



Sweet potato as a worthy option for rural livelihood: A study on Tribal dominating villages of Jharkhand

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ABSTRACT

Subsistence farming based on some specific crops gives free reign to the rural mass, and has ability to create food security options. The storage roots of sweet potato serve as staple food, animal feed, and as a raw material for industries as a starch source. Orange fleshed sweet potato containing more carotenoid content is a major remedy for vitamin A deficiency. In Jharkhand, a few sweet potato growing belts are observed which supply sweet potato to the sweetmeat and peda industries. This study is an endeavour to find out the production and consumption status of sweet potato along with the problems encountered in production. Data was collected directly from sweet potato growing farmers of three villages. As tool, questionnaires, observation, personal interview and group discussion were used. The data were analysed with simple statistical tools. Based on the problems faced by the villagers, some recommendations were made by participatory approach.

KEYWORDS : Sweet potato, subsistence farming, Agriculture, Jharkhand

INTRODUCTION

Being a type of agrarian societies, the tribes of Jharkhand have their own strategies to minimize the impact of adverse climatic conditions and its efficiency is strongly dependent on a variety of household characteristics, including levels of knowledge and experience, gender of household head, family labour availability, off-farm job opportunities, and accumulated wealth. The main coping strategies applied by farmers include cultivating drought tolerant crops, raising livestock for sale, hunting, seeking casual labour within their communities, and consuming wild fruits and tubers. Sweet potato plays an important role in smallholder farming systems. In many developing countries, sweet potato is a secondary staple food and may play a role in controlling vitamin A deficiency (Hagemimana *et al.*, 1999, Low *et al.*, 2001). The crop is cultivated by small and marginal farmers for consumption by roasting, baking, boiling, frying and as subsidiary vegetable. Foliage and unmarketable tubers are used to feed other livestock and particularly to pig feed (Naskar *et al.*, 2007).

Sweet potato acts as a major source of subsistence and cash income to the tribal farmers of agro-climatically disadvantageous regions. In spite of its numerous qualities, it is much underexploited and this is probably because of its status as a poor man's food (Woolfe, 1992). Vitamin- A deficiency is one of the leading causes of early childhood death as well as is a major risk factor for pregnant and lactating women (FAO/WHO, 2002). In Jharkhand, sweet potato is cultivated in mostly Chhotanagpur plateau belt. Basically, as a Kharif crop, the farmers plant it in the month of July to September and harvest in the mid of winter. In general, this crop does not requires much attention of farmers in comparison to other crops. This crop is most popular in the tribal communities who use to regularly take this in the form of various preparations after 4-5 months of harvesting of the crop. Thus small tribal farmers get a suitable option to utilize their upland in monsoon in the form of subsistence farming and take a highly energetic carbohydrate food in their diet. In this backdrop the present study is an endeavour to study the pattern of subsistence as well as identify the production problems in three small villages of Jharkhand.

AREA AND METHODS OF STUDY

Among the three studies villages, two multi-ethnic villages namely *Chokrabeda* and *Beyang* comes under Ranchi district of Jharkhand and the third one, *Sursu*, which is a tribal village, is located under Ramgarh district. However, these three villages were chosen purposively for the study as they were known for sweet potato cultivation. Household survey was conducted for getting the information of crops grown in field. Thereafter, random sampling was used for selecting the respondents from sweet potato growing households. Thus 10 farmers from each village were chosen as key respondents. These respondents were interviewed with pre-structured questionnaires containing the production package, economics, and consumption and marketing related issues. After collecting data related to all cultivated crops, separate data were analysed. In the case of land area dedicated

for sweet potato cultivation by taking into account the economic aspect of the crop. Besides, focused group discussion and case studies were also used for some farmers. The data was triangulated with repeated questions in different types. Simple statistical tools were used to interpret and present the data.

RESULTS AND DISCUSSIONS

56.6 % farmers were found to be in the age group of 26 to 45 and 36.6% were between 46 and 65 and only 2 respondents were more than 66 years old. Among them 4 were female. *Beyang* had the largest average family size (8.4) followed by *Chokrabeda* and *Sursu* (6.9 each). The average land holding of the farmers was 7.9 acre. Among the 30 respondents one each was found to have more land than 25 acre from *Beyang* and *Chokrabeda* village.

