



STUDY ON SEED MANAGEMENT PATTERN FOLLOWED BY THE TRIBAL FARMERS OF NORTHERN HILLS AGRO-CLIMATIC ZONE OF CHHATTISGARH STATE, INDIA

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Abstract

Present study was carried out in 8 villages of 4 blocks in two selected district of Northern hills agro-climatic zones of Chhattisgarh State. Total 120 tribal farmers were considered as respondents for study purpose. The studies indicated that most of the respondents were belonged to medium category with land size 2.1 to 4 ha. In the study area, 56.67 per cent respondents had irrigation facility and major source of irrigation was tubewell (58.82%). Regarding annual income, majority of the respondents had annual income up to Rs 50,000. Regarding credit acquisition, majority of the respondents (65%) acquired credit and 49.17 per cent acquired from the cooperative society for the duration up to the 6 month for the purchasing of fertilizers and other instruments or inputs. Most of the respondents were borrowed credit up to Rs. 10000 to 20000. Regarding seed management most of the respondents were practicing 1-2 ploughing, 25 to 30 kg⁻¹ ha seed, 40.35 per cent adopted indigenous techniques, most of the respondents used fertilizer, manures and weeding. Most of the respondents had practiced cleaning threshing floor, separation of inert matters and weed seeds, drying, treatment of bins, grading and storage insect pest control.

Key words : Seed management pattern, tribal farmers.

Introduction

In India, there are two types of seed systems: the formal system, which is market-oriented and is developed by the public and/or private sectors, and the family or community production system, which is based mainly on seed self-provisioning exchanges and gifts among neighbors and the informal market traditionally. ICAR and SAUs developed improved crop varieties and hybrids, multiplication of seed for commercial purposes was predominantly done by the public seed agencies like NSC (National seed corporation), state farm corporation of India and the 13 state seed corporation (SSC). The quality seed production and management is a specialized programme in which the various types of practices such as seed selection, seed treatment, roughing, weeding, seed harvesting, threshing, winnowing, cleaning, drying, storage, insect pest management, fumigation, seed moisture control, rodent control, grading, transporting and selling etc are performed by farmers.

Materials and Methods

The study was conducted purposively in Surguja and Surajpur district of northern hills agro-climatic zone of Chhattisgarh State during the year 2014-2015. Out of total blocks in Surguja and Surajpur district namely, Ambikapur, Batouli, Surajpur and Bhaiyathan were selected for study. Out of the total villages of these blocks total eight villages were selected randomly. From each selected village, 15 tribal farmers were selected randomly for the collection of data. In this way sample of 120 tribal farmers were considered as respondents for the study purpose. The data were collected personally by the researcher in cooperation with RAEOs and other officials of the district by using pre-tested interview schedule.

Results and Discussion

Size of land holding

The details about land holdings of the respondents are given in table 1. The data regarding land holdings indicates that most of respondents (41.67%) had 2.1 to 4 ha of land holdings belongs medium category farmers,

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Table 1 : Distribution of the respondents according to their size of land holding. (n= 120)

Land holding	Frequency	Percentage
Marginal farmers (up to 1 ha)	20	16.67
Small farmers (1.1-2ha)	21	17.5
Medium (2.1-4 ha)	50	41.67
Big farmers (above 4 ha)	29	24.17

Table 2 : Availability of irrigation and source wise irrigated area among the respondents. (n=120)

Particulars	No. of farmers		Area (ha)	
	Frequency	Percentage	Area	Percentage
Availability of irrigation facilities				
➤ Available	69	57.50	92.30	21.68
➤ Not available	51	42.50	333.60	78.32
Total	120	100.0	425.90	100.0
Sources of irrigation				
➤ Canal	21	30.88	36.84	39.92
➤ Tube well	40	58.82	48.58	52.64
➤ Well	4	5.84	2.02	2.18
➤ Pond	3	4.42	4.85	5.26
Total	69	100.0	92.30	100.0

Table 3 : Distribution of the respondents according to their annual income. (n=120)

Annual income (Rs.)	Frequency	Percentage
➤ Up to 50000	71	59.17
➤ 50001-100000	35	29.17
➤ 100000-200000	13	10.83
➤ More than 200000	5	4.17

followed by 24.17 per cent had above 4 ha land holding (big farmers) and 17.5 per cent had small farmers with holding size between 1.1 to 2 ha. About 16.67 per cent of respondents were found under marginal farmers category with land holding up to 1 ha. Similar findings reported by Ghimire *et al.* (2012) and Tura *et al.* (2010).

