South Asian Journal of Agricultural Sciences

E-ISSN: 2788-9297
P-ISSN: 2788-9289
Impact Factor (RJIF): 5.57
www.agrijournal.org
SAJAS 2025; 5(2): 124-127
Received: 21-05-2025
Accepted: 25-06-2025

Rupeshwar
M.Sc., Department of Agricultural Extension Education, Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh, India

Dr. MK Chaturvedi
Professor, Department of Agricultural Extension Education, Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh, India

Bhupesh Kumar Baghmar
M.Sc., Department of Agricultural Extension Education, Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh, India

Chandraprabha
M.Sc., Department of Agronomy, Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh, India

Correspondence Author:
Rupeshwar
M.Sc., Department of Agricultural Extension Education, Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh, India

Assessing the problems faced by beneficiary farmers in adopting bio-organic pest control measures and suggestions for improvement under the tribal sub-plan in Mohla-Manpur-Ambagarh Chowki District, Chhattisgarh

Rupeshwar, MK Chaturvedi, Bhupesh Kumar Baghmar and Chandraprabha

DOI: https://www.doi.org/10.22271/27889289.2025.v5.i2b.199

Abstract
Tribal Sub-Plan came into existence in 1974-75 as a strategy for the development of areas having tribal concentration. Moreover, State Governments are expected to allocate TSP funds in proportion to the Scheduled Tribe (ST) population of the State in relation to the overall State Plan. The biological control offered by these living organisms plays a crucial role in reducing populations of pest insects, mites, and pathogens.The study was conducted in Manpur- Mohla - Ambagarh Chauki district of Chhattisgarh state purposively due to Tribal Sub Plan scheme was launched in this district in the year 2023-24, in the study area the maximum number of the respondents were found to be middle school 30.83 per cent.45.83 per cent of respondents had small-sized land holdings, according to the occupation 48.33 per cent had Agriculture + labour of occupation, annual income of farmers Rs. 1,00,000 to Rs. 2,00,000 found 46.67 per cent of respondent. irrigated area found 55.83 per cent in farmer's field. majority of farmers 68.66 per cent were having tube- well is major source of irrigation, Sources of information reveals that the majority of respondents 39.17 per cent only occasionally consulted Agriculture University / KVK. Perception about TSP Scheme of farmers the majority of farmers said highly useful observed by 70 per cent farmers for enhancing the farming practices and economic development provided intensive training to promoter-farmers, who trained the tribal farmers. majority of farmers Participated only one training program 71.66 per cent. Knowledge about the resistant variety against insect - pest of rice the found by respondents 77.50 per cent had knowledge. Yellow stem borer 65.83 per cent found is a major insect of the sampled farmers knowledge of farmers with regard to bio - organic control found 75.83 per cent. majority 62.50 per cent of respondents observed reduced cost when using bio-organic pest control in Rice. the management practices of Bio organic pest control in rice *viz*.

Keywords: Tribal sub-plan, bio organic pest control, rice, scheduled tribe component

Introduction
The Tribal Sub-Plan (TSP) was introduced in 1974-75 as a focused strategy for the development of areas with a high concentration of tribal population. Following the merger of Plan and Non-Plan expenditures, the Ministry of Finance re-designated the TSP as the Scheduled Tribe Component (STC). 41 Central Ministries / Departments have been identified for earmarking of STC. Moreover, State Governments are required to earmark TSP funds in proportion to the Scheduled Tribe (ST) population of the State, as per Census 2011, in relation to the total State Plan. Until 2017-18, the monitoring of the TSP plan was carried out by the erstwhile Planning Commission; however, from FY 2018-19 onward, the responsibility for monitoring the STC plan was transferred to the Ministry of Tribal Affairs.
The Welfare State is enshrined in the Indian Constitution with a view to ensure social justice to the most deprived society, especially the Scheduled tribes. Tribal administration has witnessed considerable progress since the Fifth Five-Year Plan. To ensure a coordinated and integrated strategy for the socio-economic development of tribal communities, Gujarat adopted the area-based development strategy known as the Tribal Sub-Plan (TSP) approach. It is a pioneer study in the field and the study is based on empirical work some broad conclusions have been drawn and suggestions given, which if acted upon, may go a long way in improving in the administrative, and management for tribal development.

This article is likely to interest policy makers, sociologist and social anthropologist, development planning and the intelligent and aware laymen concerned about the developmental issues (Makwana, Ramesh H. 2017) [8].

