CHAPTER - VII

PROBLEMS COME ACROSS BY FARMING COMMUNITIES AND STRATEGIES FOR ITS SOLUTION

7.1 Introduction:

Problem is inherent in every form of enterprise, but their degree in the input-output relation in agricultural sector is comparatively high. Agriculture is a biological occupations whose output is subject to vagaries of nature, weather, pests, insects etc. and also it has a long gestation lag. Even after harvests it is subject to price uncertainty, perishability etc. Hence risk and uncertainty is greatly associated with agriculture. Presence of high risk and uncertainty due to factors like flood or drought may lead to fruitless employment. Thus agriculture in the study area continues to face more or less various challenges from natural and social background. As most of the farmers are small and marginal and being poverty stricken, they find it difficult to accept any risk or overcome the problems come across by them. For sustained agricultural production, it is imperative to identify the location of specific constraints of agricultural practices and to evolve appropriate agro- techniques for its removal. The following are some of the major general constraints of farming practices in the circle as a whole.

7.1.1 Natural Constraints- Monsoon dependency and flood damage

Like the district of Darrang, the Sipajhar revenue circle is characterised by high rainfall and high humidity during the period of monsoon and distribution of rains vary from year to year in an unpredictable manner. Therefore flood or
drought may occur at one or other stage of the crop due to uneven distribution of rain. The causal factors of flood can be of primary and secondary factors. Primary factors result from external climatological forces like excess rain over wide spatial tracts usually gives rise to annual monsoonal flood, heavy rains from sudden storms gives rise to flash flood over small areas and prolonged rainfall in localised small drainage basins often results into heavy flooding, whereas the secondary factors are the flood intensifying factors which tend to be more drainage and basin specific. For instance, the construction of embankments as part of the flood control measure has intensified the flood problem by narrowing down the movement and flow of water through the river channel.

The prevailing patterns of weather and climate have a strong bearing on the occurrence and intensity of the flood hazard in the circle. Unless the floods are moderated and the large volumes of waters properly managed, no sector in the state’s economy – be it agriculture, energy, communication or industry – is going to thrive in any desired manner (Goswami, 1985). So far only the structural measures, mainly embankments, are used in adhoc manner to combat the menace of floods.

The erratic and unpredictable behaviour of rainfall together with vulnerability to various weather disasters has increased the degree of uncertainty in agricultural yield. The farmers of some caste and community are incapable to give up completely the outmoded beliefs and practice, and their poverty has further aggravated the problem. Agriculture in Sipajhar circle is essentially subsistence, with more than 80 percent of the operational holdings belonging to marginal and small farm category. Thus vast majority of the farming population
in the area is marginal and small farmers with uneconomic and unviable farm size. Since the prospect of obtaining a marginal surplus or incurring heavy deficit depends largely on weather conditions and crop failure would mean economic ruination. The fear of possible loss discourages the poor and marginal farmers to invest in modern inputs and techniques. All these affect adversely the crop production in the circle.

Flood and drought are the two major natural calamities having profound impact on agriculture with respect to the entire economy. Unlike many other circles in the district, agricultural production in Sipajhar revenue circle suffer mostly from flood than from drought. This circle covers flood prone areas more than one fourth of its geographical area. No villages in the circle is completely immune from the flood, though the periodicity of occurrence, intensity and duration of flood vary over time and space.

Monsoon appears both as a blessing as well as a curse to the farming community of the region. It carries the message of hope and joy on the one hand in the form of much needed rainfall and sorrow and frustration on the other in the form of flood. In the case of sipajhar, flood is the most devastating natural calamity that occurs as an annual phenomenon without exception. Starting from the onset of monsoon in May until October every year, intermittent spells of flood with varying intensity submerges extensive areas and brings untold misery to many people by destroying agricultural assets like standing crops which virtually strangles the backward agrarian economy of the state. The flood that occurred between 3rd week of may and middle of September 2012 in three
successive waves, inundated 88 km$^2$ of land spreading over 38 villages of the circle.

The flood of the Sipajhar circle is caused by river system of mighty Brahmaputra. The immediate south bank of the Brahmaputra being the southern boundary, a portion of this river is included within the Sipajhar region. The two tributaries flowing through the western part of the circle are Barnadi and Nanoi. During the rainy season these two rivers inundate a considerable portion of land situated in the western part of the region. Apart from these two tributaries of the Brahmaputra the eastern part of the Sipajhar revenue circle is drained by another major tributary of the Brahmaputra, namely Saktola river which forms the eastern boundary of the circle. Sometimes they create havoc by breaching the embankments existing on both of their sides.

