Email:editorijless@gmail.com Volume: 8, Issue 4, 2021 (Oct-Dec)

INTERNATIONAL JOURNAL OF LAW, EDUCATION, SOCIAL AND SPORTS STUDIES (IJLESS)

A Peer Reviewed and Refereed Journal

DOI: 10.33329/ijless.8.4

http://ijless.kypublications.com/

ISSN: 2455-0418 (Print), 2394-9724 (online)

www.kypublications.com

International Journal of Law, Education, Social and Sports Studies (IJLESS)
Volume: 8, Issue 4, 2021 (Oct-Dec.)
ISSN: 2455-0418 (Print), 2394-9724 (online)
Research Article

A STUDY OF VARIOUS TYPES OF CULTIVATION AND METHODS IN VISAKHAPATNAM TRIBAL AREAS

Dr.VENKATA PRASAD RAO SRIRAM
Researcher, Department of Anthropology, Andhra University,
Visakhapatnam, Andhra Pradesh, India
DOI: 10.33329/ijless.8.4.46

ABSTRACT
Current research on the Agriculture, shifting cultivation traditional farming methods of Visakha agency, Paderu revenue subdivision'. In this paper the methods followed in agriculture, the way of shifting cultivation, the situation of podu cultivation, the cropping pattern in podu lands and the problems and prospects of podu cultivation are discussed. The deforestation, the reasons for deforestation, the effects of deforestation and finally the deforestation in tribal areas also presented in this paper. The research identifies that at Present, Vegetable cultivation is an alternative source to get income support among the farmers. Some medium and large farmers have been successful oil the modern agricultural practice. But the marginal and poor farmers have not been benefited out of this. The involvement of public and private agencies is not so effective in development of agriculture. The agencies are less eager to understand the needs of the communities in the region. There is no equity in distribution of services both communities and villages wise.

INTRODUCTION

Agriculture is the age-old occupation of the tribal people. Though the people had changed their cultivation pattern from swidden cultivation to settled cultivation, but some of the practices have remained unchanged among many group of farmers. The unchanged practices may be due to fact that they find the practices more sustainable. It is painful when somebody says the tribals are backward or primitive. It not only affects the sentiments of the clientele group but also equally affect the organizations working in those areas for their development. Hence, the technology should be transferred to them without affecting their sentiment. A number of appropriate technologies are generated by them and have become sustainable under their farming system. Agriculture has changed dramatically, especially since the end of World War-II. Food and fiber productivity soared due to new technologies, mechanization, increased chemical use, specialization and government policies that favored maximizing production. These changes allowed fewer farmers with reduced labor demands to produce the majority of the food and fiber in all over the world. Although these changes have had many positive effects and reduced many risks in farming, there have also been significant costs. Prominent among these are topsoil depletion, groundwater contamination, the decline of family farms, continued neglect of the living and working conditions for farm laborers, increasing costs of production, and the disintegration of economic and social conditions in rural communities. A growing movement has emerged during

the past two decades to question the role of the agricultural establishment in promoting practices that contribute to these social problems. Today this movement for sustainable agriculture is garnering increasing support and acceptance within mainstream agriculture. Not only does sustainable agriculture address many environmental and social concerns, but it offers innovative and economically viable opportunities for growers, laborers, consumers, policymakers and many others in the entire food system.

The tribes of Visakhapatnam agency take out their living by following several methods of cultivation like shifting cultivation and settled cultivation. Shifting or Jhum cultivation, the oldest method of agriculture, is followed by many tribes inhabiting tropical and sub-tropical regions all over the world. This primitive method of land use is in existence in widely separated places throughout the world, especially in regions of high rainfall and temperature were conditions are favourable for the quick growth of plants. Though there is dearth of reliable information yet the estimated area under shifting cultivation in the world be 36 million Sq. Km. inhabited by 200 million people. It is widely believed that shifting cultivation is the survival of crude agriculture practiced by the pre-historic man. According to "Varrier Elvin" shifting cultivation is a stage in the evolution of human culture and almost all the races have resorted to this practice at some stage or other. In India, shifting cultivation is in practice among the Baigas of Madhya Pradesh, the Nagas of Nagaland, the Khasis of Assam, The Kolams, Hill Reddy's, Konda Dora, Khods and Soaras of Andhra Pradesh, Juang, Bhuyan, Khonds and Soaras of Orissa and the Malayars of Malaber Coast. It is estimated that about 24% of Tribal farmers are engaged in shifting cultivation in India, which varies from 51% to 74% in some states like Andhra Pradesh, Orissa, Manipur and Tripura whereas is varies from 31% to 48% in some other states like Kerala, Karnataka and Assam. An estimated extent of 9.29 lakh Hectares of land is utilized fro shifting cultivation by nearly 2.6 million tribal people in India.

