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Horticulture Practices in the Tribal Areas of Visakhapatnam District in Andhra Pradesh

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Abstract: *In this study an attempt is made to analyze the impact of Horticulture development on the levels of living of different tribes living in the Visakhapatnam Sub – Plan areas in Andhra Pradesh. The basic economic occupation in the study area is farming. The practice of the most of the marginal and small farms is basically subsistence farming with emphasis on production of food for family consumption. Due to the effective implementation of Horticulture programme by ITDA under APTDP with the assistance of IFAD and due to its post project programmes, a large number of farmers diverted from podu cultivation and have undertaken Horticulture as their main occupation for their livelihood. The comparative analysis of the annual production of selected major Horticulture crops shows the family average, per capita and yields per tree of selected crops. The findings of the study reveal that social and economic levels of the tribal communities are not homogenous. But they are at different levels of variability; tribal Horticulture development cannot be uniform.*

Key words: *Horticulture, Tribal Development Project, Gross Cropped Area,*

Introduction: It has been observed that for millions of marginal and small farmers in tribal areas still adopting subsistence farming. Commercial agriculture does not mean much to them. Such farmers are not able to secure a good amount of marketable surplus. Their economy therefore is with in a backward and a low level of equilibrium trap. The significance of supplementary income to such farmers cannot be over emphasized. Horticulture can be considered as a complementary activity to agriculture. Horticulture can be defined as the culture or growing of garden plants. It serves people of India both directly and indirectly in many tangible and intangible ways. It is in this context the Horticulture crops are significant to the economy of the tribal farmers. Horticulture can be considered as a complementary activity to agriculture. Indian Horticulture has a high ranking at the international level. India is the highest producer of coconut, coffee, ginger, turmeric and black pepper and the second largest producer of fruits and vegetables is valued at about US $400 million. Besides the economic importance noted above, the Horticulture crops have considerable ecological significance.

Horticulture Programmes in the Tribal Areas of AP: To resolve the structural problems underlying the tribal economy the Andhra Pradesh Government evolved Tribal Development Project (APTDP) with the assistance of International Fund

for Agriculture Development (IFAD). The main reason involved in the implementation of the APTDP was the history of socio-political unrest in the coastal tribal region of A.P. During the 1970s and 1980s, the project area witnessed a period of turbulence as the epicenter of the naxalite revolt, a radical insurgency movement. The initiation of the project represented a bold move on the part of both the Government of India and IFAD and provided the opportunity to assess the relationship between a grass-roots-led protest movement and the operation of a participatory tribal development project. The Andhra Pradesh Tribal Development Project (APTDP) was appraised by International Fund for Agriculture Development (IFAD) in December 1990. The loan became effective on 27 August 1991 and closed on 31 March 1999. The total project cost was US$ 46.5 million, funded by the Governments of India/Andhra Pradesh (US& 19.5 million), IFAD (US$ 20.0 million) and The Netherlands (US$ 7.0million). The cooperating institution was the United Nations Office for Project Services. The Tribal Welfare Department of the Government of Andhra Pradesh was the executing agency, with overall responsibility for project implementation.

The project area is located in the north-eastern regions of the state of Andhra Pradesh. The project was implemented in four contiguous Integrated Tribal Development Agencies (ITDAs), with a high concentration of families engaged in *podu* (shifting/slash-and-burn) cultivation: Paderu (Srikakulam district), Parvathipuram (Vizianagaram district), Paderu (Visakhapatnam district) and Rampachodavaram (East Godavari district. The APTDP implemented with the assistance of IFAD focused its attention towards natural resource and agriculture development in tribal areas and allocated 70 per cent of its project outlay towards development of Horticulture activity, construction of check dams and minor irrigation tanks and different land development programmes towards agriculture development in the interior tribal areas.

Objectives & Methodology:

An attempt is made to examine the Horticulture practices of tribals, in the Paderu mandal of Visakhapatnam district, to know the differences in the Horticulture practices of different tribes and to study the Horticulture practices of Bagata and Konda Dora tribes in the Visakhapatnam district of Andhra Pradesh.

Multi stage stratified random sampling method is used in this study. To examine the Horticulture activities 40 households are selected from each tribe form their concentrated selected villages based on the random sampling procedure. They are further stratified in terms of marginal, small and , medium farms. Information relating to the socio economic conditions and Horticulture aspects of the selected farms is collected while canvassing a pre designed and structured household schedule in the selected villages during August 2007 to July 2008 in different visits.