Biological control can be naturally occurring; foreign agents classically introduced and established; released native or foreign agents augmenting populations; or conserved or enhanced populations of native or foreign agents. In augmentative releases, organisms can be introduced inoculatively to develop a sustained population that regulates pests over time, or inundatively, where mass releases are carried out to quickly suppress pest populations. Promoting sustainable agriculture needs the present-day world to overcome the challenges arising from chemical fertiliser-based farming (Tugrul KM. 2019) [13].

Abiotic factors include conditions such as drought, low temperature, soil acidity, and salinity, whereas biotic factors comprise pests, weeds, and diseases (Onyango, 2014) [11]. Biological control is broadly understood as the regulation of a target organism's population through the activity of natural enemies such as parasites, predators, or pathogens, which reduce its density relative to the population level that would occur without them. Through biological control, these organisms play a vital part in suppressing populations of insect pests, mites, and pathogens. It is an environmentally sound and effective means of reducing or mitigating pests and pest effects through the use of natural enemies (Nafiu *et al*, 2014) [9].

Methodology

The study was conducted in Manpur- Mohla - Ambagarh Chowki district of Chhattisgarh state purposively due to Tribal Sub Plan scheme was launched in this district. In Manpur- Mohla, district Manpur, Mohla and Ambagarh Chauki blocks were sampled for the study & understand the Scheme of tribal sub plan, A Cross-sectional data was collected from purposively selected 150 farmers from selected blocks for the year 2023-24 randomly under registered tribal sub plan Scheme. The data collection was done personally using interview schedule and analyzed by using appropriate statistical tools and methods.

Rice (*Oryza sativa* L.) serves as the primary staple food for almost half of the global population (Dobermann & Fairhurst, 2002) [15]. India had an area of over 45.0 million hectares under rice, producing over 200 million tonnes of paddy in 2015. Total production of rice during 2019-20 is estimated at record 116.42 million tonnes (Welfare and Welfare, 2019) [16]. Moreover, in world production of rice was 500.8 in 2019-2020 (FAO, 2020) [17]. Rice crop occupied 4040.91thousand hectares in Chhattisgarh with total production of 8002.20thousand tonnes of rice during 2018-19 (State Stastical 2019) [18]. Rice blast, caused by Pyricularia oryzae, is recognized as one of the most devastating diseases of rice, leading to annual economic losses amounting to several million dollars (Dean *et al*., 2012) [4]. Varied types of symptoms, such as leaf blast, nodal blast, collar rot, neck rot, and panicle rot, have been named based on plant parts infected. In addition, pesticide exposure in humans can lead to poisoning and may adversely affect vital organs and biological functions (Law *et al*., 2017; Raman & Muthukathan, 2017) [19].

Both abiotic and biotic factors adversely affect the crop and causes extensive losses to the yield. Environmental stresses can be categorized as abiotic—such as drought, low temperatures, high soil acidity, and salinity—or biotic, which include pests, weeds, and diseases (Onyango, 2014) [11]. More than 70% diseases have been caused by Fungi, viruses, bacteria and Nematode (Zhang *et al*. 2009) [20]. Among various Rice diseases blast is the most destructive disease in the world (Nasruddin and Amin, 2013). Pyricularia oryzae, a fungal pathogen, is responsible for causing rice blast disease (Koutroubas *et al*., 2009) [21]. Damage caused by Pyricularia oryzae affects both the leaves and panicles of rice, indicating that the pathogen impacts the crop during both its vegetative and reproductive stages (Seebold *et al*., 2004) [22]. Infected panicles often lead to the development of partially filled or empty grains (IRRI, 2014).

To identify the problems faced by the beneficiary farmers towards adoption of bio-organic pest control measures and obtain suggestions to overcome them.

Problems faced by the farmers during the adoption of Bio - organic control in rice Crop

The major constraints in Bio - Organic pest control in rice is presented in Table 4.30. The major problem felt by farmers was Low effectiveness and prevention by bio control Rank - I (74.17 per cent), Non-availability of bio control products at local level Rank -II (73.33 per cent), Higher price of bio control product Rank-III (72.50 per cent), High risk and uncertainty of return Rank-IV (71.67 per cent), Lack of complete awareness about bio control products Rank-V(63.33 per cent), Lack of skill knowledge about bio control Rank-VI (62.50 per cent), Shorter shelf life Rank - VII (56.67 per cent), Lack of technical guidance Rank-VIII(45.00 per cent), Small land holding Rank -IX (37.50 per cent) and Predominance of the inorganic farmers in the locality rank-X (35.83 per cent).