Due to heavy rainfall the flood situation in Sipajhar and Patharighat circle under Sipajhar Development Block was very critical on June, 2012. The Nonai embankment has been breached in three places at Ghorasal, Chalihapara and Nabasaktipara at 9 PM on 26$^\text{th}$ June, 2012. Around 25000 people of both Sipajhar and Patharighat circle were affected and 400 families took shelter at embankment and raised ground. This flood caused damage of crops and property of almost 30 villages in built up areas of the circle, namely Majorchuba, Gandhia pathar, Khatar pathar, Dhoka para, Bijulibari, Gharua sonapara, Dheki para, Nayakpara, Byaspara, Suktaguri, Pachim kurua, Upper kurua, Bhati kurua, Bazanapathar, Bamanpathar, Barathiabari, Sotoathiabari, Hatimuria, Narikali, Nizsipajhar, Patgirichuba, Bochachuba, Dumunichowki, Ghopa, Kabeichua, Pakabangipara, Dosotany and Ruparikash are the major ones. The villages of the
char like Dhalpur No.2, Dhalpur No. 3, Phuhuratli, Kirakara, Roumari, Baralakaiti, Bhokalikanda, No.2 Gharag, Dhanbari etc. have been almost submerged by flood water. Of which 10000 families were grossly affected by flood, especially the agricultural field of boro paddy. During time of flood people used to stay at their home with their own coping mechanisms like making some raised bamboo platform, boat and raft of plantain. It is to be pointed out that there is large scale encroachment of food prone areas of the circle during last decade which in turn increases the number of people affected by flood.

7.1.2 Technological Constraints :

i) Crop varieties : Though high yielding and improved varieties of crop have been identified yet HYVs of each crop for individual specific situation are still limited. Following are the constraints come across by the farmers in respect of crop varieties. There is limited HYV of rice for flooded, inundated and deep water conditions where land is submerged above 50 cm water level and short duration semi dwarf HYV ahu for the flood affected areas. Non availability of semi dwarf rice varieties tolerant to low temperature during reproductive stage. There is lack of varieties of ahu rice which has ability to withstand different degrees of moisture stress conditions.

ii) Inputs :

Seed : The annual requirement of seeds of various crops is mostly brought from outside the state. To fulfil the demand of quality seed, the state itself has to depend on outside sources. This dependence on outside supply most often results
in delayed arrival of seeds and consequently making timely sowing of seeds difficult or impossible. Moreover, long transportation under improper conditions causes loss of viability and increases cost of seeds. As for government supply of seeds it remains in name only, not sufficient in amount and quality. Non availability of quality seed is a perennial problem particularly of paddy and mustard. It is experienced from the field that some peasant families consumed the seeds of pea instead of sowing, as it was not in required amount.

**Fertilizer**: Fertilizer is one of the most important inputs to raise the production status of crops. The average per hectare inorganic fertilizer consumption is very low in the area, being only 2.5 kg nutrients per hectare and it is mostly concentrated in the villages of non indigenous Muslim community. The farmers of the Sipajhar, especially the ones of built up belt is quite insincere in applying fertilizer, be it organic or inorganic. It is to be noted that they are traditionally used to apply organic manure in their field in as usual way. Unless fertilizers are made available through a network of retailers in the villages, fertilizer consumption is not going to increase. The dealer point established in the panchayats are found often inactive to cater to the needs of the farmers. Therefore the fair price shops should compulsorily sell fertilizers.

**Farm Power**: The amount of power availability to the farmers is insignificant. Majority of farmers are not having adequate horse power in the form of bullocks, power tillers, tractors etc. to carry out tillage and other operations that limits the intensity of cropping. Low availability of farm power has become one of the constraints to double or multiple cropping. This has been acutely felt after
installation of shallow tube well in summer paddy area, as the cost of diesel increases the agricultural expenditure for farmers.

**Irrigation Water** : Inadequacy of irrigation water in vital stages of crop growth is an important constraint. Wherever irrigation potentialities are created, water is often not available during the drier months (October to April) when it is most needed for restructuring cropping pattern, for popularising multiple cropping as well as increasing production of the existing crops. Even in summer there are occasional evidences of prolonged breaks in the south west monsoon which affect the sali paddy of the circle. Irrigation development is, therefore, absolutely necessary for the area. Some problems are connected with irrigation works in the field such as frequent break down of the deep and shallow tube wells by sand clogging, heavy deposits of sands in field, high dependence on diesel run pump sets, lack of electric power and lowering of ground water level. Besides lack of co ordination among the various departments in the development of irrigation is another serious problem. There is no specific extension personnel to organise the farmers and co ordinate the functioning of the irrigation pumps. Cultivators’ co operation to irrigation development is also found to be lacking in some villages. They are not acquainted with the irrigation and water management practices. There are no such agency to give proper training to cultivators in this aspect.

