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The Indigenous Perception on Horticulture: A Case Study of Siang Region in Arunachal Pradesh

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Abstracts

Horticultural crops play a unique role in India's economy by improving the income of the rural people. Cultivation of these crops is labour intensive and as such they generate lot of employment opportunities for the rural population. East Siang District, the area in question is located either side of the mighty Siang River has very high potentials for horticultural development. The *Adis* who still practice shifting cultivation along with small patches of terraced cultivation either on the river bank or on gentle slopes. Along with growing of agricultural crops like paddy and maize, they grow different types of vegetables and fruits at different altitude mostly for own consumption. Today, with the increase of population and administrative centers, there is increased demand for horticultural items, specially the vegetables. The ideal geographical conditions encourage the community transform their cultivation from shifting to horticulture. This has encouraged people to grow horticultural crops to be sold in the local markets. The society that was once nostalgic about the shifting cultivation has now accepting the transformation to settled cultivation and sustainable horticulture.

Keywords: East Siang, Adi , Horticulture, Shifting cultivation, Transformation, Sustainable, Arunachal Pradesh

Significance of the study

Horticultural crops play a unique role in India's economy by improving the income of the rural people. Cultivation of these crops is labour intensive and as such they generate lot of employment opportunities for the rural population. Fruits and vegetables are also rich source of vitamins, minerals, proteins, carbohydrates, etc. which are essential for human nutrition. Hence, these are referred to as protective foods and assumed great importance as nutritional security of the people. Thus, the cultivation of horticultural crops plays a vital role in the prosperity of a nation and is directly linked with the health and happiness of the people.

Literature Review

The review of the literature helps to get into the frontiers of knowledge that are related to the area of research to be carried out. According to Miller (1965), researchers must be aware of what is known with some degree of certainty and what is accepted as truth by some and not by others must have some inkling of the nature of unexposed areas where additional research should be conducted.

G.L.Kaul (1989) in his book entitled "Horticulture crops in India" has examined that a wide variety of horticulture crops are cultivated in the region and temperate fruits are grown in the higher reaches of Arunachal Pradesh. He further stated that the horticulture crops if grown in 1/3 of the area would help the farmer to retain a long term interest in the land and be tied down to settled agriculture, thus indicating the dominant role of horticultural crops in replacing paddy and other field crops from this hill slopes of this region being grown under shifting cultivation.

Riba, T. (2013) in his published book entitled, Shifting cultivation and tribal culture of tribes of Arunachal Pradesh, India opined that the government of India has numerous programs and policies for betterment of the life of the farmer in the villages. There are developmental department like Rural Development.

Sati (2004) in the book "Horticultural Development in Hills" pointed out that orchards help in maintaining ecological balance by checking soil erosion, maintaining soil moisture and better utilization of cultivable wasteland. The book also explained the importance of fruits as a natural source of vitamins and minerals. He opined that horticulture industry has a unique role to play in the health and economy of the people of the developing countries like India.

Siddaramappa, S. Spice Board Director (Development) **Sun, 4 Jan 2015 Itanagar , PTI** stated that, "Arunachal Pradesh has huge potential for organic spices especially large cardamom, ginger, turmeric and star fruits, and we will assist farmers towards its production through various schemes," The Board would provide 30% share on subsidy to the cultivators and 20% shares would be provided by the state. The Board would also document the indigenous spices of the state. The state government would facilitate marketing of the spices through "Buy Back Policy", and had decided to include spices in the flagship programmes of the state.

Arunachal Times, Daporijo, April 6, 2016: Finding means to earn a livelihood, people in Arunachal Pradesh have resorted themselves to cultivation of cardamom which would help them increase their livelihood.

Research Gap

Agriculture is the main source of stay of the people of the district, still some of them, especially in the hills practice shifting cultivation. They grow varieties of agricultural crops locally viz; rice, maize, mustard, potato, tapioca, sweet potato, yam, various citrus fruits, etc. Previously, the emphasis was only on food crops like rice, maize, fibre crops, etc. but very recently, the farmers have started growing cash crop such as ginger, potato, citrus fruits, litchi, guava, banana, pineapple, jackfruits, pear, etc. But the method and technique of cultivation of horticultural crop still in traditional form, due to which both the quality and production become very low compared to the actual potential of the area. There are also shortcomings in its process of harvesting, storing and marketing and need improvement. There is also gap between the farmers and concerned institutions. Moreover, very few researches have been done to understand the problems and prospects of horticultural development in the study area. Therefore, in this work an earnest attempt has been made to study the status, the various factors that determine the potentiality and constraints in horticultural development in the study area. The study at hand will open up a new window of research in this field by way of eco-friendly and people-friendly approach.

