

Pisciculture Oriented Agriculture in the Ziro Valley

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Abstract- Ziro valley is a picturesque valley, lies at an altitude of 1573 metre. This valley is situated in the central part of Arunachal Pradesh which is bordered by the upper Subansiri district in the north east, East kameng in the west, Tibet and china in the north and Assam in the south east.

Physiography of the region is characterised by Himalayan mountain system. the exact topographic feature of this area is that, it is surrounded by the hills and ranges in all direction and in the middle of the valley a small river “ kiile “which flows from north to south which along with its tributaries supplies sufficient water to the rice cultivation of the people.

The tribe “Apatani “are the original inhabited of ziro valley. The total population of this tribe is about 30,000. Apatani belong to the Tibeto Mongoloid stock.

Pond culture, the ‘Apatani’ has brilliantly adopted a successful method of paddy cum Pisciculture during 1965-66. whilst world is experimenting this type of culture. It is said that ‘Apatani ‘are the first to have know how of paddy cum fish culture in India.

The paper seeks to study and examine the economic aspect of fish production, intensity of resource pattern and possible resource adjustment etc.

Paddy is cultivated with fish rearing, is practised by the Apatani tribe of the ziro valley. The study analyses the contribution made to total and net revenue by the fish rearing component of the system. Fish cultivation contributes significantly to total and net income from agri-pisciculture. it is thus recommended that the system should be encouraged using high yielding varieties of paddy and fish.

Index Terms- Apatani, Ziro valley, Pisciculture kiile river, Economic status.

I. INTRODUCTION

The ziro valley lies at an altitude of 1572 metres and stands at 1564 metres. The valleys situated in the central part of the Arunachal Pradesh, which is bordered by Upper Subansiri district in the northeast, East Kameng in the west, Tibet and china in the north and Assam valley in the southeast.

Physiography of this region is characterised by Himalayan mountain system. the exact topographic feature of this valley is that, it is surrounded by the hills and ranges in all direction and in the middle of the valley a small river kiile flows from the north to south which along with its tributaries supplies sufficient water to the rice cultivation of the people.

The valley with salubrious climate situated in the altitude of 1572 metres from the sea level is the home of Apatanis a tribal community of Arunachal Pradesh). The intermontanne valley popularly known as Apatani or ziro valley. The valley harbours

many varieties of world rare flora and fauna belonging to high altitude species and those are accounted to this valley as the hotspot for late.

The undisturbed verdure vegetation and perennial water resource of the valley has also sheltered many varieties of avian and aquatic fauna. The undisturbed verdure vegetation and valley. The aquatic fauna are edible to the Apatanis and thus they harvest them in time and season with the help of indigenous device.

Pond culture, the Apatani had brilliantly adopted a successful method of paddy cum pisciculture during 1965-66 whilst world is experimenting this type of culture. It is said that Apatanis are the first to have how of paddy cum fish culture in our country. The history of course speaks that Japan is the first country to start this type of culture in 1844 A.D.

The plot utilize for rice cum fish culture is mainly based on organic fertilizations with a variety of animal excreta such as poultry dropping, wastes of plant husks, ashes from household burnt and remain of burnt straws after the harvest is over.

II. BACKGROUND

The Apatanis belong to the Tibeto Mongoloid stock. As far as the myth of the Apatanias are concerned ‘Abotani’ was the first ancestor of the Apatanis ,who first transformed into perfect shape of human being on earth. He multiplied not only human being but also the creature of the earth. They migrated to the magnificent valley from northern areas beyond ‘ khru ‘ and ‘ kiime’ rivers .Earlier the inhabitants of this valley were named as ‘onka miri’. Anka miri ‘, Apatanang etc by early visitor of this valley. In 1944-45, Dr Heimendrop called them as, “ Apatani “from him the Apatanis have been named as Apatani. It is mark of regard or affection, which can be used against any name.

Again there is a mystery as to origin of the name ‘ziro ‘. the mythological story reveals that there was a tribe who inhabited the present old ziro and this tribe has been turned out of this valley. Consequently the name of the place was given as ziro

A number of academician and scholar have made written effort to present original homeland of the Arunachali tani tribe in their own way but the non availability of the archaeological sources and other written documents have rendered them insignificant. However there may be some truth about the migration of the non Tani group of people of Arunachal who have Buddhism and other religion because they have their own written scripts and other evidences. Among them the presumption of Dr J. Nath (1988) and Dr Dolley (1985) is somewhat relevant in the case of Tani tribes origin and migration. Dr Nath presumes on the basis of the Donyi- Polo religion of Adis and Bonpo religion of pre Buddhist Tibetans. He stated that the Buddhist religion was introduced in Tibet in the seventeenth

century A.D and Tani tribe migrated towards present, Arunachal in the beginning of the 8th century A.D. But there are some doubt about its authenticity because if its true ,Tani tribe must have at least lightest influence of the Buddhist culture ,custom, philosophy ,etc as non Tani group of Arunachal have today. But there is neither least references to Tani tribe mythology nor of any similarity with them. This presumption for the period of migration is too early for them. Thus, Math' presumption may not be true for the Tani tribe migration. But it is true that they migrated via Tibet.