**Credit** : Adoption of new technology by small and marginal farmers in significant scale can not be expected without active support of institutional credit. In fact, in a backward circle like Sipajhar rural credit institutions are required to play a more active role. Quite a few farmers reported that countless formalities and corrupt practices deter them from approaching credit institutions
for loans, even when they can not use modern inputs due to lack of finance. It is also to be noted that the problem of default, which is often cited by bankers as the main hurdle in enhancing the role of financial institutions in the rural economy, also deserves a closer examination.

7.1.3 Management and other constraints:

Linkage: one of the basic causes of ineffectiveness of various programmes is due to poor organisational and administrative machinery, absence of intra and inter departmental linkage. Success of any production programme depends very much on the strength of linkage between Assam Agriculture University and Department of Agriculture; Department of Agriculture and input supply agencies like Assam Agro Industries Development Corporation; Assam Seed Corporation limited etc.; Department of Agriculture, Irrigation Department and Assam Power Distribution Company Limited and Department of Agriculture and Banks and Cooperative Department. One basic reason for slow transfer of technology in extension is difficulty of managing a large number of farming families (700 Nos.) by one Village Level Extension Worker. It is learnt from the field that farmers are often upset by the activities of the Agricultural department and some farmers of the village do not know even their VLEW.

Adaptive trials and testing programmes are not adequate and properly coordinated. Demonstrations of package of technology for any crop sequence or farming system in specific area have not been fully implemented. Similarly, soil testing programmes is not commensurate with facilities available to act as an incentive for judicious application of fertilizer. Training for orientation and
development of skill and attitude of field extension machineries are still to be improved. Publicity is not sufficiently geared to back up the production programmes.

**Smallness of holding** : In fact small size of the cultivation unit itself is one of the major sources of problems faced by small and marginal farmers. Many empirical studies suggest that not only is the cultivation on a small farm non-viable but it will also face many difficulties in adopting the latest agricultural technology. In fact, the small holdings give birth to many ills. For instance, the marginal and small farmers have less capacity to generate marketable surplus. The small marketable surplus has a direct impact on the earnings of the small farmers. A large number of these farmers sell their produce in the village itself at unremunerative prices. Despite the keenness of some small and marginal farmers to accept some of the improved agricultural practices, like rotation of crops etc., they can not adopt them because of the smallness of their holdings. One of very critical problem come across by the small farmers of the Ganeshkuwari G.P. is that over the last ten years these farmers have become prey to the brick industry owners of outside and sold out their small holding to them. These industries are indirectly affecting the agricultural practices of the area.

**Ageing group of farmers** : The average age of the farmer in the circle is 55 years or older. With an ageing population of cultivators it is clear that agriculture needs to attract more young people. Agriculture has an image problem, because the majority of the society’s young generation consider cultivation as not being attractive occupation. Most of them think of it only as back breaking labour, without an economic pay off and little room for career advancement. Therefore
young people have become disenchanted with agriculture. Today rapid urbanisation has led to a decline of young population in rural areas indicating that more youths than ever before are moving to cities and towns to find work, leaving a few behind to work in the field. Besides it must be admitted that the evil effect of some government schemes is also experienced in the society. For instance on the one hand Antyodaya Anna Yojana launched by government of India ensures food security for the poorest families, but on the other some marginal farmers are found to have left their fields over the time for being complacent about their supplied food. In fact it must be agreed that perception of youth regarding participation in farming practices varies with socio cultural background of the farming communities. The schemes of development are likely to be less effective because of being ignorant about the knowledge of socio cultural background of farming communities for whom they are meant.

**Market:** Availability of market with assured price is one of the best incentives to motivate farmers to adopt new technology for enhancing crop production. Certain crops such as wheat and horticulture can be grown successfully are not being adopted by the farmers for want of assured market. Marketing reform ought to be an integral part of any policy for economic development. Since agriculture in this region has been at a subsistence level with very small surplus for sale, agriculture marketing has not developed. On the other hand, unless an efficient marketing comes about, it will be difficult to lift the region’s agriculture above the existing subsistence level and commercialisation of agriculture can never be promoted. An efficient marketing system has direct bearing on the growth and diversification of agricultural products. It is to be noted that
commercialisation of agriculture is gradually entering into the areas of char areas of Brahmaputra where in marketing policy and infrastructure should be separately taken care of.