Objective of the study

This study aims to closely assess the local community in promotion and development of horticulture,

with the following objectives designed to provide a clear focus and direction for the research.

1. To assess the community participation in development of horticulture.
2. To assess the people's attitude towards the horticulture activities.

Research Methodology

The present research work is confined to East Siang district. The study is based on both secondary and primary sources of data which were collected to achieve the specified objectives. Primary and secondary sources has been analysed and interpreted by adopting qualitative and descriptive research method.

Collection of data

Primary data were collected by conducting field survey in the study area; besides observation during the field survey was also formed as the important source of primary data. Primary data were collected through interview and recording method. Investigator visited different fields to confirm the statement furnished by the farmers.

Tools for collection of data

Primary data has been collected by administering interview schedule, Questionnaires' to the selected respondents. It may be mention that before construction of tools for collection of data; a pilot survey was conducted by the investigator in the 10 villages where interview schedule and questionnaires were pretested upon 30 respondents. And accordingly final tools were constructed considering the strength and weakness of pretested tools during pilot survey.

Sample and sampling techniques

Selection of sample respondent has been made by adopting simple random sampling technique. The investigator has physically visited the selected villages of all the twelve circles of the study area. The selection of sample respondent was carried out as under:

Number of circles covered during survey =12 circles

Number of villages selected from each circles 5 x 12 =60 villages

Number sample respondent (10 respondents from each village) 10 x 60 = 600 respondents

Analyses and interpretation of data

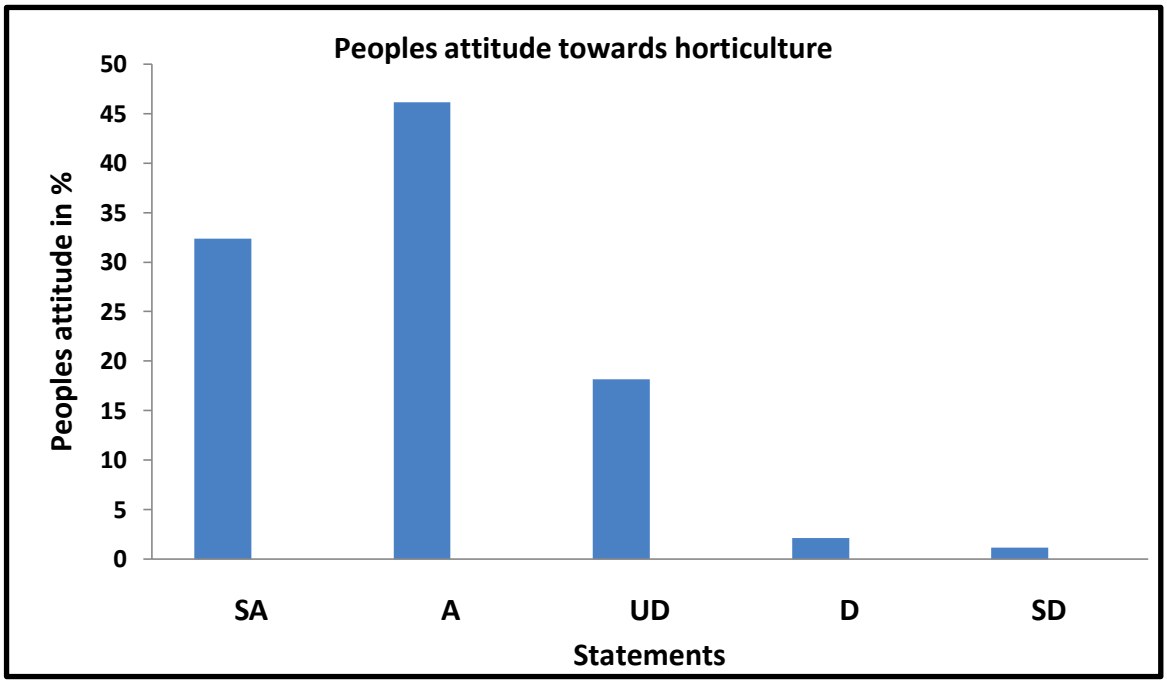
The investigator used various tools and techniques for analyzing and interpretation of data collected. The collected data were tabulated and analyzed and keeping in view the core objectives of the investigation and hypotheses formulated for testing. Simple statistical techniques have been used to elaborate the observed facts with a view to preserve the aesthetic quality of the information gathered from the field. Perceptions and Attitudes scale has been used to understand the respondents towards horticulture activities.

