering

The *Jal Kund* units which were taken up under the OFT have been very popular in the district. It has enabled life saving irrigation for vegetable crops. The farmers have been very enthusiastic about the low-cost water harvesting structures and have expressed eagerness to have more such units in the villages. At present, sixteen units of *Jalkund* structure have been proposed to the DRDA for demonstration in the four blocks of the district and the same is in the pipeline.



The manual wheel hoe too has been very popular with the farmers of the district. Taken up under the FLD, this implement has been shown to be a very good weeder. It has reduced the drudgery and saves both labour and time in the field.

Besides this, various training programmes on water and soil conservation have been conducted for the farmers.

## Plant Breeding

Hybrid paddy varieties (RCM-9 and RCM-10) have been popularized in the entire district. Also hybrid maize (HQPM-1) has been found very successful in the district. Improved technologies and varieties have been disseminated through FLDs and OFTs conducted. The concept of Model Seed Village has been introduced in the district.



Improved and Scientific Seed Bins which are low-cost in nature have been popularized

## Home Science

Women empowerment has been greatly stressed by the Home Science section of the KVK. Weaning diet and diet charts for the lactating mothers of the district have been prepared in detail. Also, various training programmes for income generation e.g. embroidery, sewing, jam/jelly preparation etc have been imparted.



Besides, training has been given on nutritional requirements, needs and diseases. "Nutrition Week" is organized every year. Nutritional Gardening has also been popularized in the district.



### **Agricultural Extension**

Awareness programmes, group discussion, survey work, Kishan melas, Farmers' Field Days and village adoption programmes are the highlight of the activities besides conducting the normal mandates like training, FLDs and OFT. Over and above, various co-ordination and linkages programmes are also being carried-on.



### **IMPACT ASSESSMENT ON THE TECHNOLOGIES DEMONSTRATED FOR POPULARIZATION**

Various Front Line Demonstration programme has been carried out in the different Blocks of the district for wide scale dissemination/popularization of the technologies. The results of the impact studies at different situation revealed that there have been wide gaps in the Yields of our technologies and the farmers' yield levels. Further, the percentage rate of the technologies adoption has also changed considerably.

Sl. No	Name of crop	Technology	Farmers (No.)	Area (ha)	Technology Yield	Farmers' Yield	Percent Change	Adoptions Rate(%)
1	Rice	RCM-10	23	8	17.27	10.36	66.64	150
2	Mustard	M-27	8	5.00	9.10	5.30	71.69	90
3	Field pea	Rachana	16	5.00	14.49	9.32	55.47	66
4	Groundnut	JL-24	4	1	16.41	9.58	71.29	50
		ICGS-76	4	2	17.44		80.05	
5	Soyabean	JSS-335	8	2	18.35	10.85	69.12	57
6	Blackgram	T-9	15	5	7.49	5.54	35.19	53

## Varietal Evaluation

On-Farm-Testing for the "Varietal Evaluation of Rainfed Paddy "using three improved varieties vizely, RCM-9 RCM-10 and Local, was conducted in the Chandel block with a view to assess the yield performance, selection of suitable and well adapted improved variety of paddy in the rainfed situation of the Chandel district so that a well adapted technology can be recommended for demonstration on the farmers field for wide range of technology dissemination.

The result showed that RCM-10 to be the most adaptive technology/variety in terms of yield and other environmental characters. **The OFT is continuing in the different Agro-ecological situation (AES) of the district.**

Block	Area (Ha)	Technology	Yield (Kg/ha)
Chandel	0.25	Litan(Control)	<b>525</b>
	0.25	RCM-9	<b>903</b>
	0.25	RCM-10	<b>923</b>

