



FACTORS EFFECTING ADOPTION OF RECOMMENDED AGRICULTURAL PRACTICES OF ORGANIC TURMERIC IN KANDHAMAL DISTRICT OF ODISHA INDIA

Asish Kumar Panigrahy and Satarupa Modak*

Centurion University of Technology and Management, Odisha – 761211, India

*Corresponding author Email : satarupamodak0@gmail.com

(Date of Receiving : 09-05-2022; Date of Acceptance : 06-09-2022)

ABSTRACT

Turmeric (*Curcuma longa* L.) is an important cash crop grown by tribal farmers of Odisha for their livelihood. It has been observed that a large number of tribal farmers still practice the traditional method of cultivation of turmeric. Turmeric is cultivated in slopes with or without terraces and in plains as a sole crop and intercrop. Local varieties 'Kandhamal Local' of turmeric are grown in Kandhamal district of Odisha. The present study was conducted during (2020-21) in Kandhamal district of Odisha to analyze the Factors responsible for willingness to adopt recommended agricultural Practices by turmeric growers and factors, socioeconomic constraints, infrastructure and situational constraints, personal constraints, managerial constraints, institutional & policy constraints and overall constraints affecting responsible for willingness to adopt recommended agricultural practices of organic turmeric. It was found that turmeric growers had a medium to high level of willingness to adopt recommended agricultural practices of organic turmeric. And among selected factors the respondent's extent of participants had a negative and significant relationship followed by nature of participants and size of agricultural and had positive and significant relationship with Factors responsible for willingness to adopt recommended agricultural Practices of Organic Turmeric. KASAM, Horticulture extension workers, Horticulture department were regularly motivating them to adopt recommended agricultural practices of organic turmeric.

Keywords: Influential Factor, farmer's willingness to adopt, agricultural practices of organic Turmeric.

Introduction

Generally Turmeric are cultivated in uplands, hill slopes and even on hilltops where shifting cultivation (PODU) is practiced and some farmers blindly believe in the traditional techniques. Therefore, adoption of new technology may not get the desired amount of yield and thus may incur even more losses. Moreover some of them show gradual interest in adoption of new technologies and cultivation practices to increase in yield.

These Kandhamal turmeric are being produced 'Organically' without chemical fertilizer and pesticide. The cultivation of turmeric in Kandhamal is mostly dominated by the Kondh (ST Caste) group of tribal communities for its distinctive yellow color. It is their chief source of income for the people of Kandhamal, as they export it in large quantities, also bartering it for grain and salt with the merchants from Ganjam, Sambalpur, Cuttack, Puri and other neighboring regions.

The local turmeric (var: Kandhamal local) most grown by the tribals contains 2 to 3 percent curcumin, 12.15 percent oleoresin and 5.33 percent volatile oil. Its keeping quality is very good and the aroma is very prominent, while the recently introduced improved variety of turmeric contains 4

to 5 percent curcumin, 10 to 15 percent oleoresin and 2 to 4 percent volatile oil.

Kandhamal has no industry or no any job-generating firms. The people here primarily depend on agriculture. As turmeric is grown across the district, farmers of Kandhamal opt their living by cultivating the crop. The growth of turmeric is almost a religious habit of the people of Kandhamal. It is the chief source of income of tribal farmers. The tribal people of the district are backward both economically and educationally. They are following traditional methods of cultivation. Turmeric is generally cultivated in the uplands, hill slopes and even on hilltops where shifting cultivation (PODU) is practiced. Some of the farmers have blind faith as they have been practicing traditional cultivation for many years. Adoption of new technology may not get the desired amount of yield and thus may incur even more losses. While few of them show gradual interest to adopt new technology and cultivation practices to increase yield and sell more organic turmeric in the market with desire to improve their financial condition.