Dr.Dolley is based on the migration of the Mongoloid tribe of India and the tribe of neighbouring countries and not particularly on the migration of the Tani tribe of Arunachal Pradesh who inhabited the central belt of the present territories of Arunachal Pradesh who inhabited the central belt of the present territories of Arunachal Pradesh. It is true in anthrop-metrical description because the physical feature of the present Tani tribe are more similar to the south-western people of china and Mongolian tribe than to the other tribe of neighbouring countries of India .The development and preservation of material culture such as adoption of agricultural measures, dwelling system and religious beliefs o f Tani tribe, especially Apatanis, are basic characteristic of the late Neolithic culture. Thus the Tani people of Arunachal Pradesh might have migrated there after acquisition of knowledge of such brilliant method of agricultural adoption and other practices from the civilization of china and Mongolian tribes, which had flourished in Yangtze kiang and Hwang Ho river valleys via Tibet before the Christian era.

Without knowing their myth and tradition, no one can presume about the original home of Apatanis and other Tani people because there are no other written script and archaeological sources of information. In fact, the myth and legend o Apatani are very important because they throw light on every aspect of their life ,origin and migration.

The Apatanis are agriculturist. They practice permanent type of cultivation. The Apatanis flat valley has enabled the Inhabitant to develop their irrigated agricultural field. So early Apatanis did not want to leave this fertile valley and thus they settle themselves permanently over this piece of land for years to come as they felt secured and prosperous, though the twin danger of epidemics and devastating fire that co-existed.

Apatanis are well built, fair in complexion and medium to tall stature. The Apatanis lived in a fairly in large village that are compact and permanent. An Apatani family is patriarchal. Earlier Apatanis had prominent tattoo mark on the face. However the system of tattooing is being discouraged by the younger generation and has been abolished.

Regarding social stratification ,the tradition of the Apatani society is stratified as ' *Gyuchi* ' and ' *Gyutti* '. Here the non Apatani scholar may believe that this stratification of Apatani is closely related to Indian caste system of the early Hindus. Of course, the marital relation between them is not encouraged. This has been discouraged because on account of existence of separate religious ceremony altars for these two separate clan in every village. Except this there is no difference between them in the society. They equally share every opportunity, whether it is political, economic, cultural or religious. Hence there is no question of untouchability in the Apatani society unlike early Hindu society in Apatani society; the cross cousin marriage is not

approved. The Apatanis treat the wife of elder brother as second mother and wife of the younger brother as his own sister. Hence, cross cousin marriage is totally unknown in the Apatani valley.

Objectives :

1. To study the historical background of the development of pisciculture.
2. To analyse the relationship of geographical condition and development of pisciculture.
3. To make a comparative study of economic condition of the people who participate in the pisciculture with that of others.
4. To study the nature and extent of problems related to breeding, production and marketing of fishes.
5. To study steps taken by the govt and local bodies in the development of pisciculture.
6. To give suggestions for the development of pisciculture in the area.

Methodology

The paper is based on primary and secondary sources. Secondary data was mainly obtained from data published from the Deptt of Agriculture, Govt of Arunachal Pradesh. Fishery statistics is obtained from the Deptt of fishery govt of Arunachal Pradesh. Base map was developed from the topographical map of the area. Ten farmers from each selected villages were requested to fill up the questionnaire among which some were still practising paddy cum fish culture. Collected data were classified, tabulated and statistically cultured.

III. PISCICULTURE AS ANECONOMIC BACKGROUND

As mentioned earlier that fish is one of the most important diets of Apatanis and it is also significant economic component for development with a view of raising the economic status of the Apatanis and it is also significant economic component for development with a view of raising the economic status of the Apatanis. This area has taken up various economically viable and labour generating fishery income under rural development programme (IRDP).one such scheme was constructed for domestic fish pond on 50% subsidy basis .it can be said safely that there is no better scheme than that of fish culture for fulfilling the objectives of the tribal people as such ;-

1. Among the general measures of development, it has several significance in its scope nature and quantum of economic benefit to the tribal community.
2. Creates a permanent income streams and substantial opportunities of employment for them.
3. Fish farming system is more or less renewable and requires very low input charging.

The area offers scope for development in fishery and Apatani people are now increasingly coming forward to take up fishery as subsidiary occupation.

IV. INSTITUTIONAL SET UP

The institution is an independent department with the director of fishery in the state. At district level, the district, the district fishery development officer is assisted by two fishery officers, six extension officers, eleven fishery demonstrators, seven staff and five supporting staff.

The main objectives of the fishery development programmes initiated by the govt for the area area :-

1. Enhancing production and productivity of the people.
2. Improving socio –economic condition of the local people.
3. Generation of income and creation of opportunities for self – employment.

