



SOCIO-PERSONAL AND AGRO-ECONOMIC FACTORS TOWARDS PERCEIVED ADVANTAGES OF MILLETS CULTIVATION IN TRIBAL AREA

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Abstract:

A study was conducted to examine socio-personal and agro-economic characteristics vis-à-vis perceived advantages millets cultivation by millet farmers in tribal area of Odisha. Farming, forest, wage, migration and farm services were major livelihood means of the farmers in tribal area of Odisha. Millets were major crops in their farming system. In the study area, 39 per cent of farmers were of middle age category (35 to 45 years). With respect to education, majority (72%) of them were illiterate to educated up to middle school. Most of the male farmers (96%) were men who were head of the family, 74% had medium size family with 5-6 members, 78% owned less than 1.5ha, out of which they apportioned less than 0.4ha for millets cultivation. Majority of farmers (69%) did not have cell phone, 92% were not availing credit from any organizations, while 54 per cent of the farmers were members of various organizations like co-operative society, youth club, and tribal farmers group etc. Total 46% had rich experience between 12-27 years. Most of the respondents (71%) had medium income between Rs.52,000-90,000/- annually, 72% of the farmers had a livestock population with 1-7 cattle, 70 percent were making use of mass media at low level and 44 per cent of the respondents had medium level of decision-making ability, which was mostly dominated by men. From above socio-economic status of the farmers' indicated that, they had poor education, low resource- base and insufficient accessibility of resources undermine their livelihood patterns. Therefore, tribal millet farmers in the study area deserve special attention for strengthening their livelihoods by developing suitable strategy.

Key Words: Socio-Personal Characteristics; Agro-Economic Factors; Tribal Millet Farmers; Perceived Advantages of Millets; Millet Cultivation

Introduction:

There are 437 tribes in India and Odisha is inhabited by 62 tribes with a total strength of approximately six million (5915067) constituting 22.43 per cent of the total state population (Rajkishore, 2007). Tribal population is ethnic in composition, smaller having subsistence economy based on forest, wages and shifting cultivation. Shifting agriculture was un-productive and un-economic holdings under un-irrigated condition in the undulating terrains with traditional skill and primitive implements wherein raise only one crop during the monsoon (Sadangi, 2016). Therefore, they have to supplement their economy by other types of subsidiary economic activities. They have simple technique, simple division of labor, small-scale units of production and no much investment power. The production, distribution and consumption are limited to the family. The ability of a household to command sufficient resources for food and basic needs is largely dependent upon social, material and economic conditions (Chhotray, 2004). The livelihood strategies of the tribal households are determined mostly by their social, demographic, economic and cultural settings. Tribal economy is affected by poverty of the physical environment, ignorance of efficient technique of exploiting natural resources and lack of capital for investment therefore, lack of food security is a major problem for them (Panigrahi *et al.*, 2010). The socio-economic improvement of the tribals still remains a question in spite of implementation of many development projects, the sustainable rural livelihood approach needs to be adopted to mitigate problems related to development in such regions. Koraput is the third largest district in Odisha in terms of its geographical area and it is fifteenth in terms of population. The geographical area is of 88 sq. km, which constitutes 5.7 percent of the total geographical area of the State. As per the 2011 Census, the population in the district was 13.8 lakhs, out of which male 6.8 lakhs and female 7.0 lakhs. Among the social categories, scheduled caste (SC) constitutes 2.0 lakhs and scheduled tribes (ST) 7.0 lakhs and the others constitute 4.8 lakhs. The literacy rate of the district is 49.2 percent, out of which the male literacy is 60.3 percent and female literacy is 38.6 per cent (Rao, 2019). An investigation on tribal livelihoods necessitates examination of socio-economic settings, resource characteristics, their livelihood options and support systems. Mostly, tribal agriculture in our country is dominated by millets cultivation as one of the major source of their food, nutrient and livelihood. The millets are being grown traditionally with their age-old farming practices, which were not much productive and profitable. However, the

millets are integral part of their livelihood. In this paper, an attempt was made to examine the resource base including socio-farming status and livelihoods vis-a-vis advantages of millets in Koraput district of Odisha.

