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## Utilization of tuber crops in Western Ghats of Karnataka

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### Abstract

Tuber crops are the important crops and are the third important food crops Western Ghats region including Sirsi, Joida and Yallapura talukas of Uttara Kannada district and Mysore district are a treasure trove for these tuber crops. More than twenty types of tubers are cultivated in Western Ghats region of Karnataka. The study was conducted in Uttara Kannada district of Sirsi and Joida during 2019-20. For this study, sixty farmers were randomly selected as samples. Survey was carried out with a help of structured interview schedule to elicit the required information from the respondents. For analysis of data, frequency, percentage and garret ranking technique was used. The study shows that, majority of the respondents were females and belong to middle age group and having small area for tuber cultivation. Around nineteen different tubers were growing by tuber growers in Sirsi and Joida and using these tubers for medicinal benefits. Major constraint facing by tuber growers was lack of awareness about availability of different tubers among consumers. Hence, it is necessary to create awareness about tuber crops among consumers through exhibitions and tuber mela in every district of Karnataka.

**Keywords:** tubers, health, benefits and farming

### Introduction

Tuber crops are the important crops and are the third important food crops They contribute about dietary and are important sources of animal feed and raw materials for the production of industrial products. Tuber is a thickened underground part of stem. Technically a tuber is either a modified stem or modified root, for example sweet potato, potato, cassava and colocasia.

In the year 2013, the major roots and tuber crops occupied about 56.11 million hectares producing 835.55 million metric tons of tubers worldwide, 43 per cent of which was from Asia and 6.43 per cent from India. Globally, the major tubers grown are cassava, sweet potato, potato, yams, taro, aroids and tannia. (Anon, 2015) [2].

In India tuber crops are distributed in five major areas. The areas include (i) South-Western hilly and coastal region, (ii) Southern peninsular region, (iii) Eastern coastal region, (iv) North-eastern region and (v) North-western region. India holds a rich genetic diversity of tropical tuber crops namely potato, sweet potato, cassava, aroids, yams and other tuber crops. (Edison *et al.* 2005) [4].

In Karnataka, Western Ghats region including Sirsi, Joida and Yallapura talukas of Uttara Kannada district and Mysore district are a treasure trove for these tuber crops. More than twenty types of tubers are cultivated in Western Ghats region of Karnataka. The major tuber crops grown in Karnataka are potato, sweet potato cassava, taro, yam, elephant foot yam, arrow root and chinese potato etc. In Karnataka the farmers cultivate varieties of tubers and some tubers are naturally available in forest. In Karnataka, tuber cultivation has turned out to be a great success for farmers of Joida taluk of Uttara Kannada district. Major of the tubers are available in the month of February and March mainly during the time of Shivaratri festival.

The tuber crops proved to be life sustaining crops in times of natural calamities and famine. When all other starch-based crops fail, tuber sustains. Most of these tuber crops are flexible in nature and they adjust with climate change and they have the potential for good return under adverse soil and weather condition (Anon, 2013). The main aim of this study was to take a broader look at the production of tuber crops and their utilization with following objective.

### Materials and Methods

The present investigation was done in Uttara Kannada district of Sirsi and Joida during 2019-20. For this study, sixty farmers who were cultivating tuber crops were randomly selected as

samples. Survey was carried out with a help of structured interview schedule to elicit the required information from the respondents. The developed questionnaire included general information of the tuber growers, farming information, types of tubers grown, health benefits, of tuber crops. The data were

collected by personal interview method and tabulated. For analysis of data, frequency, percentage and garret ranking technique was used.