Table 1: Problems faced by the farmers during the adoption of Bio - organic control in Rice Crop.

Sl. No.	Problems	Frequency	Percentage	Rank
1.	Non-availability of bio control products at local level	88	73.33	II
2.	Lack of skill knowledge about bio control	75	62.50	VI
3.	Lack of complete awareness about bio control products	76	63.33	V
4.	Shorter shelf life	68	56.67	VII
5.	Low effectiveness and prevention by bio control	89	74.17	I
6.	Higher price of bio control product	87	72.50	III
7.	Small land holding	45	37.50	IX
8.	Lack of technical guidance	54	45.00	VIII
9.	High risk and uncertainty of return	86	71.67	IV
10.	Predominance of the inorganic farmers in the locality	43	35.83	X

Suggestions given by the Farmers to overcome the problems faced by them during adoption of recommended Bio-organic pest control in Rice crop.

The results are shown in Table 4.16 with regard to the suggestions offered by the respondents to deal with the issue they encountered when adopting the Bio-Organic Pest control of Rice crop. Regarding the respondents who encountered suggestions adopting the Bio-Organic Pest control of Rice crop, the research shows that the majority of respondents For bio control, the government should focus on marketing channels so that farmers can get maximum benefit from bio control (90.83 per cent), followed by If farmers do not have knowledge of bio control, then the government should do more and more extension work for it so that bio control can get maximum promotion (84.17 per cent), For the awareness of bio control, the Gram Sevak working in the village should do the work of creating awareness about it so that the farmers can get maximum information about it (82.50 per cent), In order to increase the self-life of bio control, the addition of such elements in the bio control should be increased which can keep it safe for longer period of time. (76.67 per cent), Effectiveness is important in bio control. For this, we should pay proper attention to its ingredients and add the right ingredients (75.00 per cent),

Table 2: Distribution of respondents according to their suggestions to the adoption the Bio-organic pest control in Rice crop.

Sl. No.	Suggestions	Frequency	Percentage
1.	For bio control, the government should focus on marketing channels so that farmers can get maximum benefit from bio control.	109	90.83
2.	If farmers do not have knowledge of bio control, then the government should do more and more extension work for it so that biocontrol can get maximum promotion.	101	84.17
3.	For the awareness of biocontrol, the Gram Sevak working in the village should do the work of creating awareness about it so that the farmers can get maximum information about it	99	82.50
4.	In order to increase the self-life of biocontrol, the addition of such elements in the biocontrol should be increased which can keep it safe for longer period of time.	92	76.67
5.	Effectiveness is important in biocontrol. For this, we should pay proper attention to its ingredients and add the right ingredients	90	75.00
6.	Due to small land holdings, they are marginal farmers. They do not pay attention to biocontrol. For this, the Gram Sevak should do that work to encourage it	87	72.50
7.	Due to high cost of biocontrol, farmers do not buy it easily. Meaning, it should be provided to our farmers by the government.	86	71.67
8.	To make biocontrol, the government should make arrangements for teaching i.e. training should be given in KVK	77	64.17
9.	Farmers should be informed about biocontrol through Krishi Extension Officer and extension work should be done	54	45.00
10.	Local farmers should be informed about the harmful effects of inorganic pesticides to promote their biocontrol so that organic pesticides can be promoted	43	35.8

*Data based on multiple responses

Due to small land holdings, they are marginal farmers. They do not pay attention to bio control. For this, the Gram Sevak should do that work to encourage it (72.50 per cent), Due to high cost of bio control, farmers do not buy it easily. Meaning, it should be provided to our farmers by the government (71.67 per cent), To make bio control, the government should make arrangements for teaching i.e. training should be given in KVK (64.17 per cent), Farmers should be informed about bio control through Krishi Extension Officer and extension work should be done (45.00 per cent) and Local farmers should be informed about the harmful effects of inorganic pesticides to promote their bio control so that organic pesticides can be promoted (35.83 per cent)

Conclusion

The Tribal Sub-Plan (TSP) was introduced in 1974-75 as a focused strategy for the development of regions with a high concentration of tribal populations. Furthermore, state governments are expected to allocate Tribal Sub-Plan (TSP) funds in proportion to the Scheduled Tribe (ST) population within the state, relative to the overall state development plan. The study was conducted in Manpur- Mohla - Ambagarh Chauki district of Chhattisgarh state purposively due to Tribal Sub Plan scheme was launched in this district in the year 2023-24. The major problem felt by farmers was Low effectiveness and prevention by bio control Rank -I (74.17 per cent). The suggestions offered by the respondents to deal with the issue they encountered when adopting the Bio-Organic Pest control of Rice crop. the research shows that the majority of respondents for biocontrol, the government should focus on marketing channels so that farmers can get maximum benefit from biocontrol 90.83 per cent.