It is noted that most of the people's perception are in favour of horticulture activities than the other allied activities in the area. Most of the respondents are interested in fruits and vegetables cultivation. Many also desire to have their own horticulture farms. They know the advantage of horticulture. The people level of perception on horticulture is as high as 76.99 percent responses in comparison to 18.60 percent responses as low level and very low as 4.43 percent as shown in Table 1

Table 1:People's perception about horticulture activities

Questions	Yes (%)	No (%)	Don't know (%)
Do you know the cultivation of horticulture crops?	63.10	25.24	11.65
Are you interested in fruits cultivation?	98.05	1.91	0.00
Do you interest in vegetables farming?	95.14	3.8	0.97
Are you interest in gardening of flowers?	73.78	22.33	3.88
Are you interest in Spices cultivation?	73.78	22.33	3.88
Do you agree that horticulture have good future in Arunachal Pradesh?	94.17	0.97	4.99
Do you desire to have your own horticulture field?	87.37	8.99	3.88
Do you have your own horticulture garden?	39.80	55.33	4.99
Do you have an ancestral land in your locality?	70.87	23.30	5.82
Total	**76.99**	**18.60**	**4.43**

Source: Compiled from field source



Results and Discussions

From the positive response of farmers interviewed, number of people engaged in horticulture is expected to increase in the future. Gradually they are shifting towards the use of better technology in the form of better seed, pest control and testing of soil. The scope of horticulture crops will increase many fold due to development of transport and communication.

Most of the farmers in the study area sell their horticulture commodity in the market. 96 % respondents are bound to sell their products in the local markets. Further 63 % respondents felt that attractive market facility is not available to them. Quite in line with these facts 85 % respondents felt that they are getting low price of their products. Despite the fact that 90 % respondents know about the peak season of

market, almost similar proportion (85%) of respondents are not well aware about the standard norms of handling and packaging their products. It's also observed that perishable of the products and poor market facilities compel more than 2/3rd respondents to sell their products at low prices. Only a meager 19 % respondent was found satisfied about the selling price they get for their horticulture products. It is very discouraging to observe that all the respondents show their dissatisfaction on the total absence of storage facility for their product). The marketing facilities are not sufficiently available in all the places, especially for distant villages and small farmers.

About 68 % farmers were found facing the financial problems for their horticulture farming. It was discouraging to note that 70 % respondents' did not get any financial support from the government. This is the main constraint for poor farmers, in spite of having available land; they cannot start horticulture of their own.

Conclusion

For growing of any crop, the foremost requisite factor is the climate- temperature and atmospheric moisture. Next is the physiographic- relief features and the drainage. But mere presence of favourable physical factors will not determine the success of agriculture. Value of any physical element is in the art of manipulating it by human touch- the technology, attitude and the skills of management. The final product of any resource is the visible form of human level of perception of the value of the raw resources. In this respect, the people of the study area have realized the importance of horticulture over shifting cultivation in terms of return and employability. Many have started horticulture gardens mostly along the road sides and areas having proximity to urban centers. But in spite of favorable geographical conditions and the positive attitude of the farmers, the area is not making progress in the field of horticulture, especially in yield and production.

Introduction

Horticultural crops play a unique role in India's economy by improving the income of the rural people. Cultivation of these crops is labour intensive and as such they generate lot of employment opportunities for the rural population.