By and large shifting cultivation is practiced in the hilly terrain, where gentle slops of land, high rainfall, moderate temperature, and good soil favor quick growth of plants. Shifting cultivation is known in different regions in the country by different names it is known as "Jhum" in Assam, "Tekonglu" in Nagaland, "Adialik" in Arunachala Pradesh. "Lookinsanoog" in Tripura, "Taila, Koman and Dahi" in Orissa, "Podu" in Andhra Pradesh, "Bewar" in Madhya Pradesh and "Kumri" in Tamil Nadu. It is persistent existence since time immemorial is a proof of the intimate and deep impact of the culture of Tribal mind and Psychology. The most important factor in Tribals continued love for shifting cultivation is that is forms part of his cultural milien in which he is brought up in spite of intensive propaganda among the tribal against the harmful effects of shifting cultivation, they show considerable doggedness in sticking to this type of cultivation in the country. Similarly, among the eleven mandals under the integrated tribal development agency, Paderu, in the Visakhapatnam District, Chintapalli Mandal has the highest concentration of implemented under "Podu" were high incidence of shifting cultivation is reported by the tribal groups like Khond and Konda Dora. Hence this mandal is selected for intensive field study of "Ringuda Metta" Village Chintapalli Mandal "Podu" or shifting cultivation, as a primitive measure of cultivation, is in practice in the tribal areas of the Visakhapatnam agency in Andhra Pradesh. This is a prevalent form of cultivation practiced by sizeable tribal population in the hill tracts as a way of life and tribal groups like Khonds, Savaras, Konda Doras, Porjas, Gadabas and Konda Reddis are adept in shifting cultivation. Some studies have expressed serious ecological conscerns about the practice of shifting cultivation. Whatever may be the nature of attachment of the tribals to shifting cultivation and however much it may form part of his way of life, the magnitude of damage caused by it to the forest wealth and the soils in the country do not justify its continuation in the wider interests of the tribal and non-tribes as well. Further, the burning operations of the

shifting cultivation many a time start huge forest fires reducing valuable timber to asnes. The large scale destruction of forests also results in decreasing rainfall which ultimately causes drying up of hill streams and big rivers which constitute the life lines of the country leading to severe ecological imbalance. Most of the tribals in agency area depend on Podu cultivation. There are many reasons for which the tribals, especially in agency areas prefer for Podu cultivation. The following are the some of the main reasons for which the tribals continued love in "Podu" cultivation.

METHODOLOGY

The study is based on agricultural activities in development and changing patterns of selected four tribal villages in Visakha agency in Paderu revenue division of Visakhapatnam district in Andhra Pradesh. The selected area of present study falls in the hilly terrains of Eastern Ghats with fertile agricultural lands in the valleys. It is reported by earlier studies that the tribal people have changed their cultivation methods under the influence of government agencies, non-government agencies and non-tribals. Four multi- tribal villages ar selected for the present study in the Visakhapatnam Agency. Random sampling method has been adopted in the selection of villages. The selected villages lie in two mandals viz., Hukumpeta Mandal lies in the North East corner and Chinthapalli Mandal is in South West corner of the Visakha agency. Accordingly, villages Sanyasammapalem and Kotnapalli in Hukumpeta Mandal and Antharla and Vanthamamidi villages in Chinthapalli mandal have been considered for present study. In these four villages are multi tribal villages wherein the Bagata are numerically, economically, politically and socially dominant tribe. The researcher has carried out his field work for 24 months aportioning twelve months in two villages of Hukumpeta Mandal Sanyasammapalem and kotnapalli during February 2010 to January 2011, with intermittent trips to Visakhapatnam. During March 2011 and February 2012 the researcher has stayed in the villages of Vanthamamidi and Antharla villages of chintapalli mandal. During the first spell of field work, the researcher stayed in sanyasammapalem living a room in the home of a farmer B.V. Ramana who is a recipient of adarsha Ryotu (model farmer) by the Andhra Pradesh state Government.