Irrigation facility

Irrigation is the most critical input in agriculture. In cash crop production, productivity, cropping intensity and profitability is directly related with availability of irrigation facility. About 57 per cent respondents were having irrigation facility. The irrigation facility was restricted to only 21.68 per cent of total land (table 2). More than 78

per cent of the respondents didn't have irrigation facility while possessing 78.32 per cent of land.

Annual income

As regards to annual income, the data given in table 3 reveals that the maximum of the respondents (59.17%) were having their income in the range of up to Rs. 50000, followed by 29.17 per cent of respondents had their annual income in the Rs. 50001 to 1,00000 incomes, while 10.83 per cent of the respondents had obtained income range between Rs. 1,00000 to 2,00000 and only 4.17 per cent of respondents had income above Rs. 200000. Bishaw *et al.* (2010) found that the agriculture was the main source of income for all farmers and there were limited opportunities for off farm income generation and they had limited opportunities as casual laborers during planting, weeding and harvesting time.

Practice wise adoption pattern about seed production and management regarding selected crops

The data on practices of seed management in rice by respondents are presented in table 4. The data indicates that field preparation for growing rice seeds, most of the farmers (77.4%) had practiced 1 to 2 ploughing, While 19.3 per cent had practiced 2 to 4 ploughing and only 3.3 per cent practiced more than 4 ploughing. Regarding seed rate (transplanting), 88.72 per cent respondents used 25 to 30 kg ha⁻¹ and 11.28 per cent are used seed up to 25 kg ha⁻¹. Regarding treatment of seeds, 72.59 per cent respondents had practiced indigenous technology, and 27.41 per cent practiced chemical treatment. Regarding manure application, 80.69 per cent applied and 19.31 per cent had not applied manure and 4.87 per cent respondents used biofertilizers. Regarding balanced fertilizer application (NPK), 93.54 per cent respondents had used below recommended dose and only 6.46 per cent are used at par recommended dose. Regarding roguing, 51.63 per cent respondents had practiced one time, 40.32 per cent had not practiced and only 8.06 per cent practiced two times roguing. Weeding 61.28 per cent practiced by hand and 38.72 per cent practiced by herbicide, 51.67 per cent is not selling their seeds and 48.33 per cent were selling their seeds in market.

Cleaning of threshing floor practiced by 100 per cent respondents. Separation of inert matter practiced by 80.60 per cent respondents. Separation of weed seeds practiced by 88.72 per cent respondents. Reducing moisture (drying) content before storage practiced by 100 per cent respondents. Chemical treatment of bins practiced by 33.84 per cent respondents. Grading in size, colour, and healthy seeds grads practiced by 27.44 per cent

Table 4 : Distribution of respondent according to their adoption pattern about seed production and management practice for rice. (n= 62)

S. no.	Practices of seed management	Frequency	Percentage
(A) Before harvesting			
1.	Field preparation		
	➤ 1-2 ploughing	48	77.40
	➤ 2-4 ploughing	12	19.30
	➤ More than 4 ploughing	2	3.30
2.	Seed rate(Transplanting, kg ha ⁻¹)		
	➤ Up to 25kg	7	11.28
	➤ 25 to 30kg	55	88.72
3.	Seed treatment		
	➤ Treatment by chemical	17	27.41
	➤ With indigenous techniques	45	72.59
4.	Manure *		
	➤ Not applied	12	19.31
	➤ Applied	50	80.69
	➤ Use biofertilizers	3	4.87
5.	Balanced fertilizer application		
	➤ Below recommended dose	58	93.54
	➤ At par recommended dose	4	6.46
	➤ More than recommended dose	0	0.0
8.	Roguing		
	➤ Not practiced	25	40.32
	➤ Practiced one time	32	51.63
	➤ Practiced two times	5	8.05
9.	Weeding		
	➤ Hand weeding	38	61.28
	➤ By herbicide	24	38.72
(B) After harvesting management practices			
10.	Cleaning of threshing floor	62	100.0
11.	Separation of inert matter	50	80.64
12.	Separation of weed seeds	55	88.71
13.	Reducing moisture(drying) content before storage	62	100.0
14.	Chemical treatment of bins	21	33.87
15.	Grading Practiced in size, colour, and healthy seeds grads	17	27.41
16.	Storage insect pest control*		
	➤ Practiced by chemicals	6	9.65
	➤ Practiced by Neem leaves	27	43.55
	➤ Rodent control	36	58.03
	➤ Use of fumigants	18	29.06
17.	Marketing(n=120)	58	48.33

Table 5 : Distribution of respondent according to their adoption pattern about seed production and management practices for wheat and maize. (n= 24)