References

1. Aparna JS, Padinhateeri R, Das D. Signatures of a macroscopic switching transition for a dynamic microtubule. Scientific Reports. 2017;7(1):45747.
2. Bhadu K, Kaswan B. Organic weed management an important component of organic farming: a review. The Pharma Innovation Journal. 2018;11(7):1655-1660.
3. Borkar S. Studies on alkaliphiles: An industrially significant group of extremophiles [dissertation]. Goa: Goa University; 2002.
4. Dean R, Van Kan JA, Pretorius ZA, Hammond-Kosack KE, Di Pietro A, Spanu PD, *et al*. The top 10 fungal pathogens in molecular plant pathology. Molecular Plant Pathology. 2012;13(4):414-430.
5. Fahad S, Nie L, Hussain S, Khan F, Khan FA, Saud S, *et al*. Rice pest management and biological control. In: Lichtfouse E, editor. Sustainable Agriculture Reviews: Cereals. Cham: Springer; 2015. p. 85-106.

6. Iyagba AG, Ekpete CB. Perception and practice of organic farming among secondary school teachers in Ahoada East Local Government Area of Rivers State, Nigeria. British Journal of Applied Science & Technology. 2017;20(4):1-9.
7. Kumar JA, Deepa N, Divya K, Selvi RP. A study on satisfaction level and constraints faced by farmers in adopting the biocontrol products in Western Zone of Tamil Nadu. Age. 2022;15(24):3.
8. Makwana RH. An impact of tribal sub-plan scheme on tribal community: A sociological study. International Journal of Development Research. 2017;7(7):13879-13886.
9. Nafiu BS, Dong H, Cong B. Principles of biological control in integrated pest management. International Journal of Applied Research and Technology. 2014;3(1):104-116.
10. Ommen. Livelihood support for tribal population in Kerala through planned assistance: an evaluation of the tribal sub plan (TSP) in the agricultural sector [dissertation]. Vellanikkara: Department of Agricultural Extension, College of Horticulture; 2009.
11. Onyango AO. Exploring options for improving rice production to reduce hunger and poverty in Kenya. World Environment. 2014;4(4):172-179.
12. Seema. Analysis of socio-economic profile of scheduled castes and families. Maharashtra Journal of Extension Education. 2002;12:204-206.
13. Tugrul KM. Soil management in sustainable agriculture. In: IntechOpen; 2019. doi:10.5772/intechopen.88319. Accessed 2022 Aug 10.
14. Uddin K, Shrestha HL, Murthy MSR, Bajracharya B, Shrestha B, Gilani H, *et al*. Development of 2010 national land cover database for Nepal. Journal of Environmental Management. 2015;148:82-90.
15. Dobermann AT, Fairhurst TH. Rice straw management. Better crops international. 2002 May 16;16(1):7-11.
16. Pinker R. The idea of welfare. Routledge; 2019 Nov 20.
17. Herforth A, Bai Y, Venkat A, Mahrt K, Ebel A, Masters WA. Cost and affordability of healthy diets across and within countries: Background paper for The State of Food Security and Nutrition in the World 2020. FAO Agricultural Development Economics Technical Study No. 9. Food & Agriculture Org.; 2020 Dec 12.
18. De Brey C, Musu L, McFarland J, Wilkinson-Flicker S, Diliberti M, Zhang A, Branstetter C, Wang X. Status and Trends in the Education of Racial and Ethnic Groups 2018. NCES 2019-038. National Center for Education Statistics. 2019 Feb.
19. Law KL. Plastics in the marine environment. Annual review of marine science. 2017 Jan 3;9(1):205-29.
20. Zhang Q, Streets DG, Carmichael GR, He KB, Huo H, Kannari A, Klimont Z, Park IS, Reddy S, Fu JS, Chen D. Asian emissions in 2006 for the NASA INTEX-B mission. Atmospheric Chemistry and Physics. 2009 Jul 29;9(14):5131-53.
21. Koutrouba K, Antonopoulou E, Tsitsas G, Zenakou E. An investigation of Greek teachers' views on parental involvement in education. School Psychology International. 2009 Jun;30(3):311-28.