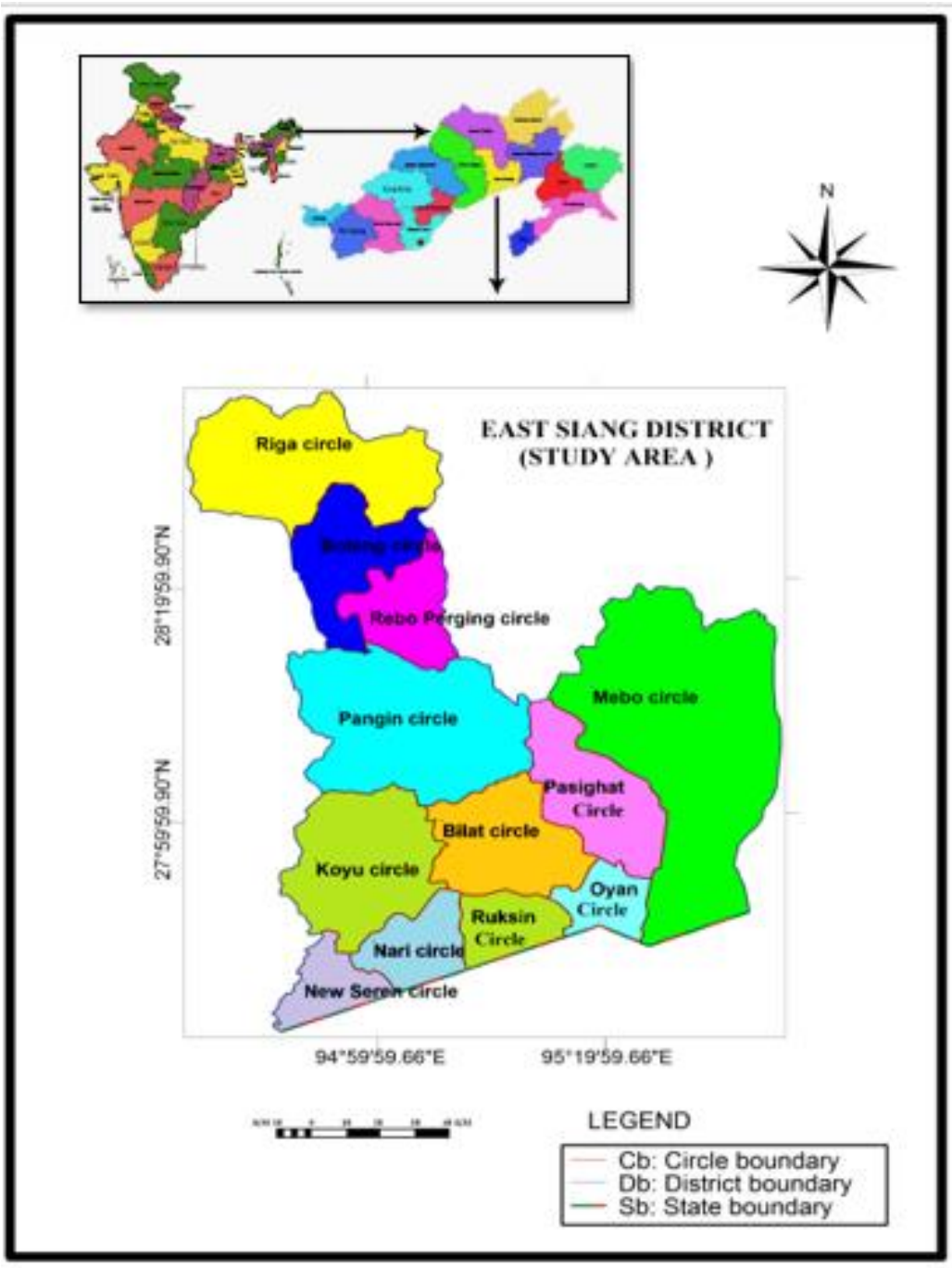
Arunachal Pradesh, being the largest state of North East India in terms of area, posses' diverse nature of landscape and varied agro-climatic condition provides an ideal condition to grow various agricultural and horticultural crops.

East Siang District, the area in question is located either side of the mighty Siang River has very high potentials for horticultural development. The dominant tribes of the study area *Adis and Galos,* who still practice shifting cultivation along with small patches of terraced cultivation either on the river bank or on gentle slopes. The potential for horticulture sector development in East Siang district is also makes sense with the fact that the district is a natural home or centre of origin of many important horticulture crops.

The study area (East Siang district) of Arunachal Pradesh lies in between the 27°30' to 29°42' North latitudes and 94°42' to 95°35' East longitudes. It covers an area of 4,005 sq. km. The altitude of area is ranges from 133 m in foothills to 752 m above mean sea level in the north. Moreover, in some areas the height is ranges upto 2500 m above mean sea level. Being in tropical and sub-tropical belt with large water body and sudden rise of hills that obstructs South West Monsoon, the area is one of the wettest parts of the country. During summer, it is warm and humid and winter experiences cold and strong gorge

wind. The study area is bounded by Upper Siang in the north, Dhemaji district of Assam in the south, Lower Dibang Valley district of Arunachal Pradesh in the east and west by the West Siang district of the state.

As per 2011 census, the total population of the district is 99,214 with male and female counts 50,116 and 49,098 respectively. The district is ranked 615th in India with population density of 28 persons per square kilometer and literacy rate of 72.54% (male 78.47% & female 66.49%). The schedule tribes' population is 70.53% to total population and the sex ratio of the district is 980. The percentage of urban population is 27.85%. Adi being major tribe, there are about ten sub tribes who live in twelve circles namely Pasighat, Ruksin, Nari, Boleng, Mebo, Koyu, Bilat, New Seren, Rebo-perging, Pangin, Riga and Sille-Oyan.



Objectives of the study

Hypotheses

More incentives would encourage the people to opt horticulture as major economy and dissuade them from practice of shifting cultivation.