## Result and Discussion

**Table 1:** Demographic Profile of the tuber growers in selected area

N=60

Particulars		Frequency	Percentage (%)
Gender	Male	09	15.00
	Female	51	85.00
Age	Young (<30)	17	28.33
	Middle (30-60)	39	65.00
	Old (> 60)	04	6.66
Education	Illiterate	31	51.66
	Can read and write	09	15.00
	Primary school (1-4)	10	16.66
	Middle school (5-7)	00	16.66
	High school (8-10)	00	00
	PUC	00	00
Religion	Degree/Post graduate	00	00
	Hindu	59	98.99
Family Type	Christian	01	1.66
	Nuclear	57	95.00
Occupation	Joint	03	5.00
	Agriculture	60	100.00
Annual Income (Lakh Rs.)	Others (Tailor, Forest guard, Business)	00	00
	Low (0.50- 1)	15	25.00
	Medium (1-2.5)	35	58.33
	High (>2.5)	10	16.66

Socio-economic status of the selected tuber growers was presented in Table 1. It indicates that 85 per cent of the respondents were female and 15 per cent of the respondents were male. These lines re similar with Kehinde and Aboada (2016) [7]. Highest percentage (65.00%) of the tuber growers belongs to middle (30-60 years) age group and only 6.66 per cent belongs to old (more than 60) age group. Regarding education, majority of the tuber growers were illiterate (51.66%) and 6.66 per cent of them completed high school education. The results are similar with Quoi *et al.* (2019) [12], about 59.2 per cent of the tuber growers were not educated. Highest percentage (98.33%) of the selected tuber grower's religion was Hindu and only 3.33 per cent religion was

Christian. In study area, majority (95.00%) of the tuber growers belongs to nuclear family The results are similar with Divya and Pushpabharati (2017), 40 per cent of the respondents belongs to nuclear family with family size 3 to 5. Majority of the tuber grower's main occupation was agriculture (100.00) in study area. Around 90 per cent of the farmers were involved in agriculture. The present study indicates that, 58.33 per cent of the tuber growers fall in medium income (Rs. 1-2.5lakh) group and 25 per cent of them belongs to high income (more than 2.5 lakh) group. The results are in accordance with Divya and Pushpabharati (2017), 40 per cent of the respondent's annual income was Rs. 1-3 lakh (medium).

**Table 2:** Farming Information of the tuber growers

N=60

Particulars		Frequency	Percentage (%)
Agricultural Land (Acres)	Small (0-5)	17	28.33
	Medium (5-10)	39	65.00
	Large (> 10)	04	6.66
Source of Irrigation	Bore well	39	65.00
	River water	17	28.33
	Farm ponds	04	6.66
Tuber Cultivation Area (Gunta)	Small (0-2)	28	46.66
	Medium (2-4)	19	31.66
	Large (>4)	13	21.66
Tuber Cultivation Experience (Years)	Less (0-10)	19	31.66
	Moderate (10-20)	28	46.66
	High (>20)	13	21.66
Marketing channels for tuber	Village Merchant	08	13.33
	Agent	29	48.33
	Tuber mela (Consumer)	10	16.66
	Wholesaler	13	21.66

The data in Table 2 shows the farming information of the tuber growers. With respect to possession of agriculture land, highest percentage (65.00%) of the tuber growers were having small land (0-5 acre) and few tuber growers were possessing large (more than 10 acres) land. Divya and Pushpabharati (2017), 73.33 per cent of the respondents having less than 5 acres land and results are similar with Girwale and Naik (2016) [5]. Majority (65.33%) of the tuber growers having bore well as a source of irrigation and 6.66 per cent having farm ponds as a source of irrigation. Highest percentage (46.66%) of the tuber growers having small (0-2 gunta) tuber cultivation area. According to Aniedu (2016), in Nigeria, 78 per cent of the respondents having less land for tuber cultivation. In study area, 46.66 per cent of the tuber growers having 10 to 20 (medium) years of tuber cultivation experience and only 13.33 per cent having more than 20 (high) years of experience. Quoi *et al.* (2019) [12], reveals that 64.30 per cent of the respondents had 4 to 7 years of tuber cultivation experience. In present study, the tuber growers having 10 to 20 years of tuber cultivation experience because, tuber crops are the main source for income as well as food security for them. Marketing channels for selling tubers in study area were village merchant, agent, tuber mela and wholesaler. Among all channels tuber mela is good channel because, tuber mela creates awareness about different tubers among consumers and in tuber mela, the growers selling tubers directly to the consumers. Hence, farmers get good profit compared to other marketing channels.

