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Erosion of Traditional Seed Supply System in Murshidabad District of West Bengal

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ABSTRACT

This study aims to explore the erosion of traditional seed supply system (TSSS) in Murshidabad district of West Bengal with reference to the erosion of rice diversity in the district. Agriculture is the main occupation of Murshidabad because of its favourable climate and quality of soil. The investigators had interviewed 400 cultivators from all the 26 community development blocks in the district and found that 164 varieties of rice were once available in the farmers' fields and at present only 12 are being cultivated marginally. In the case of high yielding varieties (HYV), farmers generally prefer to buy seeds from the market for consistent yield. A very little percentage of farmers keep HYV seeds for the next year's planting material.

Keywords: *Traditional seed supply system; Biodiversity; Traditional knowledge; Traditional rice; West Bengal*

Changing climate, increasing infestation of pests in crops and continuous increase of stresses on water and land use have made life difficult for farmers (RGSIBG, 2015). It is a big challenge for the mother earth to increase production to meet the increasing 'demands for food, feed and bio-energy' and at the same time 'conserving biodiversity and reducing the pressure on natural resources and ecosystems' (FAO, 2018). Conservation and strengthening of TSSS (Traditional Seed Supply System) or Farmer's Seed Network may play an instrumental role in conserving agro-biodiversity and maintain food security for the increasing population. Hence, this study was taken up to explore the erosion of TSSS in West Bengal, an important rice growing state in the country.

METHODOLOGY

This study was conducted in all the 26 community development blocks of Murshidabad district of West Bengal state. 400 cultivators and agricultural labourers of different age groups were selected through Snowball or Chain Sampling method and interviewed for data collection. They were interviewed based on the indicators set in the questionnaire prepared for data collection. Some of the important indicators are - name of

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the traditional varieties of rice once cultivated by them or by their forefathers, varieties available now, methods of seed selection and conservation in practice, whether they are still interested in such traditional methods etc.

FINDINGS AND DISCUSSION

From the survey as well as secondary literature, it has been found that 168 varieties of traditional rice were historically available in the district. But after the introduction of high yielding varieties these landraces were rejected by the farmers. At present, only 12 varieties are being cultivated by the farmers due to their special characteristics like aroma, taste and quality of stress tolerance.

Traditional Seed System in Murshidabad district

Traditional Seed Supply System comprises variety selection and adaptation, seed selection, seed exchange among the members in the farming community, post harvest processing and storage for crop improvement and maintaining agro-biodiversity.

Seed Selection: Selection of healthy seed is of paramount importance. Though the farmers nowadays prefer to buy seeds from the market they follow some traditional techniques of seed selection in case traditional rice which are not readily available in the market. Farmers are to conserve them at their home for the subsequent years. Table 1 presents the traditional method of seed selection followed by the farmers in the study area.

Seed conservation: In the study area some post harvest traditional practices of storage of seeds have been found. They are extremely important to keep the seeds viable (Table 2).

Seed supply or seed exchange: Exchange of seeds among the members of the farming

Table 1.
Traditional Knowledge of Seed Selection in Murshidabad

Sl. No	Traditional Knowledge of Seed Selection
1	Healthy and matured plants are selected and left in the field to dry in the field. Often the plants are tied together with a support like bamboo stick so that they stay erect. When the plants are dried well the farmers cut the disease free panicles and separate grains. Again the seeds are dried in the sun for three to four days and stored.
2	After the harvest women at home take some bundles and shake them. The grains that get separated easily at shaking are considered to be healthiest and matured and fit for seed. In such way the required quantity of seeds are collected.
3	After the threshing is over winnowing is done. Farmers often collect seed from the centre of the winnowing area. It is believed that the healthiest seeds are gathered at the centre.
4	Before the seeds are sown, farmers often place the seeds in a large pot filled with water to separate unfilled grains. Unfilled grains float.