Data Source & Methodology

The present research work is confined to East Siang district. The study is based on both secondary and primary sources of data which were collected to achieve the specified objectives. Primary and secondary sources has been analysed and interpreted by adopting qualitative and descriptive research method.

Tools for collection of data

Primary data has been collected by administering interview schedule, Questionnaires' to the selected respondents. The following features have been taken into account in the construction of tools for data collection.

1. On perception regarding horticulture development and knowledge about in environmental changes.
2. Attitude scale to test the farmer's attitude on potentials of horticulture development in the district.

Sample and sampling techniques

Selection of sample respondent has been made by adopting simple random sampling technique. The investigator has physically visited the selected villages of all the twelve circles of the study area. The selection of sample respondent was carried out as under:

Number of circles covered during survey =12 circles

Number of villages selected from each circles 5 x 12 =60 villages

Number sample respondent (10 respondents from each village) 10 x 60 = 600 respondents

Tools and techniques for analyses and interpretation of data

The investigator used various tools and techniques for analyzing and interpretation of data collected. The collected data were tabulated and analyzed and keeping in view the core objectives of the investigation and hypotheses formulated for testing. Simple statistical techniques have been used to elaborate the observed facts with a view to preserve the aesthetic quality of the information gathered from the field. Attitudes scale has been used to understand the respondents towards horticulture activities.

Peoples participation in development of Horticulture

Best plan and policy may meet its failure when there is no willingness of the people to participate. Development of a nation in general and region in particular depends on sense of belongingness, willingness to participate honestly, and dedication. To turn the wheel of development, human resources are very much necessary. The demographic pattern, especially age and sex, literary composition determine much in development. However, in the study area the situation is slightly different that most of the works related horticultural developments are in the hands of rural people who are aged and less literate. Young and educated people of the area don't remain in the village. This resulted into de-population of villages. Thus, their contribution is negligible but as and when they visit village, they carry back with them varieties of agricultural products like rice, fruits and vegetables. Both males and females

participate almost equally. Males mostly care the raising of fence, construction of firm hut, construction of trellis and fixing support to plant like banana. But most of the works like weeding; plucking of fruits, next sowing, etc. are mostly done by females. In rural areas, girls help parents after the school and during vacation. Compared to girl, son's participation is less. There are also many instances where grown up girls cultivate small patches of land for growing ginger, vegetables or mustard to be sold to meet the minor personal expenses.

It is noted that most of the people's perception are in favour of horticulture activities than the other allied activities in the area. Most of the respondents are interested in fruits and vegetables cultivation. Many also desire to have their own horticulture farms. They know the advantage of horticulture. The people level of perception on horticulture is as high as 76.99 percent responses in comparison to 18.60 percent responses as low level and very low as 4.43 percent as shown in fig 8.

Table 1: People's perception about horticulture activities

Questions	Yes (%)	No (%)	Donot know (%)
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Are you interested in fruits cultivation?	98.05	1.91	0.00
Do you interest in vegetables farming?	95.14	3.8	0.97
Are you interest in gardening of flowers?	73.78	22.33	3.88
Are you interest in Spices cultivation?	73.78	22.33	3.88
Do you agree that horticulture have good future in Arunachal Pradesh?	94.17	0.97	4.99
Do you desire to have your own horticulture field?	87.37	8.99	3.88
Do you have your own horticulture garden?	39.80	55.33	4.99
Do you have an ancestral land in your locality?	70.87	23.30	5.82
Total	**76.99**	**18.60**	**4.43**

Source: Compiled from field source

From Table 1, we can conclude that the perception level, which is very important for horticultural activities, is very satisfactory. A high level of perception is very important for the introduction of horticulture activities in the region. The people's response is positive. Among the respondents, the perception level of youths is also satisfactory. This implies the future scope of horticultural development in the area.