Data Collection

The data was collected from both primary and secondary sources. The primary data was collected by the use of qualitative research techniques such as observation, interviews, case studies, household schedule and focused group discussion. Participatory rural appraisal was also a meaningful approach for the data collection. This was primarily meant to cross check the data collected by the traditional research techniques. The secondary data were collected through books, journals, articles, publications and government reports. This data was collected from the old and new documents available in various libraries, internet, Agricultural Research Center Chintapalle, ITDA Paderu, Agricultural Extension Officer. Agricultural College Bapatla, Agro-Economic Research Center, Andhra University, offices and institutions of Soil Conservation department, HYV seeds, etc.

RESULTS AND DISCUSSION

Irrigation and Utilization of Modern Techniques

It is found that 90% households are having possession of irrigated land in the region. But the important thing is that more than 90% of land is irrigated by rain fed water, which is seasonal. Only 10% of the total irrigated land is supported by canal irrigation. And, this 10% land is possessed by the Vanthamanidi Village, under Tajangi Regervaiour. The observation is that most of the land is supported with the rail fall water rather than canal or any other modern irrigation source. During last few decades, government has been trying to construct canals, develop minor irrigation keeping in mind the growth of agriculture in the region. People have been constantly demanding for the development of irrigation facilities in the region as there is demand for water for growing vegetable crops through out the year.

Following the demands from the people in the region, a small check dam and a watershed project materialized in the region. But this limited support has not completely helped the communities to overcome the water shortage during dry season. From the use of matrix-scoring technique to understand the most urgent issues and the demands of the people in the villages it is noticed that the people rank irrigation as the basic issue in the village. Majority of the people demand for immediate solution of water problem to go for cultivation. It is noticed that lack of irrigation is the most important problem followed by provision of credit, supply of agricultural implements and agricultural extension. The discussion with the farmers of different groups, both men and women groups provides the logic why do people rank irrigation's the major problem. In fact, there are some traditional water sources such as rain fed and a small water reservoir in the area. The availability of the water is for seven to eight months (i.e., June-July to Jan-Feb). People use the water for irrigation purpose. There is no mechanism to reserve this water so far. Now, there is an urgent need to store this water for effective use in agriculture through out the year. The involvement of government officials is required to get this activity done. As the people are interested to cultivate different crops through out the year, water has become an essential component than any other inputs. In this regard, irrigation has been the major requirement. However, despite all this, there is not much effort made from the irrigation department and there is less government support extended to the region to tackle the issue.

Usage of Mechanical Inputs Like Diesel Pump Sets and Tractors

Now-a-days, use of diesel pump for irrigating crop field is noticed among the farmers in the tribal area. Wide popularity of vegetable cultivation in the region has attracted some farmers to use of diesel pump sets. For the progressive farmers, diesel pump is a status symbol. In the villages there are four diesel pumps owned by the people. One diesel pump set is owned by a Bagatha household in Sanyasammapalem and the other three are by remaining households. Sometimes, these diesel pumps are rented to other families who need them for irrigation.

Though tractor is an important component of agricultural modernization, the use of tractors in agricultural fields is rare in the villages. There is power filler owned by one Bagatha household in Sanyasumma Palem village, which is mainly used for renting. At the time of field study, the charge to hire a tractor was Rs.500 per day. The same amount is also charged to plough one hectare of land. During road work, house construction, and other construction purposes, this tractor is also hired from him. Though there is no instance of using the tractor for agricultural purpose in the villages, some tribal land lords from other villages hire it for agriculture purpose.