**Pest and wild animal surveillance**: Due to weakness in functioning of pest surveillance service, the circle suffers considerable losses in crop production from the attack of different pests and animal like monkey every year. There has been little attention given to wild animal that damage crops, particularly crops of small and marginal farmers. Monkeys have been annually damaging various types of crops, especially vegetable crops and cause substantial loss to the farmers of Bordoulguri and Hazarikapara panchayats in the circle. The farmers of Ghopa in Bordoulguri G.P. are the worst suffers who watch helplessly while the monkeys damage their crops and are gradually reluctant to grow vegetable crops.

**7.2 Suggestions for alleviating the constraints**:

**7.2.1 Measures for Flood Protection**:

Total elimination of flood is not a feasible proposition; at best it can be controlled or moderated. In backward riverine district like Darrang, even moderation of flood is easier said than done. In fact controlling of the mighty Brahmaputra and its turbulent and wayward tributaries is extremely complex hydraulic problems. Nevertheless, steps must be taken for at least minimising the devastating effects of the recurring floods. Three types of measures viz. immediate, short and long term, as suggested under the National Flood Control Policy, were adopted since 1954. Immediate measures are meant for providing
protection to areas against immediate danger purely on a stop–gap basis. The short term measures include digging of channels, diversion of channels, raising the ground level of villages, construction of additional embankment, dykes and maintenance of existing ones. So far only the structural measures, mainly embankments, are used in adhoc manner to combat the menace of floods. There has been a great proliferation of these purely short term measures in the state. The ill effects of these piecemeal type measures on the regime of the rivers are visible everywhere in the shape of aggraded river beds, reduction in their conveyance capacity and intensification of the flood hazard. Embankments or dykes leads to raising of river beds in the plains through silt gathering, over and above depriving the adjoining areas from fertilising silts contained in flood water. This measure merely shifts the danger of flood from one region to another. Long term measures for management of floods through adoption of sound watershed management practices especially in the upper catchments will definitely go a long way in reducing the intensity of present hazard. Besides such long term measures has long gestation period. Hence attempt should first be made on training the tributaries and the Brahmaputra through afforestation, soil conservation and improvement of water flow. Such measures should be taken on the basis of river basin improvement.

Since flood will continue to occur in spite of the anti flood measures, it is essential to make effort for managing the disaster. The conventional way of doing so is to undertake relief and rehabilitation operation after the calamity occurs. Often supplemented by remission of land revenue and granting loans in the affected areas. A nation wide network for flood forecasting with Guwahati as
one of its three circles, covering the eastern region is at work. It issues flood
warnings, 6 to 48 hours in advance, as an anticipatory action aimed at
minimising the damages caused by floods to human settlements.

The non structural (administrative) measures, especially land use
regulation and zoning practices, should also receive serious attention as
environmentally safe and technologically feasible measures for reducing adverse
impact of floods and ensuring stabilisation in the productivity of agriculture. As
the embankments along the rivers of Barnadi, Nanoi and Saktola are found to be
in dilapidated conditions at many places of the circle. Especially, because of
frequent breaching of Nanoi embankment during flood the villages of Punia,
Salpam, Badiasisa, Dhekipara, Goroi mara and Bachachuba have been the worst
sufferers of the area. Therefore use of appropriate disaster management
techniques with respect to floods, improvement in the flood warning system,
provision of adequate outlets for flood waters and strengthening as well as proper
maintenance of the existing structures for flood and erosion seem to be some of
the important areas that need immediate attention for alleviation of the flood
hazard.

Following are the measures to be followed before, during and after
disaster takes place in the circle for lessening the sufferings of the farmers.

**Before Disaster:**

1) To undertake extension measures relating to the latest result of
research available from AAU (Assam Agriculture University) on already
released varieties including flood tolerant varieties and other cultural practices
for agriculture in the affected areas. 2) To suggest the dates after which sowing,
transplanting should not be undertaken and advise suitable cropping patterns to
farmers as per physiography and cultural background of the area. 3) To make
assessment of the acreage under crops and number of cultivators to be affected.
4) To prepare G.P.-wise agricultural maps showing areas under different crops in
the generally flood affected areas. 5) To assess the requirement of seeds,
seedlings, manures etc. for grant at emergency relief works. 6) To make
arrangements for raising seedlings in specific government agricultural farms,
nurseries etc. 7) Before disaster awareness programmes should be organized with
the farmers at village, G. P. and Block level to make aware of the flood &
drought affected victims for adopting alternative effective technology such as
direct sowing of sprouted seed, short duration varieties of paddy like Culture-1,
IR-64 and Monohar sali, Luit, Kapilee, Disang, MTU-7029 as late transplanting
sali after flood, Cultivation of Rabi Pulses, Vegetables, Mustard and other Rabi
Crops or Autumn Paddy. 8) To construct raised platform for shelter during flood.
9) To make arrangement for community nursery programmes so as to distribute
crop seedlings to affected farmers through advance planting and contingency
arrangement at free of cost.