**TARGET MANDATED FRONT LINE DEMONSTRATION VISION 2025**

TECHNOLOGIES	HORIZONTAL SPREAD OF THE TECHNOLOGY			HORIZONTAL SPREAD OF THE TECHNOLOGY			HORIZONTAL SPREAD OF THE TECHNOLOGY			TOTAL		
	<b>2008</b>			<b>2016</b>			<b>2025</b>					
	No. Of villages	No. Of Demonstration	Area in ha	No. Of villages	No. Of Demonstration	Area in ha	No. Of villages	No. Of Demonstration	Area in ha	No. Of villages	No. Of Demonstration	Area in ha
Weaning Diet	6	30	-	6	30	-	6	30	-	18	90	-
Weed management in Paddy	9	18	12	9	18	12	9	18	12	27	54	36
Poultry production	9	30	-	9	30	-	9	30	-	27	90	-
Paddy	18	69	24	18	69	24	18	69	24	54	207	72
Maize	12	24	9	12	24	9	12	24	9	36	72	27
Groundnut	12	12	3	12	12	3	12	12	3	36	36	9
Groundnut	15	18	6	15	18	6	15	18	6	45	54	18
Rapeseed	15	24	15	15	24	15	15	24	15	45	72	45
Soyabean	21	24	6	21	24	6	21	24	6	63	72	18
Blackgram	21	45	15	21	45	15	21	45	15	63	135	45
Field Pea	24	48	15	24	48	15	24	48	15	72	144	45
Cabbage	18	24	6	18	24	6	18	24	6	54	72	18
Garden Pea	9	24	6	9	24	6	9	24	6	27	72	18
Mushroom	6	90	-	6	90	-	6	90	-	18	270	-
<b>Total</b>										<b>585</b>	<b>1440</b>	<b>351</b>

**TARGET ON-FARM TESTING-VISION 2025**

DISCIPLINE	2009-2012		2012-2016		2016-2020		2020-2025		TOTAL	
	No. Of Activities	No. Of Farmers	No. Of Activities	No. Of Farmers	No. Of Activities	No. Of Farmers	No. Of Activities	No. Of Farmers		
AGRONOMY	3	9	3	9	3	9	3	9	12	36
HORTICULTURE	3	30	3	30	3	30	3	30	12	120
PLANT BREEDING	3	6	3	6	3	6	3	6	12	24
AGRIL. EXTENSION	3	48	3	48	3	48	3	48	12	192
AGRIL. ENGINEERING	3	9	3	9	3	9	3	9	12	36
HOME SCIENCE	3	9	3	9	3	9	3	9	12	36
ANIMAL SCIENCE	3	9	3	9	3	9	3	9	12	36

**TARGET MANDATED TRAINING VISION 2025**

Particulars	Year	Discipline-wise training no	No. Of Beneficiaries	Year	Discipline-wise Training no	No. Of beneficiaries	Year	Discipline-wise Training no	No. Of beneficiaries	Year	Discipline-wise Training no	No. Of beneficiaries
Agronomy	2009-2012	45	900	2012-2016	50	1000	2016-2020	50	1000	2020-2025	50	1000
Horticulture		30	600		30	600		30	600			
Plant breeding		30	600		30	600		30	600			
Agril. Extension		30	600		30	600		30	600			
Agril. Engineering		30	600		30	600		30	600			
Home science		45	900		45	900		45	900			
Animal science		45	900		45	900		45	900			
	SUB-TOTAL	255	5100		260	5200		260	5200		260	5200