The Factors Affecting Traditional Crops Production

Despite the continuation of mechanization in some agricultural activities, the use of traditional technology continues in this region. But, in due course of time many traditional crops such as jower, maize, etc have lost the place due to various factors. Firstly, enforcement of ban on the traditional Podu cultivation has been the major cause of taking up new agricultural practices. It has also caused loss of traditional agricultural occupation by many farmers in these villages. Facing these issues, most of the families searched for new job opportunities for survival. In this situation, settled cultivation emerged as a major support for the people in the tribal area. Following this, vegetable cultivation entered as an alternative in the area. The enforcement of restrictions on Podu cultivation, farming development of a few farmers, interaction of these farmers with other farmers in the tribal area etc resulted the community to opt settled cultivation and latter to take up vegetable cultivation more aggressively.

Secondly, the cultivation of cash crops gradually led the farmers into using new agricultural inputs. Use of new seeds and chemical fertilizer became essential growing practice of vegetable cultivation. The people started focusing on the new crops. Their focus on traditional crops gradually reduced. Most of the time both males and females engaged themselves is the new agricultural practices.

Thirdly, the market was not favourable for the continuation of traditional practice. The traditional agricultural produce did not fetch reasonable price to the farmers from the local market. The time and labour consumed for cultivating this produce is more and needs sufficient labour cost, but the return is less. Even the public and private organizations were not so supportive for continuation of the traditional practice. During post independence period the research and extension focus was only on cereals like paddy and wheat and cash crops like vegetables. There is less effort on protection and development of traditional cereal crops like Jower, and millets. This directly or indirectly affected the continuation of the practice.

Role of Regional Agricultural Research Station

With the inception of National Agricultural Research Project to develop need based, location specific, problem solving and result oriented technologies under Regional Agricultural Research Station for High Altitude and Tribal area Zone with its lead center located at Chintapalle, Visakhapatnam district as the seventh agro-climatic zone of Andhra Pradesh was established in the year 1985. This research station is managed by Acharya N.G. Ranga Agricultural University. It was rendering service to tribal farming community of Eastern Ghats which include 41 mandals in Srikakulam, Vizianagarm, East Godavari, Khammam and Visakhapatnam districts of Andhra Pradesh. The Associate Director of Research is the zonal head for research, administration, planning, supervision and reporting research of all the stations in the zone. It has three sub-stations i.e., Agricultural Research Station at Seethampeta in Srikakulam district, Horticultural Research Station at Pandirimamidi in East Godavari district and Krishi Vigyan Kendra at Rastakuntubai in Vizianagaram district. The Horticultural Research Station at Pandirimamidi was shifted in the year 2009 to Andhra Pradesh Horticultural University. The Regional Agricultural Research Station at Chintapalle is the lead centre for Niger. Rajmas (Kidney bean) and Black pepper for the entire state. This Research Centre was established, in the year 1985 at Chintapalli, a tribal area in Visakhapatnam district. The main objectives of the Regional Agricultural Research Station at Chintapalli are:

i) To conduct location specific, problem oriented and need based research in field and horticultural crops.
ii) To develop low cost technologies for crops grown in tribal area,
iii) To strengthen the regional research on location specific problems of the region.
iv) To produce and supply seeds and plants of improved crop varieties,
v) To rapidly transfer technology to the tribal farmers.

Introduction of New Crop

Field crops like wheat, mustard, sunflower, beans and flowers like roses, gladioli, dahlia and spices were introduced and were found to be promoting. Studies on scented rice, kharif pulses, Bengal gram, Soybean, Sunflower and groundnut were being taken up for evaluation. Hence, the research station has identified the following high yielding crop varieties that are found suitable to this agency tract in place of traditional varieties as their research achievements.