With adoption of recommended technology and applying organic manures in their field helps to increase organic turmeric production, which ultimately opens the chance to attend premium marketing of organic Turmeric in

the global market. Thus, creating a niche market of organic Turmeric in Kandhamal as organic turmeric is not adequate. According to its demand. It will ultimately result in the development of the economic status of farmers of this particular region. These farmers also can export produce to other states and it will not only benefit the farmers but also the traders or businessmen involved in this sector. Hence creating willingness among farmers to adopt recommended technology and scientific method of farming can benefit them economically as well as it will provide health benefits to people who consume organic products.

Thus, adoption of recommended Agricultural Practices of Organic Turmeric will increase their production level. The supply of products can meet the demand. If they produce more, they will supply more, so ultimately market value will increase. It can lead to their improvement in income/economic status. Loss of production/ yield due to insect or pest attack can be controlled effectively with organic inputs. Consumption of organic food products is good for health as well as harmless for the ecology. By keeping in view, the above reason farmers should adopt recommended technologies of organic Turmeric.

However, farmers are not ready to adopt any recommended technology because they think that this input and labor-intensive method of scientific agricultural practices will be burdensome, as they have been following so far with low cost and not applying any external inputs rather than seeds. Another reason is that farmers are not willing to take risks to introduce any new technology, as they are unaware about the benefits of recommended technology or practices. They have no awareness about advantages or disadvantages, as well as benefit-cost ratio. So, most of them put their step backwards towards adoption of any new technology.

Materials and Methods

The study was conducted in the Kandhamal district of Odisha famous for growing organic turmeric among the state. From the district 6 blocks were selected purposively to complete the sample size of 180. Ex-post-facto research design was selected to conduct the study and primary data was gathered with help of a structured interview schedule. To find out the factors effecting adoption of recommended organic turmeric regression analysis was used.

Result and Discussion

Descriptive Statistics: To understand the dispersion of selected independent variables in the research area mean and standard deviation was measured and tabulated in the following table.

Table 1 : Mean and Standard deviation Value (n=180)

S.N.	List of variables	Mean	Standard Deviation
1.	Experience in Agricultural Activities	30.92	4.43
2.	Experience in allied activities	20.11	6.63
3.	Annual income	1.92	0.30
4.	Distance of the nearest Mandi	1.62	0.61
5.	Preferred Method of Cultivation practices	1.00	0.00
6.	Mode of funds	1.01	0.10
7.	Source of funds	1.00	0.00
8.	Know about the Cultural Practices	1.00	0.00
9.	Fertilizer Application	1.00	0.00
10.	Weed, Insect & Pest management	1.00	0.00

11.	Marital status	1.00	0.00
12.	Total number of members	5.25	1.52
13.	No. of members help in family farming	1.77	0.63
14.	No. of adult Male	2.50	0.89
15.	No. of adult female	2.71	1.01
16.	Size of agricultural land	3.02	0.25
17.	Irrigated land	0.50	0.50
18.	Unirrigated land	0.86	0.47
19.	Low cultivated land	0.32	0.45
20.	Homestead land	0.56	0.40
21.	Forest land	0.57	0.45
22.	Waste land	0.09	0.30
23.	Housing condition	10.00	0.00
24.	Transportation facility	2.70	0.46
25.	Farm power	2.90	0.54
26.	Household implements	2.57	0.97
27.	Communication tools available	3.06	1.70
28.	Nature of participation	1.45	0.50
29.	Extent of participation	3.78	0.91
30.	Frequency of Visit	17.67	1.05
31.	Total Innovation	9.55	2.29
32.	Motivation behind adopt recommended agricultural	29.53	0.69
33.	Attitude towards Organic farming	93.20	2.53
34.	Economic constraints	5.21	0.59
35.	Infrastructural & situational constraints	4.90	0.42
36.	Personal constraints	4.94	0.45
37.	Managerial constraints	6.97	0.36
38.	Institutional & policy constraints	11.07	0.75
39.	Overall constraints	33.11	1.66