**Table 3:** Different types of tubers grown by the farmers in selected area

Tubers	Frequency	Percentage (%)
Cassava	19	31.66
Chinese Potato	15	25.00
Sweet potato	21	35.00
Elephant foot yam	05	8.33
Dhavi Kon (lion foot type)	18	30.00
Yam (Dukar Kon)	17	28.33
Yam (nagar kon)	16	26.66
Yam (arial bulbs)	14	23.33
Yam (aale kon, hairy type)	14	23.33
Arrowroot	10	16.66
Shatavari	4	6.66
Colocasia (banda type)	11	18.33
Colocasia (dwarf type)	18	30.00
Alocasia	03	5.00
Red taro (tambade aalu)	01	1.66
Bili suli gedde	05	8.33
Potato	09	15.00
Lessar yam	08	13.33
Tannia bulbs (kaasar aalu)	01	1.66

**Note:** Multiple Responses

A close perusal of Table 3 shows the tubers grown by the tuber growers. In study area, around 19 different types of tubers were growing. Among these tubers, sweet potato (35.00%), Colocasia (dwarf type) (30.00%), elephant foot yam (8.33%), cassava (31.66%), arrowroot (16.66%), potato (15.00%), dhavikon greater yam (30.00%), lesser yam (13.33%) and dukar kon yam (28.33%) were growing in higher quantity. The results are in line with the results of Prakash *et al.* (2018) [11], The important tubers grown in

Kerala were cassava, sweet potato, yam, Colocasia and elephant foot yam. And Mesta and Pushabharati (2017) [9], reported that, in Western ghats of Karnataka, the farmers growing more than 20 types of tuber crops.

**Table 4:** Medicinal benefits of tubers as perceived by the tuber growers

Type of tuber	Medicinal benefit	Frequency	Percentage
Colocasia (Taro)	Diabetes	18	30.00
	Blood Pressure	18	30.00
Chinese potato	Gives better strength	14	23.33
	Improves digestion among pregnant women	19	31.66
Arrowroot	Dysentery	21	35.00
	Fever	18	30.00
	Tiredness	13	21.66
	Keeps body cool	21	35.00
Bili suli gedde	To control white discharge among women	14	23.33
Elephant foot yam	Piles	23	38.33
Pirshi	Weakness	22	36.66
Haluballi	Fever	14	23.33

**Note:** Multiple Responses

An observation of Table 4 shows that medicinal benefits of tubers as perceived by the tuber growers. Highest percentage (30.00%) of the tuber growers perceived colocasia tuber good for maintaining blood pressure, chinese potato, to improve digestion among pregnant women (23.33%). Arrowroot perceived good for fever and dysentery. Bili suli gedde was perceived to prevent white discharge problem among women (23.33%) and 38.33 per cent perceived elephant foot yam good for piles problem. The information is in accordance with the results of Divya and Pushpabharati (2017). The study stated that, respondents perceived arrowroot good for repeated fever, tiredness and dysentery. Chinese potato perceived good for strength and reduce the digestion problem among pregnant women.

### Conclusion

Tubers are the most important crops after cereals. The Uttara Kannada district of Karnataka is a store house for several tubers because in this area around 19 types of tubers were growing and using these tubers for food security and to reap health benefits. Tuber growing farmers in Sirsi Joida was highly constrained by lack of minimum support price and lack of awareness about variety of tubers among consumers. Therefore, it is suggested to improve the selling cost of the tubers by providing good marketing facility to the tuber growing farmers and creating awareness by campaign, exhibitions and mainly government should conduct tuber mela every year in all the district of Karnataka. It is necessary to create awareness about health benefits of tuber crops among consumers.

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