Prevailing Horticulture Practices of Selected Tribes in the Study Area:

The Information was collected from the sample households covered under Horticulture programme about three major Horticulture crops. The sample households have been divided into three farms. The total numbers of persons covered in the sample are 80

among them 40 are Konda Dora tribe households and another 40 belongs to Bagata tribe households.

Cropping Patterns of Households under Horticulture:

The intensive development of Horticulture programmes in the study area by ITDA is expected to diversify the cropping patterns of the tribal farms because the Horticulture programmes will help the farms to cultivate different varities of fruits and vegetables in the study area. In this context the information relating to cropping patterns of the households of Konda Dora and Bagata tribe are analysed. Table1 presents the cropping pattern details of the Konda Dora tribe households under the Horticulture programme. In the study area coffee, mixed Horticulture and banana are taken up as major Horticulture crops by the households of both the selected tribes.

Table.1: Crop Pattern of Konda Dora Tribe Households

Category	Major Crops			G.C.A*
	Coffee	Mixed Horticulture	Banana	
Marginal Farmer	2.62	1.89	0.97	5.48
Small Farmer	3.74	2.41	1.84	7.99
Medium Farmer	6.42	4.12	3.46	14.00
Total	4.26	2.81	2.09	9.16

*Gross Cropped Area

The cropping patterns of Konda Dora tribe households under Horticulture programme reveal that the total cropped area is estimated 9.16 acres in case of all the three crops. Among the major crops coffee and mixed Horticulture spreads a large proportion of the total cropped area. The distributions of cropped area under Horticulture clearly indicate predominance of coffee and mixed Horticulture crops for all the categories of farmers of Konda Dora shows that among the major crops coffee is the important crop constituting a major proportion of the cropped area. The cropping patterns of Bagata tribe are presented in the following table 2.

Table. 2: Crop Pattern of Bagata Tribe Households

Category	Major Crops			G.C.A*
	Coffee	Mixed Horticulture	Banana	
Marginal Farms	2.78	1.92	1.02	5.72
Small Farms	3.94	2.68	1.96	8.58
Medium Farms	6.83	4.54	3.69	15.06
Total	4.52	3.01	2.22	9.79

The above Table presents cropping pattern details of the Bagata tribe households under Horticulture programme. The average cropped area

per sample household is 9.79 acres for all the crop. Coffee crop is the predominant crop in major crops. This is noticed in case of all the three categories of farmers. In case of Horticulture programme both the tribe households given importance to coffee and mixed Horticulture among the major crops. However the extent of Gross Cropped Area is relatively lower in case of both tribes in case of Horticulture programme.

Fallow Land levels of Households under Horticulture Programme:

The intensive development of Horticulture programmes in the study area by ITDA is expected to reduce the extent of fallow land because the Horticulture programmes will help the farms to utilize even the dry land in an optimum manner. In this context the information relating to fallow land of the households of both the tribes are presented in the following Table 3. The extent of fallow land is recorded to a very lower extent in case of both the tribes. The extent of fallow land is relatively recorded higher in case of Konda Dora tribe when compared to Bagata tribe households.

Table- 3: Fallow Land

Farms	Konda Dora (%)	Bagata (%)
Marginal	15.05	10.35
Small	20.21	18.54
Medium	26.18	21.01
All farms	20.48	16.63

The proportions of fallow land to operational holding vary considerably among the three categories of farmers among both the tribes. However, according to the field reports of the households during last five years because of intensive Horticulture development in the study area there is a gradual decline in the fallow land for the three categories of farmers of the both the selected tribes. Also it is noticed that in the case of marginal farmers and small farmers there is striking decrease in the fallow land particularly among Bagata tribe small farmers and medium farmers there is a considerable decrease in the extent of fallow land.

Intensity of cropping details of Households under Horticulture Scheme:

Generally the intensive development of Horticulture programmes in the study area by ITDA is expected to increase crop intensity because under Horticulture farms are used to cultivate the minor crops along with major crops simultaneously this practice ultimately increase the extent of crop intensity. Also the Horticulture programmes will help the farms to utilize even the dry land in an optimum manner. In this context the information relating to crop intensity levels of the households of both the tribes are presented in the following Table 4.