Table – 1: The crops and crop-varieties cultivated by tribals

SI. No.	Name of the crop	Improved varieties
Field crops:		
1.	Paddy	Pushkala, Vasundhara, MTU-1006, MTU-1993, MTU-
		1001, MTU-1010, KRHZ, SrikakulamSannalu,
		Tellahamsa,RGL2537, IR64, BPT5204, MTU7029,
		MTU3026, MTU1006, JGL1798, Esukaravva,

		Sannadhanyam, Akpitta, Akp2 and Srivari
2.	Maize	Aswini, DHM-103, DHM-105 and Aparanjiss
3.	Ragi (*chodulu*)	Godavari, Cowthami, Katnagiri, VR-822, VR-520, VR-
		687, Anga and Dhasara
4.	Samai	LAVT-9, LAVT-6,KGN2, karra and pedda
5.	Wheat	Sagarika
6.	Korra	Prasad, SA1-2572
7.	Niger	KGN-2, KGN-1,GA-10
8.	Mustard	PT-303
9.	Sunflower	Morden
10.	Soybean	MACS-56, JS-335
11.	Chickpea	Jyothi
Horticultural crops:		
12.	Banana	KBS-2
13.	Pineapple	Kevv, Simhachalam
14.	Guava	Allahabad Safeda
15.	Pepper	Panniyur-1, Kottanadana, Sreekara and Subhakara
16.	Ginger	V_1S_1-8, IISR Varada
17.	Turmeric	BSR-1
18.	Tomato	Pusa Early Dwarf, PKM-1, Pusa Ruby, Marutham
19.	Chillies	Pusa Jwala
20.	Brinjal	Bhagyamati
21.	Cabbage	Pride of India
22.	Cinnamom	Accession No. 44
23.	Cardamom	Mudigeri-1
24.	Lima bean	Accession No. 6
25.	Rajmash	Chintapalli Red

Efforts on to Promote Cultivation of Millets

Cultivation of millet grains, which are highly nutritious, has been declin- ing at an alarming rate. According to a Bureau of Economics and Statistics re- port (2012), millets production, including sorghum, has declined by 79.5 percent, bajra by 89.3 percent, finger millet by 81.25 percent, and other millets by 96 percent during the past four decades. However, efforts, of late, are being made by the Union and State Governments and NABARD with the involvement of NGOs to change the scenario by encouraging farmers to take to millet cultivation. The changing cash requirements are prompting the tribal people to grow high-value crops such as vegetables in place of the traditional millet crops. While cash crops are necessary to meet their diverse needs, it is also important to grow and consume their traditional food crops such as millets. The important issue in millet cultivation is poor productivity, which can be circumvented through introduction of suitable high-yielding varieties.

Though Visakhapatnam district occupies more than 50 percent acreage under important millet crop like little millet (sama), the average productivity of this crop in the district is very poor, making farmers look for commercially viable options like vegetables and growing hybrids in paddy to improve the productivity to meet their food requirements and cash needs.

Regular use of millets can lead to significant health benefits and might help in reducing the incidence of cardio-vascular diseases, constipation, diabetes mellitus, and in improving the overall health of people. Currently, millets are confined to tribal and adjoining areas, -losing substantial acreage to crops like cotton, maize, chili, and other such commercial crops. As millet are well adapted to the rain-fed conditions which occupy almost 65 per cent of the total agro-ecological situations in India, it Is the need of the hour to revitalise these millet crops to improve productivity. The major food crop in the tribal area is finger millet followed by little millet. However, in recent times, there seem to be a shift in tribal; people's food habits from millet-based food systems to rice-based foods. Village Developmental Committees' team leader of Vikas, an NGO working with NABARD, told The Hindu that introduction of rice in the PDS at subsidised price led to the tribal people shifting from millet-based food systems to rice. A number of other factors like hardships in hand processing of millets coupled with absence of millet processors, and psychological factors like pride in consuming rice over millets led to the decrease in diverse food base. Millet straw is a valuable livestock feed. Vikas has identified 2,000 farmers from Araku Valley, Dumbriguda, and Hukumpeta mandals for providing mini kits of improved seed of millet to be grown in half an acre of their farm.