During Disaster:

1) To alert all subordinate officers and staff on receipt of warning. 2) To
check stock of seeds, manures, implements etc. and make arrangements for
raising seedlings. 3) To draw a tentative programme for emergency relief works.
4) To arrange distribution of agricultural inputs in consultation with the district
administration. 5) To render technical guidance to the needy cultivators for
salvage and protection of surviving crops and raising of such varieties of crops as may be suitable during the season or in the next crop season. 6) To arrange for spraying of pesticides wherever necessary. 7) To visit the affected areas constantly to ensure effectiveness of agricultural relief and rehabilitation measures. 8) To make estimation of crop damage caused by flood and drought and crop land affected by the siltation or erosion should be assessed.

**After Disaster :**

1) To restore the tools and plants and repair the damaged tools and plants 2) To dispose off undistributed seeds and manures etc., which cannot be kept for use beyond a particular crop season. 3) To raise crop seedlings at community nursery and distribute among the farmers of the affected villages. 4) As per provision of the contingency plan sanction by the higher authority necessary steps for implementation should be taken up. 5) Field functionaries should be informed and will be guided for successful implementation of the contingency plan. 6) Necessary seed testing should be done by the Assam Seed Certification Agency before distribution of Seeds. The Agriculture Development Officer should also monitor the testing of the supplied seed locally.

The foregoing discussion is made mainly on risk and uncertainty involved in the event of flood which is the main calamity faced by farmers in the circle. But till now no effective measure has been taken to prevent the occurrence of flood or to mitigate or lessen the damage caused by flood. Flood prevention measures will involve long term schemes for training of rivers. But short term measures for soil conservation, afforestation, drainages etc. may lessen the
intensity of flood and its damage. In addition to the preventive measures, relief measures should be taken immediately and flood rehabilitation programmes be planned with the onset of flood in severely affected areas. A special task force may be created for this purpose. Risk and uncertainty associated with price fluctuations may be dealt with state and district level through proper and timely action for stabilisation of agricultural prices by ensuring reasonable prices to farmers. The price support should be administered in different region depending on the importance of the crop. Efficient marketing arrangements with proper storage facilities may also reduce the risk by eliminating exploitation by middleman and wholesalers.

7.2.2 Restructuring of cropping pattern:

Impact of early and delayed rainfall is reflected in agricultural practices of farmers. If onset of rain is delayed, area under ahu and jute is reduced, leading to decreased production of these two crops. Besides, a delayed sowing of ahu under such circumstances, in turn, delays planting of sali with consequent reduction in yield. On the other hand, early showers in March-April which are beneficial for ahu crop, may cause serious inundation damage to boro crop if the rain is intensive. Warm humid climate with overcast sky forms a congenial environment for profuse weed growth, especially in ahu and jute crops and it favours year round incidence of pests and diseases. High rainfall and humidity also create problem of storage and timely spraying. Moreover, harvesting and post harvest operation of the ahu crop are adversely affected as this crop has to be harvested during heavy monsoon period.
It is however to be remembered that the flood prone areas that bear the brunt of the flood attack are potentially the areas of high crop yield in the circle and the fresh alluvium left behind by receding floods have traditionally been the single most important source of natural enrichment for the agricultural fields. During field visit it was observed that the non indigenous Muslim community of char is well accustomed to low and moderate magnitude of flood and they normally expect one wave of flood in a year if it is of medium intensity, because the fresh alluvium left behind by receding flood has traditionally been the single most important source of natural enrichment for the agricultural fields. In contrast, high magnitude of flood and soil erosion is the two phenomena the people of this belt are most concerned about.

The extent of damage caused by floods depends on the time of their occurrence. Unfortunately, the main cropping season (June to November) in the area coincides with the period of intense monsoonal activity and resultant floods. The floods that occur during the period from July to September have the most devastating effect on agriculture, especially the sali crop that occupy more than 70% of the total cropped area. On the other hand the early floods occurring around the first week of June may damage the standing boro paddy and jute crops. Floods occurring late in the season i.e. late August or early September leave practically no time for planting of rice seedlings and hence may cause total loss of the crop. Depending on the availability of seedlings, transplantation of sali crops in areas affected by flood may be staggered upto mid September. In view of the extensive damages done to the sali paddy by the recurrent waves of flood, there is definitely an imperative need in such areas to shift the emphasis
from kharif to rabi crops and to practise multiple cropping. This will involve reorientation of the agricultural sector and restructuring of the cropping pattern.