**TARGET/PROPOSED EXTENSION ACTIVITIES- VISION 2025**

Nature of Extension Activity	No. of activities	2009-2012			No. of Activities	2012-2016	No. of Activities	2016-2025	TOTAL	
									Activities	Beneficiaries
Field Day	5		225		5	225	5	225	15	675
Kisan Mela	1		1000		1	1000	1	1000	3	3000
Kisan Gosthi	3		300		3	300	3	300	9	900
Exhibition	1		80		1	80	1	80	3	240
Film Show	3		300		3	300	3	300	9	900
Method Demonstrations	20		130		20	130	20	130	60	390
Farmers Seminar	1		90		1	90	1	90	3	270
Workshop	2		200		2	200	2	200	6	600
Group meetings	10		110		10	110	10	110	30	330
Lectures delivered as resource persons	15		240		15	240	15	240	45	720
Newspaper coverage	10		-		10	-	10	-	30	-
Radio talks	10		-		10	-	10	-	30	-
TV talks	8		-		8	-	8	-	30	-
Popular articles	10		-		10	-	10	-	30	-
Extension Literature	20		-		20	-	20	-	60	-
Advisory Services	60		500		60	500	60	500	180	1500
Scientific visit to farmers field	80		260		80	260	80	260	240	780
Diagnostic visits	30		400		30	400	30	400	90	1200
Exposure visits	6		300		6	300	6	300	18	900
Ex-trainees Sammelan	3		60		3	60	3	60	9	180
Soil Health Camp	3		300		3	300	3	300	9	900
Animal Health Camp	3		300		3	300	3	300	9	900
Agri mobile clinic	3		1500		3	1500	3	1500	9	4500
Soil test campaigns	4		200		4	200	4	200	12	600
Farm Science Club Conveners meet	10		110		10	110	10	110	30	330
Self Help Group Conveners meetings	10		100		10	100	10	100	30	300
Mahila Mandals Conveners meetings	6		120		6	120	6	120	18	360
Celebration of important days (specify)	3		120		3	120	3	120	9	360
<b>Total</b>									<b>1026</b>	<b>20835</b>

**PROJECTED AREA, PRODUCTION, REQUIREMENT, DEFECIT/SURPLUS –vision 2025**

YE AR	POPULA TION	CROP S	AREA(‘ 000 ha)	PRODUCTION( ‘000MT)	REQUIREMENT (‘000MT)	DEFECIT/S URPLUS
200 8	147370	CERE ALS	12.70	14.39	24.36	-9.97
201 2	163878		14.05*	18.76*	27.12	-8.36
201 6	180442		15.45*	26.26**	29.86	-3.6
202 0	197006		16.98*	36.76**	32.60	+6.8
202 5	213570		17.38*	51.46**	35.73	
			*10%	**30%; ***40% ****50%		
200 8	147370	PULSE S	2.50	2.40	2.12	+0.28
201 2	163878		2.75*	2.88**	2.35	+0.53
201 6	180442		3.02*	3.45**	2.60	+0.85
202 0	197006		3.32*	4.14**	2.83	+1.31
202 5	213570		3.65*	4.96**	3.05	
			* 10%	**20%		
200 8	147370	OILSE EDS	3.87	5.19(1.03)	2.65	-1.62
201 2	163878		4.25*	5.96(2.12)*	2.94	-0.58
201 6	180442		4.66**	7.09(2.88)**	3.24	-0.36
202 0	197006		5.12***	9.21(3.68)**	3.54	+0.14
202 5	213570		6.35***	11.65(4.46)**	3.74	
			*15%;** 20% ***30%	*30% **40%		
200 8	147370	FRUIT S	12.45	138	6.36	+131.64
201 2	163878		13.28*	151.6*	7.07	+144.53
201 6	180442		14.60*	174.57**	7.80	+166.77
202 0	197006		16.04*	209.46***	8.57	+200.89
202 5	213570		17.64*	240.14***	9.12	
			*10%	*10%; **15% ***20%		