From table no 1, average experience in agricultural activities of the selected respondents was 30 years and with allied activities was 20 years; mean annual income was 1.92 lakhs; distance of the nearest mandi was about 1.62 kms; all respondents preferred to practice traditional method of cultivation as well as managed with Borrowed funds, collect funds from public banks, Know about the Cultural Practices Word of mouth, Fertilizer Application & Weed, Insect & Pest management usage of Organic Products only; and all the respondents were found married. Average respondent has at least 5 members in their family; almost no one from family to help in farming, on average 2 male and 2 female in every household; 3 acres of agricultural land on average; almost no acreage of Irrigated land, non irrigated land, Low cultivated land, Homestead land, Forest land, Waste land. Housing conditions include at least having kachha house or Mixed house or single storied pakka or double storied pakka, LPG connection, electricity, own drinking water source or water purifier, sanitary latrine or ring latrine. Bullock cart or Cycle as own transportation vehicle; Power Tiller or Tractor as Farm power implement; Wooden cot or furniture or Fridge as Household implements; Radio or Television or Telephone as Communication tools available with most of the respondents; connected with more than 1 grass-root organization with occasional type of contact; outside contact score was more than 17; average total innovation score more than 9; Motivation score was 29.53, Attitude towards Organic farming score 93.20, Economic constraints score 5.21, Infrastructural & situational constraints score 4.90, Personal constraints score 4.94, Managerial constraints score 6.97, Institutional & policy constraints score 11.07, Overall constraints score 33.11.

Factors to Adoption of recommended agricultural technologies practices of Organic Turmeric:

Table 2 : Factors affecting adoption of recommended organic turmeric (n=180)

Sl. No.	Variable	Coefficient value	Significance
1.	Type of family	0.095	0.409
2.	Total number of members	-0.176	0.268
3.	No. of members help in family farming	0.078	0.583
4.	Nature of participation	1.440	0.000
5.	Extent of participation	-1.871	0.000
6.	Frequency of Visit	-0.137	0.299
7.	Total Innovation	0.010	0.908
8.	Motivation behind Adopt Recommended Agricultural	-0.150	0.134
9.	overall constraints	0.121	0.218
10.	Age	0.014	0.884
11.	Education	0.088	0.364
12.	Annual income (in Rs)	-0.161	0.127
13.	Size of agricultural land	0.178	0.043

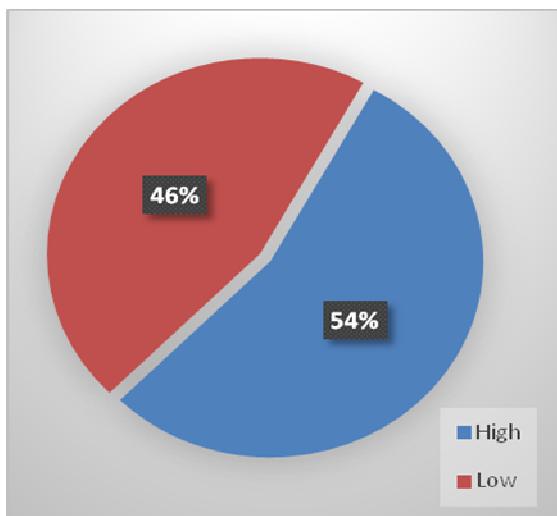
It can be seen from the table 2 that among the Type of family, Total number of members, No. of members help in family farming, Nature of participation, Extent of

participation, Frequency of Visit, Total Innovation, Motivation behind Adopt Recommended Agricultural, overall constraints, Age, Education, Annual income (in Rs), Size of agricultural land only nature of participants, extent of participants and size of agricultural land holding were the most effective factors identified to effecting attitude of the respondents towards recommended organic farming technologies.

As per secondary source of information KASAM and state department of Horticulture organizes regular training and awareness campaigns to popularize recommended Organic Turmeric production technology with the help of grass-root level organizations.