In situations where late transplanting of rice is required, transplantation of seedlings of high yielding varieties such as IR-50, Pussa-2-21 etc. can be done up to mid September and reasonably high yield can be obtained. If floods subside within August or early September, then immediately after the recession of the floods, seeds of rice varieties like Culture-1, Gobind or C.R.-2371 can be directly sown.

In the low lying areas that are waterlogged or marshy and in areas where irrigation facilities are available, boro paddy varieties such as boro-1, boro-2, China-63, Kalinga-2, C-10 or C-13 can be suitably grown. On relatively higher grounds where irrigational facilities are available ahu paddy varieties such as Pusa2-21, Cauvery, Krishna, Govind, Culture -1 and IR-50 can be grown.

Likewise, different varieties of other crops can be grown during the flood free period. These include varieties of mustard and rape seed such as M-27 or Ts-29, varieties of grams such as T-44, ML-56, T-122, T-27 or PU-19, varieties of potatoes like Kufri-Chandra Mukhi and Kufri Sinduri. Besides, different kinds of vegetables can also be grown during the flood free period.

To achieve the desired restructuring of the cropping pattern so as to make the agriculture of the area better adapted to the prevailing flood hazard, the most important prerequisite is the development of irrigational facilities. Considering the urgent need to shift the emphasis in agriculture from Kharif to Rabi crops in flood prone areas and keeping in view the irregularity in occurrence and disparity in distribution of monsoonal rains, increased reliance on irrigated waters rather
than on the erratic monsoonal runoff seems to be pivotal point on which improvement in agriculture will depend. Besides the socio cultural background of the different social groups of the area must be kept in mind while restructuring the crop pattern, because the traditional attitude and economic condition of the farmers play important role in selection of crops. Therefore an agro ecosystem analysis approach becomes essential to determine the sustainability of an agricultural system.

7.2.3 Plant Protection Measures:

While seeds and fertilizers are the basic inputs to increase agricultural production, plant protection measures are required to save the crops in the field from the ravages of pests, diseases and wild animals. It is a common experience that pests and diseases can damage crops if adequate preventive and curative measures are not taken in time. The incidence of pests and disease on different crops has been estimated to be about 23% of the cropped area. In case of plant protection, the thrust should be the need based use of plant protection measures instead of prophylactic treatment. The government machinery should also encourage the Integrated Pest Management. This approach implies the adoption of cultural, mechanical, biological and chemical methods of control. Besides wild animal habitat is decreasing day by day due to human interference resulting in farmer- animal conflict. Such monkey-farmer conflict is visible in the circle which can be prevented by preserving and creating some groves nearby field. Apart from this, some measures like use of well trained dogs, dry fish to cause itching on their hands, loud speaker to play sound of dog’s barking, spraying red
chilli powder through banana, fire cracker etc. can be applied to drive monkey away from the field.

Agriculture is highly susceptible to risks like droughts and floods. Insuring crops against the risks of failure or damage due to natural as well as other calamities is regarded as an important means of alleviating distress among the farmers. By neutralising to a great extent the risk of loss or damage through risk management, crop insurance can go a long way in bringing reasonable degree of stability in agriculture and instil a sense of confidence and security among the farming population. For this purpose the Government of India introduced many agriculture insurance scheme throughout the country. Participation in the Comprehensive Crop Insurance Scheme is voluntary. If the actual yield in area covered by the scheme fall short of the guaranteed yield, the farmers are entitled to an indemnity on compensation to the extent of the shortfall in yield.

7.2.4 Infrastructural Development:

Future increase in agricultural production in Sipajhar circle depends mainly on intensive cultivation on existing land by cultivating more than one crop. Self sufficiency in food lies in increasing agricultural production by adoption of higher agricultural technology. In this process strengthening of the agricultural infrastructure both qualitatively and quantitatively would surely play the most prominent role in the coming years. In particular, it would be necessary to improve irrigation facilities, agricultural extension service and the flow of institutional credit to the farm sector. Improvement of irrigation facilities in the
area is a matter not merely of creating additional irrigation potentials but also of ensuring that the potential created is fully utilised. To avoid frequent break down or defects of the machine or pump sets, proper repairing services should be arranged. Emphasis is to be laid more on minor irrigation projects (ground water based well irrigation) than on major or medium projects. Well irrigation has been found to be generally superior to canal irrigation. Ground water based well irrigation systems are not only cheap but are also within easy reach of an average farmer. The small scale nature of shallow tube well based irrigation system makes it ideal for most farms in the circle. Proper coordination is to be maintained among the departments connected with irrigation development. It is necessary to maintain the pump sets in efficient condition to ensure confidence of the farmers. Technical supervision at the time of installation of the wells is highly essential to avoid subsequent difficulties. Proper utilisation of fund is another important point in this regard.