**TARGET ENTERPRISE-WISE VISION 2025 AND THE TECHNOLOGIES INTERVENTION/STRATEGIES**

SL.NO.	ENTERPRISES	2008			2016			2025		
		Area (in Ha)	Production (Mt)	Productivity	Area (in ha)	Production (Mt)	Productivity	Area (in ha)	Production (Mt)	Productivity
<b>CEREALS</b>										
1	RICE	10300	11,124	1.08	11330	16686	1.47	12463	25029	2.01
2	MAIZE	2480	12,400	5.00	2728	18600	6.82	3000	27900	9.30
<b>INTERVENTIONS</b>		Increasing cropped area by 10% and changing the productivity; Introduction of suitable and Improved/HYVs/Hybrid long with latest technical know-how (SRI,HQPM-1);				Introduction of suitable and Improved/HYVs/Hybrid along with resource-conservation technologies (INM;IPM;SRI, HQPM-1); Increasing cropped area by 10% and increasing the productivity level and post-Harvest Management intervention				
<b>PULSES</b>										
3	RICE-BEANS	200	120	0.60	220	168	0.76	242	235	0.97
4	PEA	500	400	0.80	550	560	1.02	605	784	1.30
5	SOYABEAN	300	900	3.00	360	1260	3.50	432	1764	4.08
<b>INTERVENTION</b>		Technologies demonstration with Improved/HYVs along with increasing the area by 10%; IPM;INM and organic agricultural practices				Intensified and sustainable approaches like intercropping, mixed cropping, value addition and market linkages etc through the introduction of hybrid and Improved vars. and INM and IPM approaches				
<b>OILSEEDS</b>										
6	GROUNDNUT	1000	2000	2.00	1200	3000	2.50	1440	6000	4.17
7	SESAMUM	300	114	0.38	350	140	0.40	420	180	0.43
8	MUSTARD	2270	1362	0.60	2724	1906	0.70	3268	2668	0.82
<b>INTERVENTION</b>		Introduction of zero-tillage Mustard and cultivation of other oilseeds varieties through demonstration and through rain-water harvesting techniques				Increasing the area and production level in the specific location with Improved/HYVs, water harvesting; Seed production technology and seed village concepts FLDs, field days and crop competition techniques				
<b>HORTICULTURAL CROPS</b>										
9	BANANA	8200	1,23,000	15.00	9028	147600	16.35	9930	177120	17.84

10	PASSION FRUIT	400	1400	3.50	440	1960	4.45	528	2744	5.20	
11	HATKORA	300	1500	5.00	330	2200	6.67	366	2900	7.92	
12	COLE-CROPS	450	4500	10.00	540	5850	10.83	648	7605	11.74	
13	POTATO	1600	12,800	8.00	1920	16640	8.67	2304	21632	9.39	
14	GINGER&TURMERIC	2800	11200	4.00	3360	14560	4.33	4033	18928	4.69	
15	CHILLI	3600	7200	2.00	4320	9360	2.17	5184	12168	2.35	
16	CORIANDER	100	500	5.00	120	825	6.88	132	1225	9.28	
<i>INTERVENTION</i>						Replacement of local var./introduction of improved & HYVs and rain-water –harvesting techniques through technology popularization methods Changing the area, production and productivity status of Fruits and vegetables		Promotion of Commercial cultivation Changing the productivity level using INM, IPM, IDM and rejuvenation of old orchards, post-harvest management, value-addition and promotion of market avenues; formation of farmers' clubs/SHGs & availing financial assistance and crop festivals etc			
22	<b>PIGGERY</b> -Backyard System  -Exotic System	55,000 nos. 15753 nos.	1,375 630		60,000 20,000	1500 900					
<i>INTERVENTIONS</i>											
23	<b>POULTRY</b>	2,80,800	280 Mt Meat & 8424000 Eggs		3,00,000	375 Mt Meat & 10,50,000 Eggs					
<i>INTERVENTIONS</i>											
24	<b>FISHERY</b> (Ponds)	40	80		60	150					