Both nature of participation and extent of participation indicates farmers active engagement with grass-root level organization, as well as helps to strengthen one's knowledge management behavior which may directly influence a person to adopt scientific methods of cultivation. Again, the large size of agricultural land improves risk management behavior of individuals to adopt new technologies without crop failure or economic uncertainties.

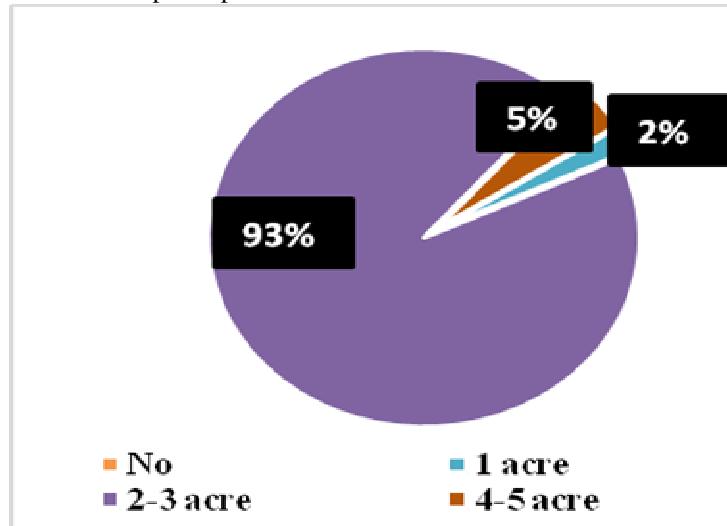
Nature of participation, Extent of participation, Size of agricultural land found as the major factors directly influence willingness to adopt.



A. Distribution nature of participation



B. Distribution of extent of participation



C: Percentage of Size of agricultural land

Fig. 1 : Factor favorable for willingness to adopt

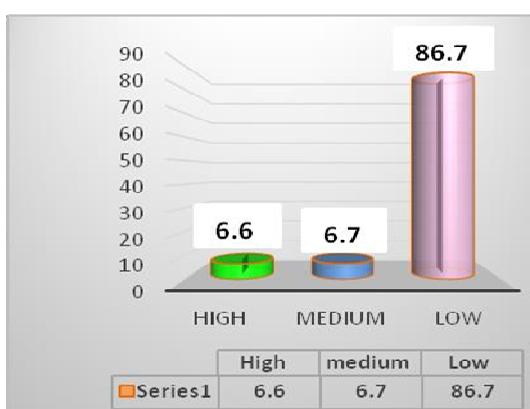
It can be seen from the data presented in figure-1(A), found that majority of the respondents that is (54.4%) respondents were highly participating in different organization such as; KASAM, KVK and Horticulture department whereas only 45.6 percent of respondents were having a record of very less participation in different organization.

It can be seen from the data presented in figure-1(B), majority of (54.4%) respondents were highly participating in different organization it means they were regular contact with different organization and also attend the meetings regularly and followed by 33.3 percent of respondents were occasionally came to different organization, 12.3 percent respondents were never attending any meetings and contact with different organization because they are socially and educationally backward class. They do not benefit from

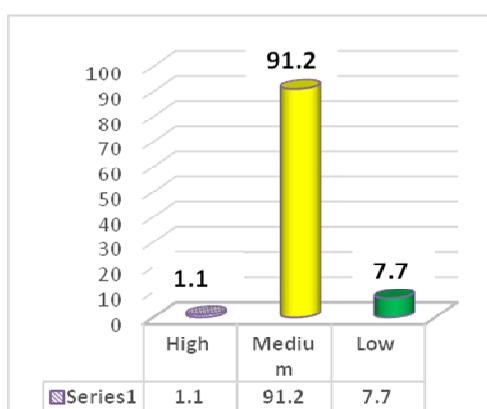
participating in the different organizations and also think they are well with their family, if they are involved in any organizational activities then will lose money as well as time.

