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Indigenous technology of tribal farmers in Jharkhand

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Tribals are known to have rich knowledge of indigenous technology pertaining to agriculture practices and an attempt was made to document the indigenous knowledge. Data was collected from 3 districts covering 9 villages from 225 farmers with the help of a structured questionnaire. In all, broadly classified 26 indigenous knowledge were identified in the study area.

Keywords: Indigenous technical knowledge, Tribals, Jharkhand

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Jharkhand is one of the eastern states, where bulk of tribals live, constituting about 28% of total population. It is a homeland of 30 tribes including 8 primitive tribes. The tribes happened to be primarily rural and their economy is predominantly agricultural, based on natural seasons comprising and exploited on primitive methods. These tribes have rich knowledge about the indigenous practices especially in soil management, seed protection and post harvest aspect on paddy. This traditional knowledge has been derived from the tribe's farming experience through trial and error method and handed down from previous generation to present generations. Many of these indigenous methods and practices are very human in nature and can play an important role in sustainable suitable agricultural production. This indigenous knowledge may be exploited and blended with existing scientific technologies to explore more sustainable and human friendly methods of agricultural practices. Therefore, there is an urgent need to identify and document existing indigenous knowledge related to agricultural practices followed in different regions of the country. Keeping this in view, the study was taken up in Jharkhand.

Methodology

The study was carried in 3 districts of Jharkhand during 2003 to 2004. Ranchi district is situated in the central part of Jharkhand, Gumla district in the western part and Hazaribagh in the northern part of the state. In each district, 3 community development blocks were selected based on forest ecology and open ecology of the area. In each block, one village was selected randomly on the basis of 3 different tribal sub-groups present in the area. The data was collected from 25 farmers in each village through a well structured questionnaire. Questionnaire was pre-tested for its validity through a well structured questionnaire. Questionnaire was pre-tested for its validity and reliability purpose before data collection. Frequently and percentage was computed for descriptive analysis.

Results and discussion

Twenty five indigenous cultivation practices had been identified. Of 25, 10 were found to be used for soil management, 3 for weed management, 2 as plant protection measures, 6 for management of seed, and 5 for post harvest activities. The extent of adoption of various indigenous agricultural practices of tribals of 3 districts is presented (Table 1). Under soil management, 6 indigenous practices were found to be adopted by cent percent of the respondents and these were ploughing the field 3-5 times before sowing, breaking the clods by wooden cylindrical shaped implements (Fig.1). FYM is kept in the field basket full of helaps for direct seeded/ transplanted rice, practice of crop rotation and mixed cropping (Figs.2&3) as well as bunding and terracing of land according to slope. It is a common practice among tribals to go for crop rotation and mixed cropping in upland for maintenance of soil fertility. About 15%,

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Table 1—Indigenous agricultural practices

Practices	No of respondents (n= 225)	
Soil management	No	%
Ploughing the field 3 to 5 times before sowing	225	100
Braking the clods by wooden cylindrical shaped implements	225	100
FYM is kept in the field basket full of heaps for direct seeded/ transplanted rice	225	100
Use farm yard manure only	101	45
Practice crop rotation	225	100
Practice mixed cropping	225	100
One summer ploughing	35	15
Ploughing the field after every shower during summer	190	84
Trees planted on the ridges of the fields in upland	173	77
Bunding and terracing of land according to slope	225	100
Weed management		
Bushening	206	92
Mixed cropping	225	100
Crop rotation	225	100
Plant protection measures		
Use of *Parsa* leaf	173	77
Use of *Sindwar* leaf	27	12
Seed management		
Harvested rice is left in the field for sun drying	225	100
Drying of paddy before storage	225	100
Rice is stored in *mora* (Straw made)	209	93
Neem leaves are mixed with pulses and stored	29	13
Different seeds (*urd* and millet) are mixed and stored together	29	13
Soaking of seeds in water before sowing	7	3
Post – harvest activities		
Rice is threshed by bullock	225	100
Pulses and millet are threshed by hand beating	225	100
Winnowing by *soop*	225	100
Parboiling of paddy	225	100
Dehusking by *Dhenki*	47	21

Fig.1 Breaking the clods by wooden cylindrical shaped implements

Fig.2 Mixed cropping: Wheat & Mustard

Fig.3 Mixed cropping: upland rice with pearl millet and pigeon pea

Fig.4 Parsa tree (Cleistanthus collinus)

Fig.5 Thrashing of paddy by bullocks

reported that they ploughed their land once in summer for mulching and moisture conservation while 84% agreed for ploughing the field after every shower during summer season for the same purpose. Two measures for control of soil erosion were found among respondents. About 70% of the respondent agreed for planting trees on the ridge of upland fields whereas 100% respondents reported for bunding and terracing of land according to slope direction as another practice to control soil erosion.

With regard to weed management, 3 types of indigenous practices were found to be prevalent among tribals. Bushening is a unique weed management strategy practiced by the tribals (Table 1). In this practice, farmers plough the rice field after one month, which is broadcasted. All respondents reported that mixed cropping and crop rotation helped in controlling weeds in the crop field. Several crops are grown together in one field such as upland rice with pigeonpea & sorghum, maize with sorghum & cowpea or rice with pigeonpea, etc. In case of rotational cropping, farmers change the crop in next year in a particular field. This finding is similar to the earlier work in which 15 types of mixed cropping pattern and 4 types of crop rotation among tribal farmers of Jharkhand was being reported. Under plant protection measures, about 77% of respondents used *Parsa* (*Cleistanthus collinus*) leaf (Fig. 4) in rice field to control insects like yellow stem borer, case worm, gall fly and Gandhi. Use of *Sindwar* (*Vitex negundo*) leaf was reported by only 12% of respondents for the control of insect pest infestation in stored grains of paddy and wheat.

Six types of indigenous practices have been reported for seed management. Harvested rice bundles are left in the field for 2-3 days for sun drying as well as sun exposure of paddy before storage. This practice was also reported to be adopted by tribals of Kalrayan Hills of Villupuram district. The adoption practice of other 4 practices ranged from 3-93%. The practices in the descending order of adoption are rice is stored in straw made *mora*, *neem* leaves are mixed with stored pulses, different seeds are mixed and stored together and soaking of seeds before sowing. The finding on the use of *neem* leaves with stored pulse is in agreement with earlier work[3]. The study revealed 5 indigenous technologies for post harvest activities. Paddy is thrashed by a pair of bullock (Fig. 5). Similarly, pulses like black gram, horse gram, pigeonpea and chickpea are thrashed by hand beating. Even finger millets and small millets are also thrashed by hand beating. Winnowing is done by bamboo made device locally called as *soop* by all the respondents. It is interesting to note that even today, about 21% respondents use *Dhenki* (a wooden device) for dehusking of paddy.

Conclusion

A good number of indigenous cultivation practices were found to exist in Jharkhand. Many of these practices are really very effective and need to be documented, validated and exploited for ensuring sustainable agriculture.

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References

1 Lakra V, Cardenas VR & Sinha R, Rice based cropping system of the farmers in Jharkhand, *J Dev Manage Stud*, 3 (4) (2005) 1705.

2 Natrajan M & Govind S, Indigenous agricultural practices among tribal women, *Indian J Traditional Knowledge*, 5 (1) (2006) 118.

3 Reddy BS, Indigenous technical knowledge on pulses, storage and processing practices in Andhra Pradesh, *Indian J Traditional Knowledge*, 5 (1) (2006) 87.