<b>INTERVENTIONS</b>											
<b>SL.NO</b>	<b>ENTERPRISES</b>	<b>2008</b>			<b>2016</b>			<b>2025</b>			
		<b>Area (in Ha)</b>	<b>Production (Mt)</b>	<b>Productivity</b>	<b>Area (in ha)</b>	<b>Production (Mt)</b>	<b>Productivity</b>	<b>Area (in ha)</b>	<b>Production (Mt)</b>	<b>Productivity</b>	
<b>CEREALS</b>											
<b>1</b>	<b>RICE</b>	<b>10300</b>	<b>11,124</b>	<b>1.08</b>	<b>11330</b>	<b>16686</b>	<b>1.47</b>	<b>12463</b>	<b>25029</b>	<b>2.01</b>	
<b>2</b>	<b>MAIZE</b>	<b>2480</b>	<b>12,400</b>	<b>5.00</b>	<b>2728</b>	<b>18600</b>	<b>6.82</b>	<b>3000</b>	<b>27900</b>	<b>9.30</b>	
<b>INTERVENTIONS</b>		Increasing cropped area by 10% and changing the productivity; Introduction of suitable and Improved/HYVs/Hybrid along with latest technical know-how (SRI,HQPM-1);				Introduction of suitable and Improved/HYVs/Hybrid along with resource-conservation technologies (INM;IPM;SRI, HQPM-1); Increasing cropped area by 10% and increasing the productivity level and post-Harvest Management intervention					
<b>PULSES</b>											
<b>3</b>	<b>RICE-BEANS</b>	<b>200</b>	<b>120</b>	<b>0.60</b>	<b>220</b>	<b>168</b>	<b>0.76</b>	<b>242</b>	<b>235</b>	<b>0.97</b>	
<b>4</b>	<b>PEA</b>	<b>500</b>	<b>400</b>	<b>0.80</b>	<b>550</b>	<b>560</b>	<b>1.02</b>	<b>605</b>	<b>784</b>	<b>1.30</b>	
<b>5</b>	<b>SOYABEAN</b>	<b>300</b>	<b>900</b>	<b>3.00</b>	<b>360</b>	<b>1260</b>	<b>3.50</b>	<b>432</b>	<b>1764</b>	<b>4.08</b>	
<b>INTERVENTION</b>		Technologies demonstration with Improved/HYVs along with increasing the area by 10%; IPM;INM and organic agricultural practices				Intensified and sustainable approaches like intercropping, mixed cropping, value addition and market linkages etc through the introduction of hybrid and Improved vars. and INM and IPM approaches					
<b>OILSEEDS</b>											
<b>6</b>	<b>GROUNDNUT</b>	<b>1000</b>	<b>2000</b>	<b>2.00</b>	<b>1200</b>	<b>3000</b>	<b>2.50</b>	<b>1440</b>	<b>6000</b>	<b>4.17</b>	
<b>7</b>	<b>SESAMUM</b>	<b>300</b>	<b>114</b>	<b>0.38</b>	<b>350</b>	<b>140</b>	<b>0.40</b>	<b>420</b>	<b>180</b>	<b>0.43</b>	
<b>8</b>	<b>MUSTARD</b>	<b>2270</b>	<b>1362</b>	<b>0.60</b>	<b>2724</b>	<b>1906</b>	<b>0.70</b>	<b>3268</b>	<b>2668</b>	<b>0.82</b>	
<b>INTERVENTION</b>		Introduction of zero-tillage Mustard and cultivation				Increasing the area and production level in the specific location with Improved/HYVs, water					

		of other oilseeds varieties through demonstration and through rain-water harvesting techniques				harvesting; Seed production technology and seed village concepts FLDs, field days and crop competition techniques				
<b>HORTICULTURAL CROPS</b>										
9	BANANA	8200	1,23,000	15.00	9028	147600	16.35	9930	177120	17.84
10	PASSION FRUIT	400	1400	3.50	440	1960	4.45	528	2744	5.20
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12	COLE-CROPS	450	4500	10.00	540	5850	10.83	648	7605	11.74
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14	GINGER&TURMERIC	2800	11200	4.00	3360	14560	4.33	4033	18928	4.69
15	CHILLI	3600	7200	2.00	4320	9360	2.17	5184	12168	2.35
16	CORIANDE R	100	500	5.00	120	825	6.88	132	1225	9.28
<b>INTERVENTION</b>					Replacement of local var./introduction of improved & HYVs and rain-water – harvesting techniques through technology popularization methods Changing the area, production and productivity status of Fruits and vegetables			Promotion of Commercial cultivation Changing the productivity level using INM, IPM, IDM and rejuvenation of old orchards, post-harvest management, value-addition and promotion of market avenues; formation of farmers' clubs/SHGs & availing financial assistance and crop festivals etc		