The fishery programmes started in this area with a few five year plan. Now the fisheries activities have increased manifold with the enhancement of outlays. The subsidy oriented programmes for the fish farmers are paddy cum fish culture, the

farmer’s secure direct benefit based on an average market rate of Rs.80 per kg.

Beside this, the govt has implemented various schemes through thru department of fisheries to improve pisciculture activities in this area that are given below :-

1. For pond culture through on payment of 50% subsidy against construction cost.
2. To supply fish seed, feed to the villagers in 50% subsidy rate.
3. Establishment of fish nursery so as to supply fish seed to the local people.
4. Implementation of paddy cum fish culture programmes especially in this area as a unique programme.
5. Improvement of natural water areas like lakes for pisciculture purpose.

V. COST BENIFIT ANALYSIS OF ONE HECTARE AREA OF PADDY CUM FISH CULTURE

A . INVESTMENT

1. Denudation of paddy field
 (Canal or trench, strengthening
 Of bunds. Provision of switch gate)

2.paddy cultivation

(from sowing to harvesting)

3.Fish culture, cost of 1000 fingerlings@Rs1000
 Per 1000fingerlings

Say investment (1+2+3)

Rs5000+5000+1000 =Rs 11000

ANNUAL OPERATION COST

Rs 5,000

Rs 5000

Rs 1000

B . INCOME :-

1. Sale of 150 kg fish @ Rs 200 per kg.

200×200
 =Rs 40,000

2. Sale of 1,000kg paddy @ 30 per kg

Rs30×10,000
 =Rs 30,000

Total income

40,000+30,000
 =Rs 70,000

NET SURPLUS :-

TOTAL INCOME –TOTAL INVESTMENT

Rs 70,000 – Rs 11000
 = Rs 59,000

Source: - Data collected by the investigator.

INPUT AND OUTPUT RATIO OF FISH AND PADDY.

Sl.no	ITEM	INPUT	OUTPUT	NET SURPLUS
1.	FISH	1000	40,000	39,000
2.	PADDY	1000	30,000	29,000
	TOTAL	2000	70,000	68,000

Sources: Data collected by the investigators

The Apatani people of this area are getting benefit through double cropping i.e. paddy cum fish simultaneously in the same plot and in same period of time without any supplementary adding.

An overview of the present pace of pisciculture development has revealed that pisciculture can play a dominant role in the enhancement towards the growth of the region as well as the state if sufficient development facilities are provided in near future.

VI. CONCLUSIONS

- Cultivation of crops for higher economic return within the climatic and ecological limitations of the area can be achieved by restructuring the cropping pattern.
- Urgent attention should be given to develop infrastructure inputs for agricultural products like marketing, processing unit, storage facilities, co-operative etc.
- Development of infrastructures facilities inside the village block should be provided to the proper linkage with the regional transport.
- Modernization and mechanization of agriculture is not yet produced in this area. They are practising age old method of cultivation without using any animal power. So extensive research work is necessary to find out how far the concept of modernization is applicable within this valley area taking its topographical and other related technological dimension into consideration. For instances, special attention can be given for the introduction of high yielding variety seeds in accordance with the agro –climatic condition which is not yet a popularized practice among the Apatanis.
- In order to facilitate such improved agricultural input, the dept of agriculture under govt of Arunachal Pradesh should take special measures to generate among the villager through adequate demonstration as well as integrated programme.
- Development of forest and pastures are essential not only from economic point of view but also for restoring and maintaining the ecological balance of area. For example, reckless felling of trees is one o the major problems of the area in recent years, which cause a large scale destruction o valuable forest for commercial purposes. So proper attention should be given to minimize the felling of trees otherwise it will bring a disastrous consequences for the community itself. So, mass awareness campaign is essential where Apatani elite can play a pivotal role.
- The area is lagging behind in the agro based industries .So, an attempt to develop the forest based industries may be viable alternative to strengthen the economic base of the people of this valley. This may also help to curb down the unhealthy trend of timber export outside this region.
- There should be an organized system for marketing of fish by introducing fishery co-operatives.
- Proper coordination between centrally sponsored schemes i.e fish farming development agencies (FFDA) with research organisations of the state, state fishery development organisations are important in order to upgrade the technical knowledge of the people involved in such groups.
- FFDA need to intensify their effort to maintain seed bank to meet the demand of the fish seed. Establishment of more number of hatcheries will go a long way in providing adequate quantities of seed
- Pond culture is not much organised as paddy cum fish culture in this area and therefore it is a seasonal source of income for the Apatanis.so proper encouragement should be given to them for pisciculture so they can get benefit from fishery throughout the year.
- Apatani valley is industrially backward area. For the development of medium and large scale industries, road transport as well as market facilities should be provided. Their traditional household industries should be encouraged and help them to market their product in well organised way.
- Some people use chemical substances like bleaching powder which is most discouraging in the field of pisciculture practices, which result to the death of valuable food organisms of aquatic environment. Act need to be enforced to stop Such unwanted practices of fishing, for increasing food production in a sustainable manner, conservation of aquatic life, biodiversity is necessary.

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