Table 2.
Traditional Knowledge of Seed Conservation in Murshidabad

Sl. No	Traditional Knowledge of Seed Conservation
1	Often seeds are stored in earthen pots. Earthen pots protect seeds from moisture and attack of non insect pest like rats.
2	Nishinda leaves or neem leaves are placed with the stored seeds. Nishinda has toxic effect. Neem is well known to have insect repellant property. Some time red chili and turmeric are also put at the bottom of the container. Some people treat the container by plastering the inside part of the container with cow dung and cow urine.
3	Often people store rice mixed with husk. Probably dust keeps rice weevil free.
4	People used to store seed in 'Puri' made of straw rope. To keep storage pest away from seed people often used a mixture of cow dung, cow urine and some soil to plaster the outside of the 'Puri'.
5	A powder prepared from clove, neem leaves and garlic is wrapped in a cloth and put into the container containing seed. This is an effective way to keep the storage pests away.
6	Farmers generally put the seeds under the sun and dried well before storing in air tight containers. The seeds are again dried under the sun at three to four months interval to keep the seeds viable and storage pests away.

communities is a very important part in TSSS. In case of traditional rice farmers receive seeds through selling, borrowing, gifts from fellow farmers and exchange among themselves. In theses ways seeds move from one place to another and from one community to another

Table 3.
Perception of Farmers towards TSSS according to their Age

(n =400)

Sl. No.	Particulars	Rational	Irrational	Not sure
	Age group			
1.	18-28 years	24 (14.72%)	126 (77.30%)	13 (7.98%)
2.	29-40 years	27 (31.40)	39 (45.54)	20 (23.25)
3.	41 years and above	99 (65.56)	35 (23.18)	17 (11.25)

resulting in increase in agro-biodiversity which in turn secure food security.

Perception of the farmers towards TSSS

The perception of the farmers with respect to the rationality of TSSS was assessed and presented in Table 3.

Table 4 shows that 77.3% respondent who are young and hold the baton of agriculture, donot favour TSSS and even 45.54% respondent in the age group of 29-40 years also donot favour TSSS. 65.56% of farmers in the age group 41 years and above think TSSS to be rational while 35% in this group think it rational.

Table 4 shows that illiterate and up to VIII class educated farmers still have respect for TSSS. They have attachment towards traditional rice mainly due to their taste, aroma and their use in worship at local festivals. Large percentage of respondents qualifying Secondary and Higher Secondary grades consider TSSS as irrational. On the other hand, graduates are almost equally divided in their attitudes towards TSSS. About 88% of the respondents having Masters think it to be rational. It is interpreted that education has made them aware of the importance of rice biodiversity and traditional rice in conservation of agro-biodiversity.

Threats to Traditional Seed Supply System

Erosion of Traditional Seed Supply System is the erosion of traditional agricultural

Table 4.

Perception of Respondents towards TSSS according to their Level of Education

(n = 400)

Sl. No.	Particulars of Education	Rational	Irrational	Not sure
1.	Illiterate	59 (52.21)	36 (31.85)	18 (15.92)
2.	Primary and Upper Primary (I-VIII)	61 (49.19)	57 (45.96)	6 (4.83)
3.	Secondary (IX-X)	7 (8.04)	63 (72.41)	17 (19.54)
4.	Higher Secondary (XI-XII)	6 (12.24)	35 (71.42)	8 (16.32)
5.	Graduation	9 (50.00)	8 (44.44)	1 (5.55)
6.	Masters degree	8 (88.88)	1 (11.11)	0

knowledge, culture and landraces which are sources of valuable and rare genes. Young generation of farmers are more interested in high yielding varieties (HYV) of seeds now and they have become dependent on modern technologies. They are more inclined to HYVs, chemical fertilizers and hazardous pesticides and in turn they are fast losing the plant genetic resources which their forefathers discovered and improved. They prefer to buy seeds released by the multinational companies and certified by the governments from the expensive market instead of saving them from their own fields. Thus the traditional knowledge system of the farmers and agro-biodiversity are on the brink of dilution.

Farmers of different indigenous communities over generations have been playing the pivotal role in creating and conserving agro-diversity through their traditional knowledge practices. But this tradition is on the verge of dilution, as per the findings of the study. This is a matter of great concern. It is time to document these traditional practices for their use in crop improvement and breeding programmes in future. Local administration should give utmost importance to Biodiversity Management Committees (BMCs) take People's Biodiversity Register (PBR). Biodiversity conservation programmes through traditional knowledge in secondary and higher secondary schools should be a must so that the students from the very beginning will be aware of the importance of traditional knowledge and biodiversity. Diversity fairs may regularly be organized in the community. The farmers conserving biodiversity should be given recognition through awards and incentives so that others also get interested in biodiversity conservation. Agricultural universities should also come forward to join the local farmers to help them maintain agricultural diversity in a sustainable manner. These formal science institutes may arrange for webinars in collaboration with the local libraries.

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