Review of Literature:

Mishra *et al.*, (2021) studied socio-economic variability of tribal poultry farmers of Koraput district, Odisha. The findings revealed that majority (44.38%) of the tribal poultry farmers belonged to middle age group and 49.38% of them had of primary level of education. Most (82.5%) of the respondents owned semi-pucca house and 60.62 % had possession of less than eight animals besides, poultry. Whereas, 61.25 % of them possessed less than 28 numbers of indigenous backyard poultry. However, majority (90.62%) of the farmers reported that the backyard poultry was their secondary occupation. It further revealed that 30% of them had less than 1.00 acre land holding only, 21.25% of them had annual income of above one-lakh rupees.

Hemalatha *et al.*, (2013) studied socio-economic profile of millet growers in Karnataka. It was found that majority (66%) of the farmers were literates, 30% had primary level education, while 5.8% had education up to the degree level. Majority of the farmers (81%) dwelled in stone and mud house and only 18% had own houses constructed with cement and bricks. On an average, three members per family worked as family laborers on their own farm by which their wages were saved. They worked for 243 days in a year as laborers as well as supervisors including their farming activities. The annual income was mainly from agriculture and other non-agriculture operations like masonry, working in industry and petty business. The annual earnings from jobs in some cases were upto to Rs. 74,479/- and from agriculture were Rs. 44,907/-.

Roy *et al.*, (2013) studied socio-economic status of hill farmers: of Almora district in Uttarakhand. The study showed that 58 percent of the respondents were belonged to scheduled caste and rests were from general class. The average age of the respondents was 42 years and most were having medium education level (63.33%). Agriculture was the sole occupation of 25 percent farmers whereas others had subsidiary occupations like labor, shop keeping, driving etc. Majority of them had medium level of social participation (78.34%). The average landholding was 0.40 ha and most were having a medium herd size (66.67%) of goat. The respondents had an average farming experience of 19 years. Most of the farmers had medium levels of annual income (55%) and material possession (60%). In totality, the study revealed that 26.67 percent of farmers belonged to low socio-economic status followed by, 55 percent of farmers belonged to medium socio-economic status and 18.33 percent belonged to high socio-economic status category. It influenced the agricultural activities to create extend.

Objectives of the Study:

- To study socio-personal and agro-economic characteristics of millets farmers vis-a-vis perceived advantages of millets in tribal area
- To find out relationship between perception of millet farmers towards advantages of millets cultivation and their socio-economic characteristics

Methodology:

The present study was conducted in three tribal villages namely, Bagraguda, Talalimka, Aminguda in Koraput blocks of Eastern ghats in Koraput district of Odisha state. The location was purposefully selected because of having intensive millets cultivation and majority of the population (>80%) were tribals in the Koraput district. Total sample of 100 from the three villages in the study area, who were millets farmers of different categories, were selected randomly. Total 15 socio-personal and agro-economic variables were selected (Table 1) for the study and these were categorized on the basis of equal class intervals for interpretation. A semi-structured interview schedule was developed for data collection, which was pre-tested with sample of 10 farmers who were not included in the actual sample of the study and validated with experts' opinion. Accordingly, final interview schedule was developed with suggested modifications. The data pertaining to the crop season 2020-21 were collected on different aspects millets cultivation and allied farming by conducting personal interviews, facilitated group discussions and empirical observations. The data were analyzed by using descriptive statistics, frequencies, percentage and correlation using SPSS statistical tool.

Limitations of the Study:

- There are different regions with similar farmers' background in the country, which could not be covered with limited resources and within stipulated time.
- The research was carried out in Koraput district of Odisha state, which can't be generalized the results of millets farmers in such areas of the country.

Results and Discussion:

Socio-Personal and Agro-Economic Characteristics of Millets Farmers in Koraput:

Social and economic characteristics have always influence on individual's occupation and livelihood besides, other factors. Out of 100 selected millet farmers, 91% were belonged to the tribal community in the selected study area. In total 15 socio-personal characteristics of millets, farmers of Koraput district of Odisha were studied and results are presented hereunder with appropriate classifications (Table 1).

Age: The study revealed that maximum number 39% of farmers out of the sample were middle age (35 to 45 years) followed by, 35 per cent farmers belongs to young age (<35 years) and only 26 per cent farmers were

found in old age (>55 years) group. It is observed that majority of the respondents were belonged to middle age group. This might be due to fact that as demographic transition was taking place, only few of younger generation was taking up farming occupation. It is obvious to find more number of middle-aged people continuing with farming, as it was their traditional occupation for generations.

Education: The educational status of the respondents revealed that 38 per cent of them were studied up to middle school and 34 percent were illiterate. If both put together, it was found that more number of respondents (72%) falling into the categories of illiterate to middle school. This is indicating that age of the majority respondents was higher and general literacy level of the area was low.