Considerable differences are observed among both the tribes in their crop intensity levels. The crop intensity levels of Bagata tribe households relatively recorded at high levels (169.52 percent). The intensity of cropping among the Konda Dora tribe households is very low and it is estimated at 149.27 percent. In the cae of marginal farmers (146.31 percent) it is very low and for the medium farms (151.62 percent) it is recorded relatively high. As a whole, the extent of crop intensity is relatively higher in case of both the tribe farms who are covered under Horticulture programme. The reason is that in case of Horticulture along with the major crops like coffee, mixed Horticulture and banana in most of the areas the minor crops like turmeric, ginger and maize are also simultaneously cultivated by the farm households

Table – 4: Intensity of Cropping Pattern (Per household)

Farms	Konda Dora	Bagata
Marginal	146.31	161.29
Small	149.87	170.84
Medium	151.62	176.43
All Farms	149.27	169.52

Crop Yield Patterns of Households under Horticulture Scheme:

This section discusses about the annual production of selected Horticulture crops raised by the sample households. Also an attempt is made to analyze per capita output and family average of selected Horticulture crops of households under different farms. From observation it is found that among the major crops the output of coffee is highest in the study area. Production of mixed Horticulture and banana is second and third highest respectively in the study crops are discussed in a sequence of tables. Table 5 highlights the information about the production of coffee by the sample households.

Table. 5: Production of Coffee by the Sample Households

Sl.No	Farms/Tribes	(in kilograms)	
		Per capita	Per family
Konda Dora:			
1	Marginal Farms	7.00	14.00
2	Small Farms	6.22	18.60
3	Medium Farms	7.10	24.88
Bagata:			
4	Marginal Farms	3.80	11.60
5	Small Farms	10.60	38.52
6	Medium Farms	19.40	66.00
7	All Tribes and farms	9.02	28.93

It is observed from the above table that the total coffee production of sample house holds is 3186 Kgs. Thus on an average, each family produces 28.93 Kg of coffee and each person produces 9.02 Kgs of coffee. Families belonging to

highest income group produce the highest coffee out put. The production of mixed Horticulture items is presented in Table 6.

Table: 6: Production of Mixed Horticulture items by the Sample Households

S No	Tribe/Farms	(in kilograms)	
		Per capita	Per family
Konda Dora:			
1	Marginal Farms	285.00	550.00
2	Small Farms	240.00	796.50
3	Medium Farms	215.50	810.00
Bagata:			
4	Marginal Farms	617.00	2450.20
5	Small Farms	288.50	1045.50
6	Medium Farms	520.00	1460.00
7	All Tribes and farms	361.00	1185.37

It is recorded that the sample households produce 95964 kgs of mixed Horticulture items, which implies a family average of 1185.37 it also indicates that each person produces around 361.00 kgs of mixed Horticulture items. The details relating to production of banana are presented in the following Table 7.

Table: 7: Production of Banana by the Sample Households

S No	Tribe/Farms	(in dozens)	
		Per capita	per family
Konda Dora:			
1	Marginal Farms	75.00	138.50
2	Small Farms	178.20	575.00
3	Medium Farms	112.50	393.55
Bagata:			
4	Marginal Farms	230.10	890.50
5	Small Farms	182.00	737.20
6	Medium Farms	268.00	910.00
7	All Tribes and farms	174.30	607.46

It is recorded that sample households produces 64978 dozens of banana, which is shown in table. It is also observed that on an average, each family produces 607.46 dozens of banana and each person produces around 174.30 dozens of banana. The comparative positions of the annual production of selected major crops are presented in the following Table 8.

Table: 8: Comparison of Major Horticulture Crops of all Tribes

S .No	Name of crop	Per capita	Per family
(1)	(2)	(3)	(4)
1.	Coffee(kg)	9.02	28.93
2.	Mixed Horticulture(kg)	361.00	1185.37
3.	Banana(dz)	174.30	607.46

The comparative analysis of the annual production of selected major Horticulture crops presented in the above table shows the family average, per capita and yields per tree of selected crops. It reveals that production of coffee is relatively high when compared to mixed Horticulture items and banana. Though coffee recorded higher production in comparison to other Horticulture crops the per capita and per family production is relatively recorded high in case of other crops mixed Horticulture and banana.