In order to expedite the process of transfer of technology, it would also be necessary to strengthen the agricultural extension service in the circle so that more efficient and effective extension service is catered directly to a wider section of farmers. Field experience indicate that the existing system of Village Level Extension Works (VLEW) communicating information to the farming community through the selected groups of contact farmers, has not worked satisfactorily everywhere. Technically there is no guarantee in the system that information conveyed by VLEW to contact farmers gets communicated to all farmers in the locality. Increasing the number of VLEW in each circle and at the same time raising the number of contact farmers in each VLEW ‘eleka’ or area
may help cover the loopholes in the extension service network to some extent. A system of rotation of the batch of contact farmers in each village after every couple of years or so, might also help to bring more and more farmers closer to the agricultural extension service over time. In one instance in the field survey it was found that the VLEW had not received proper preparatory training for his job. Unless the VLEWs have had adequate training and are qualified for the kind of job they are to handle, the quality of the extension service can not be expected to be of any reasonable standard. So it is imperative to ensure that a VLEW is assigned the responsibility of an area only after being adequately trained and properly qualified.

For rapid improvement of the agriculture in the study area, the institutions of rural credit are also required to step up their active participation in providing short term agricultural credit. In this context the usual argument of financial institutions that such loans involve high risks of default, can not be dismissed lightly. But if the financial institutions can device some procedure to ensure that the loans are used for the purpose for which they are sanctioned and if the credit is linked with crop insurance scheme it might become more effective. It is very important for the financial institutions operating in the villages to simplify procedures of dealing with people and to cut down formalities to the unavoidable minimum. In many instances in the field, it is noticed that farmers, despite being in need of financial support for better farming, were found to be reluctant and apprehensive about approaching financial institutions for credit. Unless the financial institutions operating in the village sector reach out to the masses and inspire the growth of banking habits among all sections of village people, they will be serving the rural elites of the
large and medium farmers, betraying thereby, and the very purpose for which these institutions were originally established.

In the remaining aspects of agricultural infrastructure, such as the system of distribution and sale of farm inputs, marketing and storage of farm products, etc., the existing state of affairs does not seem to be satisfactory. Programmes for increased agricultural production must be associated with an efficient marketing system. Establishment of regulated markets for the major crops and proper functioning of such markets can remove the malpractices of private traders in the marketing process. Provision of adequate warehousing and storage facilities is necessary in order to reduce storage cost and minimise storage loss. Such storage facilities should be urgently created in Dhalpur and Kirakara market of the circle. Development of cooperative marketing on sound footing is very essential in the area as an important step towards development of organised marketing system. The existing primary marketing societies should also be made more effective. Distribution system of the modern farm inputs should be planned and organised well so that quality and quantity of inputs can be effectively maintained. Besides it is necessary to take appropriate measures to develop transportation and communication facilities in rural areas for improving the system of market information.

7.2.5 Measures of ameliorating conditions of small and marginal farmers:

Though it is not possible to increase the size of the small farm, the impact of many problems that arise due to its small size, can be reduced if cooperative community farming of small farms is encouraged. However, in the light of the slow progress of cooperative farming in the past in our state, the government
should encourage, at least, the organisation of service cooperatives by the small and marginal farmers. The idea behind the programmes of cooperative community organisation was to solve the problem of small farm families by arousing in them enthusiasm for new knowledge and new ways of life and feeling them with the ambition to live a better life. A cooperative farming society, to be successful, should be a compact body, a community in the true sense of the term. A community can grow out of necessity but can not be created by the fiat of the government. Mutual trust and personal contact are essential requirements which can be ensured only with unlimited liability of the members, and with a production target voluntarily accepted by all the members. Already there are a few Field Management committees in the circle, most of them are found to be passive due to lack of true spirit should be restructured and renovated removing the drawbacks of them. FMC should have representatives from all sections of farmers so that better co ordination can be built up. Such an organisation of farmers, functioning truly to the spirit of betterment of all farmers in the village, can undoubtedly add momentum to the progress of farming. Important thing, therefore, is not merely to set up such organisations but also to see that they are not reduced to another kind of instruments for channelizing the benefits of development schemes to the influential section of the village society only.