Access of Credit Facilities for Agriculture

Agriculture is the main occupation of the 80 percent people in tribal areas. Agriculture supplies the basic food items of these people. But the total production in the tribal areas is not sufficient for whole population. Therefore, the primary requirement is to increase production by changing the pattern of cultivation and provide gainful employment to the tribal masses. In tribal area, therefore to increase agricultural production by poor farmers, adequate credit facilities are required. Accordingly the present study was carried out, the agricultural development and changes in tribal areas, for studying the access of credit facilities from different sources through which the sample households utilised the credit facilities in the study area is presented below Table 2.

Table –2: Utilization of credit facilities from banks and other sources by the sample respondents in study area

S. No	Credit facilities	Sanyasamma palem	Kotna palli	Antharla	Vanthamamidi
1	Agricultural loansfrom banks	14	25	16	12
2	Agricultural loans from private purpose	18	34	19	22
3	Loans from banks forother purpose	15	26	18	20
4	Agriculture croploans	25	42	27	23

Impact of Agricultural Development on Social Statues, Economy, Health and Education

According to the reports from government and publications on tribal development, during recent years some of the traditional agricultural practices are being continued and several are being replaced with new practices. There is change in land ownership, crop production, fertilizer and high yield variety (HYV) seed application, etc in agriculture. Some traditional crops such as sin, turmeric, kangu etc., exist with variation in quantity of production. But the introduction of new cash crops such

as vegetables and other spice items are increasing over time. Application of fertilizer is relatively new phenomenon in traibal areas. There is still continuation of traditional tools and implements in agriculture. The Tribals use traditional tools like Nagali, Palugu, Paara, etc., in the agricultural practice. Meanwhile, there is use of diesel pumps, winnowers, tractors, powertillars, spraying machine like mechanized inputs. But engagement of human labour is still of primary importance. Women continue to play significant role in agricultural operation. This shows that the agriculture is in transition. There is neither complete modernity nor complete tradition in this region, but there is change over time in agriculture.

It is also found that the farmers, by and large, are progressive and have modem outlook. They are aspiring to access new innovations. They select the crops which can better adapt to the local climate and best suited to the local social and natural environments. Market and infrastructure are also some important preconditions in addition to environmental factors. Selection of crop variety is based on consumption pattern, local demand, market support and quality of product as well. Over the decades some crops have been successfully adopted and some have been failure in the region. Therefore, the tribals are chaning their way of agricultural practices according to the new technologies and new methods to get better productivity with limited sources. While the improvements in grcultural activities of the trbals implemented the production ad productivity of the crpopping pattern also increases. On the other hand the impact of agricultural developments shows on their social, economical and educational changes.

All the major changes in social, economical and educational activities observed are achieved within two-three decades. Increase in literacy level, laying of pucca roads into the villages under "Pradhan Mantri Gram Sadak Ycjna (PMGSY), transport facilities, and other factors, have brought people into the fore of urbanisation. These factors play crucial role in the adoption of mechanized inputs. It is observed that during recent years the people are more or less able to save some amount personally or in the form of ank deposits for the future. Most of the tribals send their children to higher studies and majority of the educated tribals are in better jobs in all departments. The way of dressing style also changed and the culture of these people improves day by day. This was not very common in the past among the tribal societies. However, with the influence of outside world, there is change in behavior. More particularly, the women folk have induced their husbands, at least, for some saving for future investment in agriculture, education and other purposes.

Conlcusion

Overall, the modem technology because a common feature in the villages. During recent years there is increase in use of modem inputs in agriculture in the villages. All these changes have emerged with the growing interest among the farmers for adoption of new technology, need for food due to population growth, emergence of formal institutional arrangements, policy factors and so and so forth. However, the farmers are rational in choosing certain technologies and selecting suitable crops based on the local climate, availability of resources, financial strength, and mail, other factors. Change in agriculture is not spontaneous. Tile innovativeness of a single person also contributes to the change in a system as in the case of growth of beans cultivation. The school teacher, voluntary workers are also the agents to bring changes in agricultural practices in the villages. The aspiration, innovativeness and eagerness have also played the major role among the individuals who could bring changes in the cropping pattern, and technological adoption. The new practice of vegetable cultivation has been transmitted from one community to another community through different forms. For example, girls after marriage become the change agents in agriculture in their in-law's village. Similarly, there are other forms like the farmers from other villages coming to the region to learn about the new practice, etc.