Gender: It was observed that 96 per cent of male farmers were head of the family while; only four per cent female farmers were head of the family. It is vivid picture of patriarchal kind of society where males were dominated and had always influence on their family decision-making. This findings was supported by (Chapke *et. al.*, 2022)

Family Size: Medium size family comprising of 5 to 6 members was predominant among the millet farmers (74%) in the study area followed by, small sized family (24%) comprising of less than 4 members. Thus, it may be concluded that majority of respondents had 'medium' family size. The probable reason behind the predominance of medium size family includes more of rural dominance and less of urbanized orientation in the study area.

Land Holding: Majority of the farmers (78 %) had low land holdings less than 1.5 ha. Only, 22 per cent had above 1.5 ha up to 3.00 ha land holding. Overall, majority of the farmers had very low land holding compared to other part of the county. Most of the land of this area was attributed to light soils and of resource-poor category. However, holding with rich soil type and irrigation facilities had weightage in society of the farmers. It indicated that there is need to formulate small farmers-oriented millets promotion strategy for livelihood upliftment of the farmers.

Area under Millet: A majority of farmers (78%) cultivated millets crop on less than 0.4 ha area. However, eighteen per cent farmers apportioned 1.6-3.0 ha area for millets crop. This allotment of lands (>0.4) ha by the majority farmers out of their smallholdings in this area which indicates their favorable attitude towards millets cultivation to meet out their needs.

Mobile Telephone: A majority of farmers (31%) have had only mobile telephone out of which 7% had android mobile phone. However, 69% per cent farmers had still no mobile phone, which is primary source of information now-a-days. Their poor income status may be the reason for this status.

Source of Credit: A majority of the farmers (92%) had not availed credit facilities from any organization. A negligible farmer (2%) had availed credit from private agencies. It indicated that majority of the farmers were not aware about public and private credit facilities available for development activities and they didn't use much improved agriculture practices, which requires more monetary inputs.

Social Participation: As far as participation in social organizations was concerned, 46 per cent of the farmers were members of different organizations like tribal community group, youth club, and farmers' commodity group etc., whereas, 54 per cent of the farmers were not members of any organization. The low education status and unawareness might have led to their low social participation.

Farming Experience: Majority of the respondents (46%) had rich experience in millet cultivation ranged between 12 and 27 years followed by, respondents (39%) with experience of less than 12 years. It implies that millets cultivation in Koraput area was traditional occupation which continued from their ancestors. Thus, there is urgent need to educate and train the farmers about new production technologies of millets along with appropriate use of inputs for obtaining maximum profits.

Annual Income: Annual income refers to total income of the farmer from all the sources, which was found to be medium. Majority of them (71%) had annual income ranged between Rs.52,000/- and Rs.90,000/- followed by, 16% had below Rs. 52,000/-. A few of them (13%) had annual income above Rs.90,000/- per annum. Overall, annual income of the farmers in Koraput area was found to be lower than the average farmers of the country where improved agriculture is in practice.

Livestock Population: Seventy-two per cent of the farmers had less than seven animals (goat, cow and buffalo). Only 14% had 7-12 animals whereas, only six percent farmers had more than twelve animals. They kept livestock to support their livelihood earnings, which was difficult from the resource-poor land holdings only. There is need to make aware the farmers regarding alternate source of income and high nutritive value of millets fodder and millets byproducts as feed for their livestock.

Impact of Climate Change: Different climate change factors affected to the farmers during last 10-20 years which were recorded as highlighted in Table 1. Their impact was realized as high (65%) and medium (29%) level by the farmers. It prompted that the farmers in this region was affected by climate changes, severely. They should be empowered to cope up with such adverse effect in future.

Mass Media Use: An overall view of mass media use revealed that majority of the respondents (70%) had low level of mass media use. One-third (26%) of respondents had high level of mass media use. The majority of the respondents were not using mass media to seek and gain the knowledge regarding improved agriculture

including millet cultivation may be because of low literacy, accessibility of e-media and income level of the respondents.

Decision Making Behavior: Majority (44 per cent) of the respondents had medium level of decision-making followed by, (33%) and high (23%) had low and high level of decision-making, respectively. The socio-personal and agro-economic characteristics of the respondents like might had influence decision-making process. Predominance of higher aged, low literacy, big family size, low income etc. They need to be educated and empowered with technical support as most of the respondents consulted family members, friends and neighbors for taking advice for making decision.