SOME ISSUES AND THE PERSPECTIVES	
ISSUES	VISION PERSPECTIVES
<b>Shaping the district in the organic food production map of the world</b>	<p>Preparation of road map for the conversion of jhum land into organic agriculture through participatory approach of jhumias in clusters.</p> <p>The jhum areas demarcated for organic production would base on the availability of infrastructure like road, power, storage facilities, marketing, credit facilities and government support.</p> <p>Bringing the land area under jhum into organic agriculture by 30% and the result will be the increased in the household food security thereby the income of he farm families.</p> <p>System mode production of organic food, their storage, processing, value addition and marketing shall create job opportunities for unemployed youth.</p>
<b>Managing Global Warming</b>	<p>Controlling/improving jhum cultivation</p> <p>Reclamation and rehabilitation of degraded lands through agro-forestry approaches</p> <p>Conservation of in-situ carbon by controlling deforestation and soil erosion</p> <p>Enriching the organic carbon in soil through crop residue incorporation, manure addition including green manuring, adopting conservation tillage practices and suitable crop rotation and growing cover crops</p> <p>Controlling bio-mass burning and proper measure of agricultural waste disposal and management</p> <p>Reducing the use of nitrogenous fertilizers through IPNS system to check the nitrogen losses from the soil and N<sub>2</sub>O</p> <p>Anaerobic fermentation of excreta to yield biogas without sacrificing its manuring value so as to reduce the direct addition of CH<sub>4</sub> and N<sub>2</sub>O to the atmosphere</p> <p>Development of suitable water management practices in low land paddy fields to create intermittent aerobic condition to reduce methane and N<sub>2</sub>O production</p>
<b>Watershed development</b>	Participatory watershed management approach will be moved forwarded for sustainable agriculture
<b>Drought management</b>	Collective packages on drought mitigation programmes will be made aware and availed to the extension system to the farming community
<b>Rodent Management</b>	Community-wise, stakeholder-wise approach of rodent controlling shall be given due emphasis
<b>Homestead farming and concept of crop cafeteria</b>	<p>Diagnostic survey and evaluation of existing homestead farming systems and research on their improvement through</p> <p>Blockwise survey to append information on existing practices, crop and animal varieties, area under homestead farming system, 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.</p> <p>Evaluation of the present HFS and crop cafeteria from the point of view of economics and conservation of resources and their documentation</p> <p>Development of model homestead Farming System and crop cafeteria</p> <p>Replication of potential HFS and crop cafeteria mode in different agro-climatic zones of the region. Emphasis shall be given to include the programme in the on-going schemes on watershed development and technology mission in horticulture</p>
<b>Validating ITKs in agriculture and</b>	Identification of major ITKs for IPM and soil and water conservation by conducting survey with a tam of multi-disciplinary team of scientists and

<b>allied sector</b>	<p>identification of the major ITKs through participatory means based on applicability and economic viability</p> <p>Documentation of major ITKs</p> <p>Scientific validation of selected ITKs by studying their technical feasibility, compatibility with socio-cultural system, compatibility with agro-ecosystem and economic viability</p> <p>Refinement and integration of ITKs through comparing the performance with that of farmers field from where the ITKs have been identified. Selected ITKs would be then go through scientific refinement and testing by integration of ITKs in the farming system</p> <p>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</p>
<b>Precision Farming</b>	<p>Collaborating research station regarding the inclusion of precision farming on the selected crops as per the location specific strength</p> <p>Weather forecasting, specific nutrient requirement/uptake for plant, plant health clinic etc will be made result oriented to the farming community</p>
<b>Women in agriculture</b>	<p>Arranging scientist-Extension agency-Women interfaced to identify women related issues in agriculture</p> <p>Skill upgradation through training and demonstration</p> <p>Formation of SHGs/Farmers' club in each village and building up their technical competency</p> <p>Organising film etc shows on success stories of women movement in agriculture</p>
<b>Piggery and Poultry</b>	<p>Improved bred of Piggery and Poultry already developed by the ICAR and other University like CAU or any other research institute shall be made available to at least four blocks of the district for further multiplication under different agencies</p> <p>Feed formulae based on locally available ingredients are proposed to be developed for different categories of of Pigs and Poultry. Trial on enrichment of the feed through addition of mineral mixture, chemical and biological means are envisioned to be taken up shortly</p> <p>Trial on development of feed block shall be undertaken to address the issue of non-availability of animal feed during the lean season as well as to mitigate environmental related disasters</p>
<b>Horticultural Mission</b>	<p>Efforts have been made to disseminate the impact of Horticultural Mini-Mission to each and every blocks of the district through the facilitating programme of ICAR and state horticultural department by training and demonstration aspects. Efforts are being made on Banana and passion fruit.</p>
<b>Value Addition</b>	<p>Capacity building to handle post-harvest produce including necessary trial, training and demonstration to increase the shelf life, value addition, storage life and packaging aspects to facilitate market oriented through SHGs and Farmers' clubs</p>
<b>Soil and Water Conservation</b>	<p>Various trial on hill farming models for soil and water conservation aspects like the three tier system; Jalkund for rain water harvesting practices and drip irrigation for facilitating life-saving irrigation for horticultural fruit crops will highly be emphasised .</p>
<b>Capacity Building of farm Family</b>	<p>Establishment of rural school to enhance the knowledge of the rural educated and unemployed youths through IGNOU study centre in KVK</p> <p>Facilitating Scientists-Farmers-Extension Agency Interfaced to identify the farmers related issues in Agriculture</p> <p>Formation of SHGs and farmers' Clubs in each village and building their</p>