Table: 10: Personal Consumption of Mixed Horticulture items by the Sample Households

(in kgs)

Si.No	Tribes/ Farms	Per capita	Per family
(1)	(2)	(3)	(4)
Konda Dora			
1	Marginal	55.00	110.00
2	Small	32.20	101.50
3	Medium	24.50	120.20
Bagata			
4	Marginal	36.50	135.00
5	Small	46.30	175.50
6	Medium	62.00	210.00
7	All Tribes	42.75	142.03

It is observed from the above table that 11.98 per cent of total mixed Horticulture produce is consumed by the sample households. 142.03 kgs of mixed Horticulture items are consumed by each family. Each person of the sample households consumes 42.75 kgs of mixed Horticulture items. Table 11 presents the information regarding the personal consumption of bananas.

Table: 11: Personal Consumption of Banana by the Sample Households
(in Dozens)

S.No	Tribes/Farms	Per Capita	Per family
(1)	(2)	(3)	(4)
Konda Dora			
1	Marginal	30.00	60.00
2	Small	15.20	42.50
3	Medium	18.50	60.20
Bagata			
4	Marginal	19.20	65.00
5	Small	37.00	130.00
6	Medium	26.50	85.50
7	All Tribes	24.40	73.87

From the table it is observed that the sample households consume 12.16 percent of total banana produce. It is shown in table that each family consumes around 73.87 dozens of banana annually. On the basis of per capita, it is recorded that, each person consumes around 24.40 dozens of banana. The analysis relating to marketing produce of the selected major crops are discussed. At the outset the information relating to quantity of coffee sold by the sample households in the study area are presented in the following table 12.

Table: 12: Quantity of Coffee Sold by the Sample Households
(in Kgs)

S No	Tribes/ Farms	Per Capita	Per family
(1)	(2)	(3)	(4)
Konda Dora			
1	Marginal	6.50	12.50
2	Small	5.82	17.29
3	Medium	6.589	22.89
Bagata			
4	Marginal	3.509	10.50
5	Small	9.659	35.02
6	Medium	18.576	63.20
7	All Tribes	8.44	26.90

From the above table the information about the quantity of coffee sold in the market by the sample households reveals that 92.98 percent of total produce is sold. On per capita basis, each person sales 8.44 Kgs of coffee and on family average, 26.90 Kgs of coffee are sold. The information relating to quantity of mixed Horticulture sold by the sample households in the study area are presented in the following table 13.

Table:13: Quantity of Mixed Horticulture items Sold by the Sample Households

(in kgs)

S No	Tribes/ Farms	Per Capita	Per family
(1)	(2)	(3)	(4)
Konda Dora			
1	Marginal	230	440
2	Small	207.80	695
3	Medium	191.	689.80
Bagata			
4	Marginal	580.50	2315.20
5	Small	242.20	870
6	Medium	458	1250
7	All Tribes	318.25	1043.33

From the above table the information about the quantity of mixed Horticulture items sold in the market by the sample households reveals that 81.17 percent of total produce is sold. On per capita basis, each person sales 318.25 Kgs of mixed Horticulture and on family average, 1043.33 Kgs of mixed Horticulture items are sold. The information relating to quantity of banana sold by the sample households in the study area are presented in the following table 14.

Table: 14: Quantity of Banana Sold by the Sample Households

(in Dozens)

S.No	Tribes/ Farms	Per Capita	Per family
(1)	(2)	(3)	(4)
Konda Dora			
1	Marginal	45	78.50
2	Small	163	532.50
3	Medium	94	333.35
Bagata			
4	Marginal	210.90	825.50
5	Small	145	607.20
6	Medium	241.50	824.50
7	All Tribes	149.90	533.59

From the above table the information about the quantity of banana sold in the market by the sample households reveals that 87.84 percent of total produce is sold. On per capita basis, each person sales 149.90 dozens of banana and on family average, 533.59 dozens of banana are sold. The information pertaining a comparative view about the quantity of selected major

crops in the market is presented in the following table 15.

Table: 15: Quantity of Selected Crops Sold by the Sample Households

S.no	Crop name	% of output sale
(1)	(2)	(5)
1.	Coffee (kg)	92.98
2.	Mixed Horticulture (kg)	81.17
3.	Banana (dz)	87.84
4.	All crops	87.33

From the above table the comparative view of the selected major crops sold in the market shows that the households of study area cultivate three Horticulture crops over a greater area of the land owned by them. The households' sale the bulk portion of the produce in the market. Table reveals that around 87.33 percent of the total produce is sold in the market. Most of the Horticulture crops are cultivated for mainly sale in the study area. It is the main source of money /liquid income to the farmers in Paderu mandal. These trends reveal that the Horticulture crops support the selected household's families by generating a considerable extent of marketable surplus for them which will reflect in their income levels.