Table 1: Socio-personal and agro-economic profile of millets farmers of in Koraput

S.No	Variables	Category	Frequency	(%)	Mean	SD
1	Age					
		Young (<35)	44	35	39.56	11.73
		Middle age (35-45)	49	39		
		Old (>45)	32	26		
2	Education					
		Illiterate	43	34	4.4	3.69
		Primary education (up to 4 th standard)	5	4		
		Middle school (up to 7 th standard)	48	38		
		Higher secondary (up to 12 th standard)	29	23		
		Graduate and above	0	0		
3	Gender					
		Male	120	96	0.96	0.20
		Female	05	4		
4	Family size					
		Low (<4)	30	24	4.336	1.263
		Medium (5-6)	93	74		
		High (>6)	2	8		
5	Land holding (ha)					
		Low (<1.5 ha)	98	78	1.234	1.179
		Medium (1.6- 3ha)	20	18		
		High (>3 ha)	5	4		
6	Area under millet					
		Low (<0.4 ha)	97	78	0.370	0.286
		Medium (0.5- 0.9 ha)	21	17		
		High (>0.9 ha)	7	6		
7	Mobile telephone					
		Basic	86	69	0.832	0.534
		Android	9	7		
		No	30	24		
8	Source of credit					
		Public	7	2	0.104	0.377
		Private	3	6		
		None	115	92		
9	Social participation					
		Yes	58	46	0.720	0.655
		No	67	54		
10	Experience in millet cultivation					
		Low (<12 years)	48	39	16.488	9.471
		Medium (12-27years)	58	46		
		High (>27 years)	18	14		
11	Annual income (Rs.)					
		Low (<52000)	20	16	72272	31733
		Medium (52000-90000)	89	71		
		High (>90000)	16	13		
12	Livestock population					
		Low (<7)	90	72	4.736	4.040
		Medium (7-12)	28	22		
		High (>12)	7	6		

13	Impact of climate change					
		Low (<43)	8	6	20.504	4.371
		Medium (43-51)	36	29		
		High (>51)	81	65		
14	Mass media use					
		Low (<8)	87	70	6.888	2.226
		Medium (8-11)	33	26		
		High (>11)	5	4		
		High (>51)	8	6		
15	Decision making					
		Low (<17)	41	33	58	8.35
		Medium (17-24)	55	44		
		High (>24)	29	23		

Perceived Advantages of Millets Farmers:

Mostly, perception towards advantages of millets cultivation had influence of socio-personal of the farmers and agro-economic characteristics which were measured with seven components on five-point continuum and ranked them on the basis of mean weighted score (MWS). The millets cultivation was perceived by the farmers (Table 2) as 1) technically feasible, 2) economically viable, 4) compatible with existing farming, 5) economically sustainable and 2) cost-effective up to five ranks in order. The respondents' level of perceived advantages of millets cultivation showed (Table 3) that 46 per cent of the respondents had low level of perception followed by, 36 per cent had medium level of perception while only 18 per cent of them had high level of perception. It shows that the respondent didn't know much about benefits of millets cultivation although, they were experienced millets growers since generations.

Table 2: Perceived advantages of millets cultivation by the farmers

S.No	Millet Cultivation	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Wtd. Score	Rank
1	Technically feasible	0	116	180	60	6	362	I
2	Cost-effective	5	92	141	102	3	343	II
3	Economically viable	0	48	69	174	3	294	III
4	Compatible to be tune with past experience	0	16	81	180	4	281	IV
5	Ecologically sustainable	0	8	102	160	9	279	V
6	Socially justifiable (equitable)	0	0	36	142	42	220	VI
7	Culturally acceptable	0	0	24	128	53	205	VII

Table 3: Level of perceived advantages of millets cultivation

S.No	Category	Frequency	(%)	Mean	Standard Deviation
1	Low (< 13)	57	46	15.736	3.005
2	Medium (13-17)	45	36		
3	High (> 17)	23	18		

With assumption that advantages of millet cultivation perceived by the farmers is output of various socio-personal traits of the respondents and agro-economic factors. Therefore, relationship of fifteen such variables with perceived advantages of millet cultivation was analyzed. Results revealed (Table 4) that correlation between perceived advantages of millet cultivation and three dependent variables namely, gender, social participation and mass media usage were found to be significantly correlated at 0.01 level of probability ($P=0.01$). Whereas, social participation and mass media had negative relation with the perceived advantages of millets cultivation. And, age of millets farmers were found to be significant and negatively correlated with perceived advantages of millet cultivation at 0.05 level of probability ($P=0.05$). It is depicted that there was no awareness about benefits of millets among millets farmers social organizations and media programmes which led to low level of perceived advantage of millet cultivation. However, male of the family were more inclined towards perceived advantages of millet cultivation.