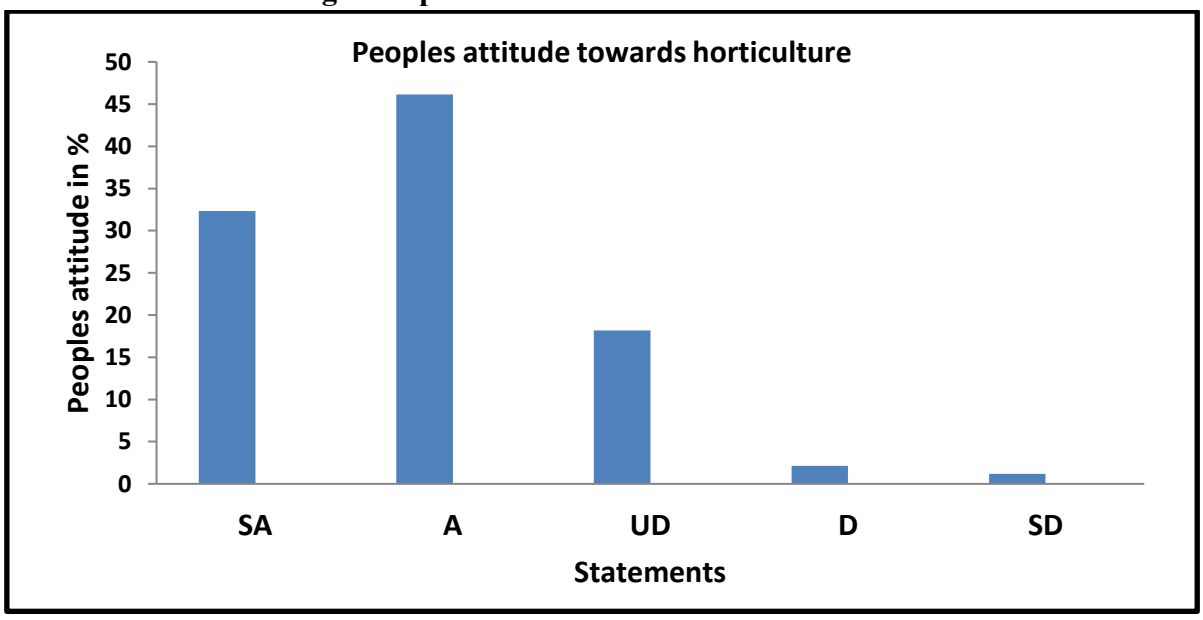
Table 2 shows the five-point Likert's scale ratings (Likert, 1932) for the statements to measure the attitude of the respondents towards horticulture activities or farming. The statement consists of five positive statements and three negative statements. The majority of the respondents (84.67%) had a positive attitude (i.e, agreed and strongly agreed) towards horticulture farming that these activities have a favourable condition in the district and also have a scope of income generation. However, 65.87 percent of respondents accepted that farmers don't adopt new technologies in horticulture farming but rely only on traditional method as shown below.

Table 2 People's attitude towards horticultural activities

Statements	Extent of agreement				
	Strongly Agree (%)	**Agree (%)**	**Undecided (%)**	**Disagree (%)**	**Strongly disagree (%)**
Horticulture is a best suited to retired people	34.95	46.60	12.62	1.94	2.91
Horticulture farming gives more profit than other agriculture activities.	40.47	40.77	10.67	3.88	2.91
Horticulture is best replacing activities to shifting cultivation	46.60	40.77	11.65	0.97	0
Horticulture provides job opportunity	47.57	47.57	3.88	0	0
Farmer's are adopting new technology in horticulture farming	41.74	46.60	65.82	4.85	0
Horticulture farming is favourable in East Siang District	39.80	44.66	13.59	0	0.97
Horticulture is a income generating activities	50.48	44.66	3.88	0	0
Govt. gives financial support to encourage horticulture activities	29.12	35.92	24.27	7.76	1.94

Source: Compiled from field study

Fig 1 People's attitudes towards Horticulture



Source: Compiled from field Survey

From Table 2 and Fig 1 we can conclude that the people's attitude is very important for adopting a new occupation and so an attitude towards horticulture activities is satisfactory. It is noteworthy to mention that most of the people's perception is in favour of horticulture activities than the other allied activities in the area. They are interested in fruits and vegetables cultivation and desire to have their own horticulture farms but the financial constraints discourage them to participate. The people have a positive perception that horticulture has good future in East Siang District in particular and Arunachal Pradesh in general. The perception level of youths among the respondents is also satisfactory.

Table 3: Respondents perception about the difficulties related to horticulture practices

Questions	Yes	No
Do you have your own nursery/saplings?	33%	67%
Do you have facilities of seeds?	26%	74%
Are you facing any problem in the growth of plants?	71%	29%
Do you face any post harvest losses in the past?	92%	8%
Do you agree that the fruits and vegetables are damaged by pest and diseases?	96%	4%
Can you identify the insects that damage the crops?	86%	14%
Do you have knowledge of soil fertility?	89%	11%
Have you noticed any climatic change during the last five Years?	68%	12%
Do you agree that fertility of soil and changes of climate affects the horticulture production?	91%	9%
Do you have irrigation facilities?	34%	66%
Do you face any kind of financial problem in farming?	68%	32%
If finances are borrowed, are you able to repay the loan/borrowed fund?	69%	31%
Does your family support/encourage you to do this cultivation?	96%	4%
Does the villager encourage you to practice these activities?	94%	6%
Do you think that there is population pressure on land?	63%	37%
Do you think that there will be the land fragmentation problems in future generation?	94%	6%
Are you facing difficulty in Communications?	66%	34%
Do you have any transportation problem in disposing of your products?	81%	19%
Do the horticulture farming is costly?	43%	57%
Do you face any problem in handling and packaging of products?	82%	18%
Do you know any scheme of government on horticulture farming?	32%	68%