	<p>technical competency E-Agriculture with the SHGs, Farmers Clubs and individual Farmers will be prioritised <b>Knowledge upgradation/awareness on IPR issue will also be highly emphasised.</b></p>
<b>Quality Planting materials for Food Security</b>	Vision on market Intelligence for commercial production of food crops and food security through the carrier of good seeds and HYVs will be the mandate of the vision.

## TARGET LINKAGES PROGRAMME-VISION 2025

Name of organization	Nature of linkage
ATMA, Chandel	Management of data-base and technology demonstration
District Agriculture Department, Chandel	Survey, Training and technical support
District Horticulture Department, Chandel	Training and technical support
Statistic Department, Chandel	District information management
DRDA, Chandel	District level planning and execution of technology to the district
ICAR-RC, BARAPANI & MANIPUR CENTRE	Host and Parent Institute (Overall Management Programme)
CAU, Imphal	Meeting, Interaction and others State Agricultural policy matters
State Agriculture Department, Govt. of Manipur	Technology Assessment and Information Sharing
State Horticultural Department, Govt. of Manipur	Joint Sponsor and Implementation of Technology
Directorate of Economics & Statistics, Govt. of Manipur	Overall state and district information sharing
NABARD, Imphal Branch	Sponsored / Funding Programmes
SBI, Chandel	Meeting and Interaction programmes
AIR, Imphal and Chandel	Technology Disseminator and Programmes Broadcasting
Doordarshan and ISTV Network, Imphal	Programme Coverage and Technologies Dissemination
POKNAPHAM, IMPHAL FREE PRESS, SANGAI EXPRESS etc	Publication and Covearge programmes

## **CRITICAL INPUTS:**

### **Fund**

As reflected/to be reflected in the Plan and EFC. In addition, fund would be generated from external project consultancy and selling of Sapplings and Seeds ect.

### **Manpower**

Efforts would be made to fill up the vacant post of Technical and other supporting staffs. Human Resource Development through training would be strengthened. Wherever advance training facility is not available in the region, SMS will be send to the various national Institutes or the Research centres for upgrading of their knowledge.

### **Laboratory\_facility**

Modern system of farm diagnosis and input generating kids and data manager must be available through the various EFCc.

## **RISKS ANALYSIS**

Reduction in shifting cycle due to population explosion and pressurize on land and the imbalance in the eco-system

Losses of soil masses and shrinking of agricultural land

Crop damage/losses due to rodent/drought situation

Ignorance on IPR and other related issues

If the burning trend is allow to carry-on and made agriculture non-remunerative then, there will be shifting of farm business to non-farm business and other serious social and political issues will come up

## **Output and Outcomes**

Technological package for agri-horti-animal and value addition for facilitating enhanced productivity to not only bridge the current deficiency gap but also to produce marketable surplus shall be one of the major outputs. Introduction of farm mechanization, improving the jhuming/shifting to semi or permanent cultivation etc...shall be the other major outputs.

Expected situation shall be the shift from mono/jhum to multiple cropping, technology shy to technology responsive farming community, small household production systems to semi-commercial/commercial system of farming, information hungry to information rich farmers' groups, natural resource degradation to natural conservation and hand to mouth system of production to commercial production system. Propagation of quality planting material for higher productivity at the district level is also one of the expected outcomes.