Table 4: Correlation between socio-personal and agro-economic characteristics of the millets farmers, and their perceived advantages of millet cultivation

S.No	Variables	Mean	SD	Correlation(r)
1	Age	39.56	11.73	-.190*
2	Education	4.4	3.69	-.009
3	Gender	0.96	0.20	.282**

4	Number of family members	4.336	1.263	.162
5	Land holding (ha)	1.234	1.179	-.122
6	Area under millet cultivation	0.370	0.286	-.115
7	Android mobile	0.832	0.534	-.063
8	Source of credit	0.104	0.377	-.175
9	Social participation	0.720	0.655	-.298**
10	Experience in millet cultivation	16.488	9.471	-.172
11	Annual income (Rs.)	72272	31733	.061
12	Livestock population	4.736	4.040	-.088
13	Impact of climate change	20.54	4.371	-.109
14	Mass media use	6.888	2.226	-.224**
15	Decision making	58.00	8.35	.097

Conclusion:

From results of the study, status of socio-personal and agro-economic characteristics namely, low education, medium size family with 5-6 members, low land holdings, low access to communication tools, low income, low social participation and media use attributed to overall low socio-economic status of the millets farmers especially of the tribal community in Koraput district of Odisha state. The rich experience in millets cultivation from traditional farming and requirement of fodder for their livestock might have promoted to perceived millets as advantageous crop in their area. The tribal community in India is indigenous people, they have now begun to break their shell of unique characteristics and they are in a state of transition. Their low and resource-poor socio- and agro- economic background coupled with the presence of greater inequality among the tribes compared to other common people of the country intensify their miseries. Introduction of low resource intensive crops like millets may be suitable option which need attention of policy makers and development agencies to develop viable strategy for their including latest millets technologies and allied farming. These apart, their socio-economic aspects like their education, skill development, financial support and livelihood security should be strengthened by creating awareness of potential agriculture and allied technologies. Policy makers should plan to ensure nutrition and livelihood security of tribal farmers in Koraput to bring them up to level of equity in the society.

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Conflict of Interest:

All authors declare no conflict of interest.

References:

1. Chapke R. R., Bharat & Tonapi, V., A. (2022). Socio-economic characteristics of tribal farmers vis-à-vis perception about advantages of millets cultivation in hilly area, India. *International Journal of Chemical Studies* 10(2), 39-45.
2. Chhotray.2004. G.P. Health status of primitive tribes of Orissa. *ICMR*.33, 10, 1-6
3. Hemalatha, S., Kamatar, M.Y. and Rama, K.N., (2013). Socioeconomic profile of millet growers in Karnataka. *Research Journal of Agricultural Sciences*, 201(4) 1-3.
4. Mishra, J., Das, B.C., Swain, P. and Shweta, K. (2020). Socio-economic variability of tribal backyard poultry farmers of Koraput district, Odisha. *Young*, 49, 30-63.
5. Panigrahi, D., Mohanty, P.K., Acharya, M. and Senapati, P.C., (2010). Optimal utilisation of natural resources for agricultural sustainability in rainfed hill plateaus of Orissa. *Agricultural Water Management*, 97(7) 1006-1016.
6. Rajkishore. (2007). A Study on Health and Socio-economic Status of the Tribal Population in Orissa. *Journal of Health Management*, 9(3) 343-367.
7. Rao, E.K., (2019). Socio-Economic status of dalits in Andhra Pradesh and Telangana: An enquiry. *Asian Journal of Multidimensional Research (AJMR)*, 8(5) 57-80.
8. Roy, M.L., Chandra, N., Kharbikar, H.L., Joshi, P. and Jethi, R., (2013). Socio-economic status of hill farmers: An exploration from Almora district in Uttarakhand. *International Journal of Agriculture and Food Science Technology*, 4(4) 353-358.
9. Sadangi, A.S.B. (2016). Livelihood Patterns and Resource Base of Tribals in Koraput and Rayagada District of Odisha. *Indian Research Journal of Extension Education*, 12(2) 307-312.