Source: Field Study

It is evident from the Table 3 that the maximum respondent (94%) were of the view that they are encouraged and supported by their family and villagers (community) for carrying out horticultural activities further they are also aware that fertility of soil and climatic changes considerably affect horticulture production. More than 90% respondents were of the view that they face post harvest losses, damages of fruits and vegetables by pest and diseases and there may be problem of land fragmentation for future generation. It has been observed that 67% respondents don't have their Nursery or Sapling and

74% sample farmers are facing the problems of seeds. An appreciable 68% sample respondents noticed climatic changes during recent years which worried them to keep pace with the changing weather situation. 66% respondents don't have the facility of assured irrigation and comparatively higher 68% farmers were found facing the financial problems for their horticulture farming. More than 2/3rd respondents were found worried about poor and costly transport facilities and increasing population pressure on land resulting in higher demand of food crops. An appreciable proportion of 82% respondents are facing the problems of proper storage and packing facilities. In addition the farmers are also not well equipped with technical know-how and various government schemes related to horticultural production and development.

Table 4: Respondents response about Incentives from the Government

Questions	Yes	No	Don't Know
Did any officials from Government visit your farm?	67%	31%	2%
Does the govt. extend any financial support to your farming?	25%	71%	4%
Does the govt. supply new plants?	12%	77%	11%
Does the govt. conduct any training, workshops or awareness programme?	83%	14%	3%

Source : Compiled from field source

Government initiatives and required incentives are very important for the development of horticultural activities. By and large the initiatives taken from the government side in the area may be considered satisfactory because of the following observed facts in Table 4: 67% respondents agreed that their horticultural farms have been visited by the officials concerned. 83% respondents opined that government have been organising training/workshop and awareness programmes to promote horticultural activities. It was discouraging to note that 71% respondents did not get any financial support from the government and only 12% respondents accepted that new plants have been supplied from government side.

Table 5: Respondents knowledge about Market Mechanism

Questions	**Yes**	**No**
Do you sell your product in the local market?	96%	4%
Do you have the attractive facilities of market?	39%	61%
Do you agree that there is low price of horticulture products?	85%	15%
Do you have the knowledge of marketing during peak season?	90%	10%
Do you know any standard about the method of handling and packaging system of your products?	37%	63%
Do you get the desired price of your product from the market?	29%	71%
Are you satisfied with the present market price/rate?	37%	63%

Are you maintaining good relation with the traders?	86%	14%
Did you sell your products at low price due to perishabilty?	47%	53%
Did you sell your products at low price due to lack of markets?	63%	37%
Do you have storage facilities of your product?	26%	74%

Source: Field Study

Favourable market facility/mechanism is very crucial for horticulture crops. Competitive/support price and above all the know-how of all these mechanisms are extremely important. The Table 5 suggests that the market mechanism and associated factors are not satisfactory in the area under study and need strategically improvement to harness the full potential of horticulture development. 96% respondents are bound to sell their products in the local markets. Further 61% respondents felt that attractive market facility is not available to them. Quite in line with these facts 85% respondents felt that they are getting low price for their products. Despite the fact that 90% respondents know about the peak season of market, almost similar proportion (63%) of respondents are not well aware about the standard norms of handling and packaging their products. It has also been observed that perishability of the products and poor market facilities compel more than 47% respondents to sell their products at low prices. Only a meager 37% respondent was found satisfied about the selling price they get for their horticulture products. It is very discouraging to observe that 74% the respondents show their dissatisfaction on the total absence of storage facility for their product.

Table 6: Respondents attitude towards horticulture activities and development

Sl No	**Perception about horticulture**	**Yes**	**No**	**Do not know**
1	Are you interested in horticultural activities?	83%	14%	3%
2	Do you like fruit?	93%	5%	2%
3	Has horticulture cultivation increased your standard of living?	89%	7%	4%
4	Do you maintain a diary of every stage of horticultural crops?	31%	59%	10%
5	Do you agree that orange has the highest production of horticultural crops in the district?	89%	8%	3%
6	Does the growth of Horticulture items is favourable in the region?	67%	27%	6%
7	Do you practice allied activities other than Horticulture?	88%	12%	
8	Do you agree that apple cultivation is suitable in the region?	27%	69%	14%
9	Do you agree that horticulture farming is climate dependent?	89%	2%	9%