The depressing state of affairs in respect of farming is that there is a declining trend in the participation of agriculture practice among young age group. On the other hand the ageing group of cultivators have been taking responsibility of raising crops in the field. Therefore it is high time to add
agriculture to the school curriculum so as to encourage young generation to perceive agriculture as a future career after school. Farmers, business man, policy makers and educators need to promote agriculture as an intellectually stimulating and economically sustainable career. Unless agriculture is made remunerative and attractive, it would be difficult to retain youth in the field. There are various concepts in the field of agriculture which can be explored to make agriculture a viable option. They should be trained in integrated farming, agro industries, horticulture, floriculture, nursery farming etc. which will present them with more options in the farming sector. Despite the decline in interest for agriculture as a career, there are still young farmers working in the field. To encourage young farmers it is vital that they should be offered a voice at policy level to express their opinion and up coming young and progressive farmers should be awarded with due honour. A younger generation has capability to introduce new technologies while also learning from traditional methods, holding the potential to offer the perfect fusion of new and traditional solution to some of the big challenges.

7.2.6 SWOT (Strength Weakness Opportunity Threat) Analysis of Agriculture Sector of Sipajhar Revenue Circle: In order to get greater insights into the agricultural development paradigms in the region, a framework of SWOT analysis is attempted.
<table>
<thead>
<tr>
<th>Strength</th>
<th>Weakness</th>
<th>Opportunity</th>
<th>Threat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rich in natural and socio-cultural diversity with distinct agro ecology</td>
<td>Low per capita holding and economic backwardness restrict investment capacity</td>
<td>Huge potential for horticulture, integrated farming, traditional occupations and agro industries</td>
<td>Natural calamities, inappropriate land tenure system.</td>
</tr>
<tr>
<td>Abundant water resource for assured irrigation</td>
<td>Lack of capital formation, lack of data base and poor soil health (excess iron in ground water)</td>
<td>Availability of farming practices with varied cropping pattern</td>
<td>Deteriorating soil health and ground water, lack of technical man power and interference of corporate sector on land</td>
</tr>
<tr>
<td>Potential to increase cropping intensity</td>
<td>Inadequate availability of quality inputs</td>
<td>Rising demand for diversified agriculture and horticulture</td>
<td>Crop damage by erratic monsoon and Lack of plant protection measures</td>
</tr>
<tr>
<td>Large riverine track( <em>char</em> areas) with high productivity potentials for vegetables, crops, maize, pulse and oil seeds</td>
<td>Inadequate transport and communication, market and storage facilities</td>
<td>Increasing acceptability of public- private partnership, inclination to farm mechanization</td>
<td>High flood and high cost of cultivation</td>
</tr>
<tr>
<td>Good technological support network between AAU &amp; ICAR</td>
<td>Lack of post harvest, processing and marketing facilities</td>
<td>Focused area of central and state government</td>
<td>Competition from other state and countries</td>
</tr>
<tr>
<td>Large work force of field functionaries including FMC</td>
<td>Lack of post harvest, processing, marketing facilities and lack of community based cooperative organization</td>
<td>Willingness of the farmer to experiment</td>
<td>Shortage of labour, training, farmer incentive, reluctance of young farmers, lack of spirit</td>
</tr>
<tr>
<td>Captive regional market</td>
<td>Dependence on imported seeds, oil seeds, pulse</td>
<td>High demand of local produce, potential international market, close society</td>
<td>Frequently changed government policies</td>
</tr>
<tr>
<td>Most suitable climate for majority of crops types</td>
<td>Inadequate agriculture infrastructure</td>
<td>Vast mono crop area with ground/surface for double cropping</td>
<td>Declining trend of farmer’s participation in agriculture and misleading image of cultivation in society</td>
</tr>
<tr>
<td>Organic cultivation by default</td>
<td>High cost of infrastructure maintenance due to vagaries of monsoon</td>
<td>Commercialization of agriculture</td>
<td>Flood, drought and lack of proper agricultural administration</td>
</tr>
</tbody>
</table>

Source: Primary Survey, 2012-13
All efforts to increase agricultural production will have no impact unless the farmers are effectively involved in the programmes. For successful implementation of the programme, it is absolutely necessary to bring about an involvement of the farmers in decision making as well as in implementation of the programmes. In order to develop confidence among the farmers in scientific management, it would be helpful if model villages can be developed in the field of agricultural production. For this, one village each from three physiographical units of the circle can be adopted by extension machinery or research agencies. Besides these, the agricultural extension machinery should be strengthened and streamlined so that effective steps can be taken in time when farmers need them.