Income Levels of Households under Horticulture Scheme:

Table: 16: The Contribution of Horticulture to the Annual Income

Sino.	Tribes/Farms	Percent of TVHC
(1)	(2)	(5)
Konda Dora		
1	Marginal	44.95
2	Small	48.26
3	Medium	57.03
Bagata		
4	Marginal	50.66
5	Small	55.66
6	Medium	61.54
7	All Tribes	58.35

Note: TVHC-Total value of output from all the six Horticulture crops.
TAI-Total annual income

From the above table 16 it is observed that Horticulture is contributing a significant proportion of 53.35 percent of the total income of the selected households of both the tribes. However the contribution of Horticulture to the total income is relatively higher in case of all the farms of Bagata tribe

households when compared to Konda Dora tribe households. Across farms the medium and small farms incomes are significantly contributed by Horticulture when compared to marginal farms.

Problems facing by the households about Horticulture crops:

In spite of the efforts made by ITDA to promote Horticulture by creating so many facilities to them, the households covered under Horticulture programme revealed certain problems facing by them,. The households reported about the several types of difficulties they are facing by them. Majority of the marginal and small farmers experience a lot of difficulty in carrying produce from villages to market. A bulk part of the produce other the coffee is sold in the Paderu market. Only a little bit of produce is taken to disposed of in the Visakhapatnam market. Although so many buses run between Visakhapatnam and Paderu, but it is very disappointing that very few buses runs between Paderu and Visakhapatnam. Villagers face difficulty to transport produce to Paderu market. They either have to take their crop by walk or by a private vehicle. In spite of ITDA's minor irrigation development activities the farms are facing the problem of inadequate irrigation facilities.

The farms also reported that birds and monkeys destroy every year a good amount of their produce. Parrots are the main pests reported to cause heavy losses in Horticulture crops. At the time of fruit ripening birds and monkeys destroy the crops. Banana and mixed Horticulture are the main crops, which are destroyed by the monkeys and birds. Similarly farmers are facing the problem of destruction of crops due to strong wind and fog. Farmers of this region have to bear heavy losses due to flower and fruit drop. Fog and strong wind at the time of flowering makes flower drop and it badly affect the crop. Strong wind and cloudy weather adversely affect the yield of Horticulture crops. High rate of fruit drop is a serious problem in Paderu. Mixed Horticulture items and banana yields are badly affected by strong wind and fog.

Another big problem relates to injury caused by termite. Some trees are badly affected by termite in this area. Termite is very dangerous and spreads very easily. Treatment of termite is very difficult. Mixed Horticulture plants are badly affected by the termite in this area. Similarly stealing of crop is a very big problem in the Paderu mandal. At the time of fruit ripening stealing increase. Farmers have to bear losses every year due to stealing of fruits. The sample households have reported that around 5 to 10 percent is stolen every year.

Conclusions

Horticulture emerged as the most important source of income in the Paderu mandal. The notable aspect of the analysis in the study is that the contribution is more then 60 percent of the marginal and small farmers in the study villages. Thus the observation is that Horticulture crops significantly contribute to the income of people in the study area. The contribution of Horticulture to the annual income of the sample households in the study area is recorded high. In spite of he special care taken by ITDA Paderu to promote Horticulture practices in the study area the households are facing problems relating to inadequate transport facilities,

lack of adequate irrigation facilities, destruction of crops due to birds and monkeys, destruction of crops due to strong wind and fog, attack of termite to mixed Horticulture crop and crop stealing. The findings of the study reveal that social and economic levels of the tribal communities are not homogenous. But they are at different levels of variability; tribal Horticulture development cannot be uniform. The Horticulture development schemes have to be devised in the light of socio-cultural factors and economic needs of the tribals in each region and sometimes each community. Emphasis needs to be given to preliminary research concerning the choice of Horticultural crops in particular areas. Although the project – in theory at least – left the final choice of crop to the villagers, it is clearly vital that the alternatives offered should include only those crops that have proved successful in the particular soil, altitude and climate conditions.

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