Sweet potato is cultivated in the uplands (*Tnar*). The land having well drainage facility is selected for the sweet potato crop. Therefore, 46.66% respondents were cultivating this crop in 21% to 40% of their total land area. Besides, it was found that due to undulating topography, the farmers use to cultivate sweet potato in different fragments of land. Average number of plots for this crop was 4.5. Maize, arhar, groundnut, tomato, potato, gourd and other vegetables were other main crops. Out of the 273.9 acre of total farmers' total land, 63.45 acre of land area was under sweet potato cultivation. Cropping intensity of the total farmers (119%) was almost near to that of the Jharkhand average (114%). During the onset of monsoon a ploughing is done and crops are sown according to the land topography and soil type. Farmers of *Beyang* follow crop rotation in uplands.

According to the respondents, very less technological assistance was availed from extension officials. Mostly, staffs of Divyayan KVK, Morabadi, Ranchi, visited the two studied villages of Ranchi district where on-farm demonstration were carried out with four varieties namely in collaboration with Regional Center, Central Tuber Crop Research Institute, Bhubaneswar. But, orange fleshed sweet potato varieties were not accepted due to easy boiling, less sweetness and storage life.

Table 1: Economics of sweet potato cultivation for different villages

Village	Sursu	Beyang	Chokrabeda
Average Cost of Cultivation (Rs/ha)	16775	20380	17640
Average Production (t/ha)	7.5	8.7	9.8
Average Market Price (Rs/t)	5500	6000	5500
Gross Income (Rs)	41250	52200	53900
Net Income (Rs)	24475	31820	36260
Benefit Cost Ratio	2.46	2.56	3.05

The cost of cultivation was calculated by estimating the value of all inputs and components in the production cycle as stated by the respondents. They usually buy the fertilizers and plant protection inputs from nearest *Gola* market. If not available from previous year crop, vines are bought @ Rs. 20 per kg. Hired labours are used only during land preparation and harvesting. The production cost was most in the case of *Beyang*. However, after harvesting they sell the tubers either directly to middlemen in market or middlemen buy in bulk. The market price vary a lot; for instance, in earlier season, they can sell sweet potato tubers @ Rs. 20 /kg while in peak production season, the price gets down upto Rs.4 per kg. The left out vines in the field are fed to cattle.

Table 2: Average consumption status of sweet potato growing families

Villages	Sursu	Beyang	Chokrabeda
Average production (t/ha/yr)	7.50	8.70	9.80
Average consumption (t/yr)	0.90	0.74	0.82
Average surplus (t/yr)	6.60	7.96	8.98
Average period of consumption (months)	5.80	4.50	4.80
Consumption of sweet potato in most popular traditional dishes			
Boiled with water	Vegetable Curry	Boiled with milk	Roasted
30	21	7	6

Among the three villages, *Sursu* accounts for most average consumption in the family level. It is because, the tribal farmers loved this food in their diet. They have been using this crop as boiled and curry for decades. They take it during breakfast at least for next two months from the final harvest. Few prefer roasted one by baking or roasting after washing. Some get the sweet potato cooked with milk for children. Some use the dried leaf of sweet potato in curry after getting it wet in hot water and it have become one of their emergency food.

Table 3: Production problems regarding sweet potato

Water shortage	Inadequate planting material	Drainage	Rodents	Fertilizer cost
27	16	13	4	11

Most of the farmers have pointed out the water shortage in other seasons as a severe issue. Rats cause more problems than the other insect pests in the village. Average rainfall in Chhotanagpur plateau is not very less, but the problems are detected when that water is run off. During monsoon, some fields requires timely drainage on heavy rainfall. Besides, as most of the farmers are marginal and small, they cannot afford adequate chemical fertilizers.

CONCLUSIONS

The sweet potato farmers are mostly known for subsistence farming. The commercially growing belt of this region is not too large. The middleman supplies the commodity to agro-processing industrial belts where *peda*, sweets and sweet potato powder are made. These are largely marketed in religious places like Deoghar. So, it is a known fact that, there is bigger scope for market. Among the studied farmers, it was observed that, most of them have more than one components in the farming system. For, examples, they have at least one type of livestock, at least one cereal crop etc. So, if they are made aware of utilizing the components of integrated farming system more suitably, there would be dual benefit of enhanced productivity as well as risk minimization. It, would keep the balance of demand-supply chain.

Following recommendations have been made by synthesizing the idea of farmers as well as researchers:

1. Water harvesting structure should be constructed in the potential growing belts. It would help to keep the vines survived in drought seasons as well as to plant the crops a little bit earlier if possible.
2. More awareness should be created in the use of organic manures by preparing them in own farm as well by using new components like green manure, biofertilizers, poultry manure, liquid manure etc. Plant protection in organic ways can reduce cost of cultivation.
3. Cooperatives can be formed for buying inputs and marketing of the harvest in fair rate.
4. Research on popularization of orange fleshed varieties should be carried out and the outcome should be disseminated among the farmers by off farm demonstrations.

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