S. no.	Existing Practices of seed management	F	P
(A) Before harvesting practices			
1.	Field preparation		
	➤ 1-2 ploughing	4	16.67
	➤ 2-4 ploughing	18	75.00
	➤ More than 4 ploughing	2	8.33
2.	Seed rate(kg ha ⁻¹)		
	For wheat		
	➤ Up to 75kg	10	41.67
	➤ 75 to 100kg	14	58.33
	For maize		
	➤ Up to 15	6	25.00
	➤ 15 to 20	18	75.00
3.	Seed treatment		
	➤ Not treatment	11	45.83
	➤ Treatment by chemicals	3	12.5
	➤ With indigenous techniques	10	41.67
4.	Manure		
	➤ Not applied	10	41.66
	➤ Applied	14	58.33
5.	Balanced fertilizer application		
	➤ Below recommended dose	21	87.5
	➤ At par recommended dose	3	12.5
6.	Roguing		
	➤ Not practiced	11	45.83
	➤ 1-2 times	13	54.17
7.	Weeding		
	➤ Not practiced	2	8.33
	➤ Hand weeding	18	75.0
	➤ By herbicide	4	16.67
(B) Before harvesting			
8.	Cleaning of threshing floor	24	100
9.	Separation of inert matter	24	100
10.	Separation of weed seeds	21	87.5
11.	Reducing moisture(drying) content before storage	24	100
12.	Chemical treatment of bins	20	83.33
13.	Grading Practiced in size, colour, and healthy seeds grads	9	37.5
14.	Storage insect pest control*		
	➤ Practiced by chemicals	8	33.33
	➤ Practiced by Neem leaves	14	58.33
	➤ Rodent control	17	70.83
	➤ Use of fumigants	6	25.00
15.	Marketing (n=120)	96	80.00

respondents. Regarding storage insect pest control i.e. chemicals treatment practiced by 9.65 per cent respondents, used neem leaves by 43.51 per cent respondents, rodent control practiced by 58.03 per cent and used fumigants by 29.06 per cent respondents to control the insects. Regarding marketing and transportation, only 48.33 per cent respondents were involved.

The data on adopted practices of seed production and management in wheat and maize by respondents are presented in table 5. The data were indicates that field preparation for growing seeds most of the farmers (75%) had practiced 2 to 4 ploughing, while 16.67 per cent had practiced 1 to 2 ploughing and only 8.33 per cent practiced more than 4 ploughing. Regarding seed rate (wheat) 58.33 per cent respondents used 75 to 100 kg ha⁻¹ and 41.67 per cent are used seed up to 75 kg ha⁻¹. For maize crop 75 per cent respondents used 15 to 20 kg ha⁻¹ and (25%) are used seed up to 15 kg ha⁻¹. Regarding seed treatment, 45.83 per cent respondents had not practiced, 41.67 per cent practiced indigenous technology, and only 12.5 per cent practiced chemical treatment.

Regarding manure application 58.33 per cent applied up to 1 ton ha⁻¹, 41.66 per cent had not applied manures. Regarding fertilizer application, 87.5 per cent respondents applied below recommended dose and 12.5 per cent respondents were applied at par recommended dose. Regarding rouging, 54.17 per cent respondents practiced 1 to 2 times, and 45.83 per cent not practiced rouging. In weeding, 75 per cent practiced by hand, 16.67 per cent practiced by herbicide and 8.33 per cent not practiced.

Cleaning of threshing floor practiced by 100 per cent respondents. Separation of inert matter practiced by 100 per cent respondents. Separation of weed seeds practiced by 87.5 per cent respondents. Reducing moisture content (drying) before storage practiced by 100 per cent respondents. Chemical treatment of bins practiced by 83.33 per cent respondents. Grading in size, colour and healthy seeds grads practiced by 37.5 per cent respondents. Regarding storage insect pest control, chemicals treatment practiced by 33.33 per cent respondents, used neem leaves by 58.33 per cent respondents, rodent control practiced by 70.83 per cent and use of fumigants by 25 per cent respondents.

Conclusion

In the light of above findings, it may be concluded that, the majority of the respondents (51.67%) adopted

seed management practices, practicing 1 to 2 ploughing with application of seeds 25 to 30 kg ha⁻¹. Most of the farmers (40.35%) were practicing the indigenous practices for seed treatment and used fertilizer, manures and weeding operations. Most of the respondents had practiced cleaning the threshing floor, separation of inert matters and weed seeds, drying, treatment of bins, grading and storage insect pest control. It may also be concluded that, to increase the adoption of seed management practices among the respondents, it is needed to increase their annual income with provision appropriate opportunities, availability of good quality of seeds as well as information regarding seed management technology should be provided regularly and at proper time.

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