The data presented in Figure-1(C), majority of (93%) respondents having around 2-3 acres of land and getting more yield also followed by few of (5%) respondents having around 4-5 acres of land and only 2 percent of respondents having one acre land.

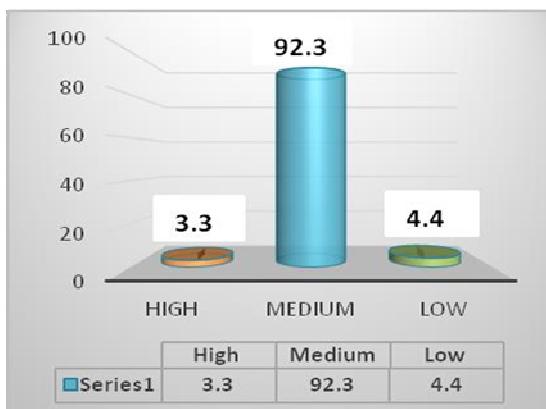
4. Constraints faced by the respondents while adopting agricultural practices of organic turmeric: It can be seen from the data presented in figure-2(A), the majority of (86.7%) respondents where economic standard was very low because they were economically and educationally backward class, followed by 6.6 percent and 6.7 percent respondent's economic standards were high and low respectively.



A. Economic constraints



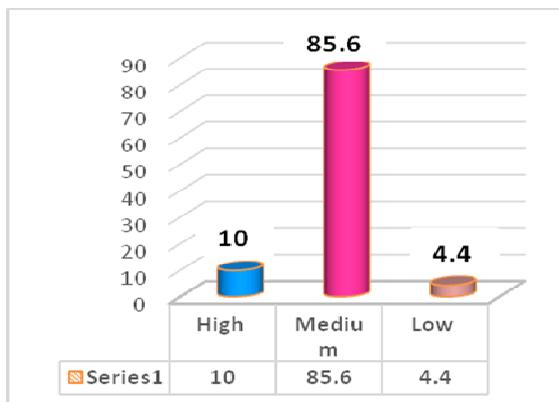
B. Infrastructural and situational



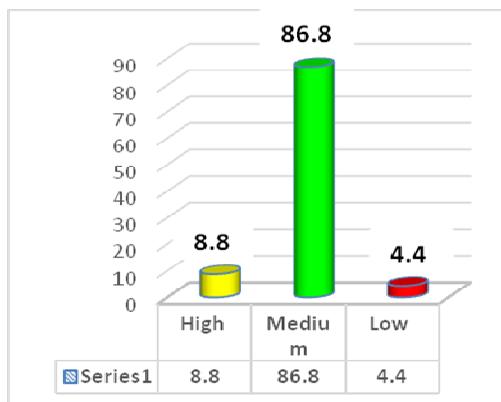
C. Personal constraints



D. Managerial constraints



E. Distribution of Institutional & policy



F. Distribution of Overall constraints

Fig. 2 : level of constraints to adopt recommended agricultural practices of organic turmeric

It can be seen from the data presented in figure- 2(B), majority of (91.2%) respondents were medium level infrastructural and situational conditions, 1.1 percent respondents were high level infrastructural and situational conditions was good because the male persons are included with farming and selling vegetables in local market and females of the house were included with SHG groups. That is why their income source was high and farmers getting houses in Pradhan Mantri Awas Yojana and Biju Pakka Ghar Yojana. 7.7 percent respondents were infrastructural and situational conditions were very poor because they were also reduced farming and female members of the house don't help in farming so their income source was low and they have not received any benefits from the government till date.

It can be seen from the data presented in figure-2(C), the majority of (92.3%) respondents were medium level of personal constraints followed by 3.3 percent and 4.4 percent respondents were high and low personal constraints respectively.

It can be seen from the data presented in figure-2(D), the majority (90%) of respondents were high management skills. They can handle all tasks with patience followed by 4.4 percent respondents were high management skill and 5.6 percent respondents were low management skill, cannot manage all the work well with patience becomes nervous, eventually gives up hope.