Source: Field study

Table 6 , reveal that the general attitude of the farmers towards the development of horticultural activities is highly positive. Their perception is also very clear. A very high proportion of the

respondents (83-89 %) show their keen interest in horticultural activities; liking fruits; strongly feel that horticultural activities has raised their standard of living and at the same time they are also aware of the fact that horticulture is a climate dependent farming. Though the level of awareness of the farmers about horticulture is high, yet about 2/3rd farmers do not maintain diary about the various stages of their crops. However, it is gratifying to observe that about 31% farmers maintain diary about the different stages of their crops which reflects a very healthy trend especially in a state like Arunachal Pradesh in particular and the Nation in general where farmers hardly keep records of their agricultural / horticultural activities. A very high proportion (89%) of respondents considered that orange is by far the most important production of East Siang District. Most of them (69%) also consider that the climatic condition of the study area is not favourable for apple production. It is also evident from the table that horticulture is not the sole activities of the farmers. 88% respondents are engaged in other allied activities in addition to their horticulture activities. By and large, the observation depicted in the above table reflects the very healthy trend of horticultural development in the region.

Table 7 : Respondents' Technical Knowledge about horticulture

Questions	Yes	No	Donot know
Do you have any technical knowledge in production and processing of horticultural crops?	46%	49%	5%
Did you attend any training, workshops or awareness programme related to horticultural activities?	42%	54%	4%
Do you send a sample of soil to Soil Testing Centre?	57%	37%	6%
Do you know the measuring calculation of horticultural crops?	79%	17%	4%
Are you satisfied with the present farming methods?	64%	27%	9%
Do you agree that the new farming techniques can increase the production?	90%	8%	2%
Does the soil condition in your locality is suitable for Apple cultivation?	5%	92%	3%
Are you a member of any Farmer's Association?	33%	56%	9%

Source: Compiled from field source.

Technical knowledge about horticulture is very crucial for the desired development of horticultural activities. Farmers' technical knowledge about the horticulture in the area in question may be considered as satisfactory. In table 7, 46 % respondents revealed that they have technical knowledge and expertise about the production and processing of horticultural crops. However, respondent proportions that don't posses technical expertise is as high as 54%. But in case of farming activities, the ignorant farmers may get guidance from their expert neighbours. It was indeed gratifying to observe that appreciable, 42% respondents have attended some kind of training, workshops or awareness programme. Their level of awareness could be seen with the fact that 57 % respondents have got tested their farm soil from laboratory. The enthusiastic involvement of the farmers indicate that the proportion of farmers will increase in near future in terms of their technical knowledge and expertise and motivate them to participate in horticulture related programme and larger number of farmers will go for soil testing which

will enable them to ensure the right kind and quality fertilizers, assured system of irrigation and HYV seeds. This significant observation is based on the fact that 90 percent respondents are of the view that new farming techniques have the potentials to increase horticulture production. The positive response (yes) of the sample respondents in terms of knowing measuring techniques of crops and satisfaction on present system of farming were to the extent of 79 % and 64 % respectively. The awareness level of the farmers may be considered very high as about 92 %, respondents were of the view that 'Apple' is not a suitable option for the area in question which validates the climatic condition of the region as observed by the investigator also. Further 33 percent of the respondent association with some kind of farmers' association is a healthy sign of horticultural development in the region.

Table 8: Respondents' perception about economic aspect of horticulture

Questions	Yes	No	Don't know
Are you satisfied with the present production?	48%	46%	6%
Do you think that horticulture cultivation is an essential source for the growth and development of economy of the community?	91%	1%	8%
Do you agree that practice of horticulture can give better income compare to food crops?	94%	2%	4%
Do you agree that fruit crops are better than other horticultural products?	66%	13%	21%

Table 8, indicate very clear about the significant role of horticulture for the economic upliftment of the respondents. Majority of the respondents (91%) found unanimous about the fact that horticulture development is essential for the economic growth and development of the community. Similarly 66% respondents were of the view that fruits crops can give better income compared to other crops. However, 94% respondents were found convinced that horticulture can give better income compared to food crops. The full potential of production has not been realized till date as an appreciable proportion of respondents (46%) were found not satisfied with the present level of production.

Conclusion

From the above discussion, it is concluded that people should be given more skill-based training on the horticulture activities; be conveyed the right information from rest of country about horticulture farming and their benefits for both health and economic significance. Government and other agencies should assist in financial needs, share any new innovative of horticulture. Perceptions regarding commercial crops to replace shifting cultivation show positive responses. The general attitude of the farmers towards the development of horticultural activities is highly positive. The positive responses of the people imply that there is future scope of horticultural development in the area.

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