The adoption of new practices varies among individuals within the community. People have selected and adopted some practices and rejected some practices in agriculture with thorough observation and frequent experimentation. They have ultimately adopted those practices which are found suitable to them.

There are successes and failures in the new agricultural practice. Cropping pattern has undergone tremendous change in the last three decades. Farmers now produce vegetables, paddy, and other agricultural produce. The average vegetable production varies from 8 to 9 quintals per household per annum among the vegetable growers in the villages. This is not less as far as productivity is concerned. But there is fluctuation in the average production of agricultural produce due to several factors such as irregular input supply, fluctuation in weather condition, and others. From the economic point of view, there is progress in the village, but that is confined to influential sections who do pressurize the officials for their own benefit. The groups of households who are having at least medium land holding have gained using the new facilities for producing vegetables and other crops. On the negative side, it is observed that there are no supportive mechanisms for the marginal landholders and the landless laborers. Though they largely depend on their kitchen garden for doing some cultivation of turmeric and vegetable, it is not sufficient to maintain their livelihood. After the ban on shifting cultivation, their livelihood is under threat and there is no support from the government to provide them rehabilitation packages. With the growth of population in the villages land fragmentation has taken place. As a result, there is increase in number of marginal landholders. Lack of proper irrigation support has denied the farmers from undertaking multiple cropping operations. Many farmers who could have produced several crops in a season are forced to be away due to lack of essential inputs like water. According to people in the region, irrigation is the most essential component for the growth of agriculture in the region.

Bibliography

[1]. Ganivada, Swathi & Rambabu, P & Gopikrishna, T & Rao, Vishnu & Rao, Srinivasa. (2017). Livelihood Systems of Tribal Farmers in Andhra Pradesh. 472-475.

[2]. Pappala, Appalanaidu. (2019). Productivity of Horticulture in Remote Tribal Areas of Andhra Pradesh. Volume-3. 13-16. 10.31142/ijtsrd20253.

[3]. Swamy, Gopala & Wesley, B. (2020). Traditional Knowledge of Post-harvest Crop Handling by Tribal Farmers of Northern Andhra Pradesh. 383-389.

[4]. Rapaka, Prameela & Venkaiah, M & Swamy, Jetti & Prakasarao, J. (2020). Amaryllids of Andhra Pradesh, India. Tropical Plant Research. 7. 594-603. 10.22271/tpr.2020.v7.i3.073.

[5]. Ade, Srinivas & Sudha Rani, Voliveru & Rao, I. & Sagar, G.E.CH. (2018). A Study on Seed Banking Behaviour of Tribal Farmers of the Andhra Pradesh State, India. International Journal of Current Microbiology and Applied Sciences. 7. 2023-2033. 10.20546/ijcmas.2018.701.244.

[6]. Desavathu, Ramprasad & Allamraju, Aditya & M.D.S.R, Mohan. (2018). A study on floristic diversity using Geo-Spatial technologies in the Paderu mandal of Andhra Pradesh, India. 6. 3363.

[7]. Usha, Madhu & Pachari, Varalakshmi & Nisha, Ahmed & Rao, K. (2018). Conservation of Seed Biodiversity by the tribes of Northern Part of Andhra Pradesh, India. 32-37.

[8]. Padal, S. & Ramakrishna, H & Devender, R. (2011). Ethnomedicinal studies for endemic diseases by the tribes of Munchingiputtu Mandal, Visakhapatnam District, Andhra Pradesh, India. Int J Med Aromatic Plants (IJMAP). 2.

[9]. P. Purushotham, Tribal Agriculture in Paderu Region, Visakhapatnam: Some Observations http://nirdpr.org.in/nird_docs/srsc/srsc230217-25.pdf

[10]. Dr.VENKATA PRASAD RAO SRIRAM, AGRICULTURAL DEVELOPMENT AND CHANGE:A Studyamong Tribes of Visakhapatnam Agency, Andhra Pradesh, 2021, ISBN (Print): 978-81-948075-5-1, KY PUBLICATIONS, India