It can be seen from the data presented in figure-2(E), majority (85.6%) of respondents were reached few of the government policies and schemes and also getting all the benefits from government, and all the government schemes and policies have reached only 10 percent respondents, only 4.4 percent of respondents were not been able to access the government policies and schemes and have not yet received all the benefits from government.

It can be seen from the data presented in figure-2(F), majority (86.8%) respondents were classified into medium category of overall constraints, followed by 8.8 percent respondents were classified into the high category and 4.4 percent respondents were classified into lower groups. The probable reason might be they were financially weak and mostly benefits from government facilities have not yet reached them.

Table 3 : Ranking of selected constraints based on mean scores (n=180)

Particulars	Mean value	Rank scores
Economical constraints	5.21	III
Infrastructural & situational constraints	4.90	V
Personal constraints	4.94	IV
Institutional policy	11.07	I
Managerial constraints	6.97	II

It can be seen from table 3 that among selected constraints institutional policy was the mostly faced constraint by the responding farmers because in Kandhamal District, KASAM, MIDH, PKVY, Department of Horticulture and KVK are trying to mobilize farmers to convert from traditional cultivation to scientific method of

cultivation and also providing necessary facilities to farmers in a view to increase farmer's adoption of recommended technologies of Organic Turmeric and help them in better living, so that constraints institutional policy was the mostly faced constraint by the responding farmers followed by managerial, economic, personal constraints. And infrastructural and situational constraints were the least faced constraints.

Conclusion

They concluded that, Total Number of Members, Nature of Participation, number of members helping in family farming, number of adult male and extent of participation were having a negative significant relationship with willingness to adopt the recommended agricultural practices. Nature of participation, Extent of participation, Size of agricultural land found as the major factors directly influence willingness to adopt recommended agricultural technologies practices of Turmeric.

References

- Babu N.; Sukla A.K.; Tripathy P.C. and Prusty M. (2015). Traditional Cultivation Practices of Turmeric in Tribal Belt of Odisha, *Journal of Engineering Computers & Applied Sciences (JECAS)*, *Blue Ocean Research Journals*, 4(2): 52-57.
- Kanungo, S. (2015), Influence of Market Arrival on Price Formation of Turmeric in Kandhamal District of Odisha, *IOSR Journal of Business and Management (IOSR-JBM)*, 17(1): 1-5.
- Sahoo, P.P.; Sarangi, K.K.; Mohapatra, U.; Mohapatra, S. and Sangeetha, M. (2017). Economics of Organic Turmeric (*Curcuma longa*) Cultivation in Kandhamal District of Odisha, *Asian Journal of Agricultural Extension, Economics & Sociology*, 21(4): 1-8.
- Sahoo, P.P. and Sarangi, K.K. (2018). Value chain analysis of organic turmeric in Kandhamal district of Odisha, *Journal of Pharmacognosy and Phytochemistry*, 7(4): 1130-1137.

Website cited:

- Crop details of Turmeric, cited from www.commoditiescontrol.com, retrieved on 18.09.2020.
- Crop production and experts of turmeric cited from <http://apeda.in/>retrieved on 18.09.2020.
- Crop production turmeric cited from www.apeda.in, retrieved on 18.09.2020.
- History, crop details and botanical description of turmeric cited from <https://en.wikipedia.org/wiki/Turmeric>, retrieved on 15.09.2020
- Kandhamal district details about tribal people and literacy percentage cited from <https://kandhamal.nic.in>, retrieved on 12.09.2020
- Medicinal value of turmeric cited from www.phytojournal.com , retrieved on 15.09.2020
- Turmeric in Kandhamal district cited from www.thehindu.com, retrieved on 12.09.2020
- Area production of turmeric in India cited from www.tpci.in retrieved on 22/02/20021
- Kandhamal District demographic details cited from <https://kandhamal.nic.in>/retrieved on 18.04.2021