Sources of Seeds and Reasons of Low Seed Replacement Rate of Paddy Seed: A Case Study in Assam

M. Kakoty\(^1\) and U. Barman\(^2\)**

\(^1\)Assistant Seed Certification Officer, Assam Seed Corporation, Dibrugarh; \(^2\)Associate Professor, Dept. of Extension Education, College of Agriculture, Assam Agricultural University, Jorhat, Assam

barman.utpal@gmail.com*; +91 9435090740

Abstract

The seed being the fundamental input in crop production; its high quality forms the basis of high productivity. Therefore, farmers should grow certified seed. However, for maintaining genetic purity, certified seed should be used for three years only in the case of paddy. After that, new certified seed should be used. For that purpose, seed should be replaced periodically with certified seed. Economically, the cost of seed is a very small component of the total cost of production. However, for more production, quality seeds should be used by the farmers. In Assam, the Seed Replacement Rate (SRR) in case of paddy is below the desirable scientific level. Therefore, it is important to identify different seed sources and reasons behind the low seed replacement rate and hence, a study was attempted. It is observed that among different seed sources, important sources are self-retained seed. Fellow farmers, friends and relatives, Assam Seed Corporation, Assam Agricultural University and its various research stations, Krishi Vigyan Kendra and State Department of Agriculture were some other sources. It is also observed that there were different reasons due to which farmer do not maintain seed replacement rate for paddy. Important reasons were lack of awareness about SRR, economic status of farmer, farm size, inadequate supply of seed, traditional way of cultivation, too much depending on farm saved seed, high prices of certified seeds, isolated from market services, poor extension services, etc.

**Keywords:** Paddy seed, seed replacement ratio, Assam, self-retained seed, extension services.

Introduction

Seed is one of the most important inputs for sustainable crop production. Quality of seeds is intrinsically linked to crop yield and production, implying better the quality of seeds, better the yield. This is true for all crops, including rice and for all regions (Singh and Kumar, 2014). Seed is the critical determinant of agricultural production on which the performance and efficacy of other inputs depend. The availability of quality seed of improved variety is considered as crucial for realizing productivity. Use of quality seed alone can increase productivity by 15-20% (Behura, n.d). More production from less land can be accomplished only with a combination of quality seed, quality inputs and farm practices. However, lack of quality seed continues to be one of the greatest challenges of bridging the vast yield gap. Since ages, Indian farmers were mostly dependent on traditional varieties; therefore seed requirement was met through farm saved seeds. The use of traditional varieties coupled with farm saved seed whose quality is not guaranteed, resulted in drastic reduction in production. Therefore, it is necessary to collect seed from certified or reliable sources. Seed Replacement Rate (SRR) is the number of generation up to which the seed could used from the previous crop is one of the important aspect of crop production.

Seed renewal period as recommended by the National Commission on Agriculture (1976) for paddy is three years. The present level of SRR for field crops in India is just 5-70% (Roy, 2011). It may be mentioned that SRR of paddy is low (22.12%) in Assam (seednet.gov.in). This low SRR is one of the limiting factors of production. SRR may be low due to different reason. It is therefore necessary to find out these reasons behind low SRR. Keeping in view all of these factors, the present investigation has been taken to study following facts:

1. Different sources of paddy seed used by farmers
2. Causes behind low seed replacement rate in paddy

Materials and methods

**Experimental design:** The study was qualitative in nature. The sample districts were Jorhat and Dibrugarh of Assam. Data were collected based on review of secondary data, interaction with extension personnel and certified seed growers, through observations and field experiences in general and seed certification programme in particular.

Results and discussion

1. **Different sources of paddy seed:** From the study, it was observed that most important seed source was self-retained seed.
It could be due to inadequate supply of HYV, the high price of HYV and easy to preserved desired seed at home etc. The next important source was peer farmers. Some time farmers purchased seed from fellow farmers and sometime they exchange seed with them. It may be due to by seeing a good production of a paddy variety in his or her field; the farmer opted for that variety or non-availability of self-retained seeds. The State Agriculture Department was another important source, particularly in case of new varieties. Mostly farmers obtained hybrid seed of paddy from the Dept. of Agriculture at free of cost under some programmes. However, they generally did not wait for such programmes due to uncertainty of seed distribution time. Besides these, some progressive farmer purchased seeds from other seed sources like Krishi Vigyan Kendra and Regional Agricultural Research Stations of Assam Agricultural University, Assam Seed Corporation. It could be due to close contact between agricultural scientists and farmers, better economic status, knowledge about uses of good quality seeds and the sources. However, distance was a major problem for them collecting seeds from such sources. Tetley et al. (1991) said that cereal farmers in developing countries often have three major sources of seed. These are seeds purchased from a formal seed industry; seed obtained from other farmers and self-retained seed from the previous year’s crop. In India 85% of seed used in farming was produced by the farmer himself (Banerjee, 1984). However, this finding is contradictory to the study of Verma and Sidhu (2009) who reported that in the case of farmers of Punjab, amongst different sources of paddy seed, the share of private seed dealers has been found maximum, followed by authorized seed dealer, self-retained and commission agents. The share of other sources like fellow farmers, relatives and friends, PAU, village shopkeeper, state agriculture department, etc. has been found only 1-2% each.

2. The Causes behind the low seed replacement rate:
Number of generations which the seed could use from the previous crop is one of the important aspects of crop productivity. Deterioration in seed quality may occur due to exposure of paddy seed to adverse conditions like to deteriorate physical admixtures, loss of genetic vigour and germination power. Admixture may occur in the field, at the threshing yard or even during storage when seeds of other crops get mixed with the variety. Further, the germination power may go down due to physical damage to seed through insect and microorganism infestation, breakage of grains, prolonged seed quality results in lower productivity per unit area. Therefore, it is necessary to replace paddy seed in every three years to get more production. The major reasons for low Seed Replacement Rate of paddy as observed during the study were mentioned below:

a. Lack of awareness about SRR: Most of the farmers did not aware about the SRR. Again, most of the farmers did not interest to purchase paddy seed.

They also thought that their own seeds are the best one since these are selected and preserved through aged old practices. They are not aware about the benefits of SRR. Therefore, they used the same seed year after year without replacing the seed. They go for replacing seed only when he or she had a shortage of seed due to some reason, but the seed was purchased from the peer farmers whose seeds are of the same qualities. Therefore, SRR was not maintained properly. Singh and Kumar (2014) also reported that lack of awareness with regard to adaptability of improved variety of seeds is a common issue.

b. High cost of quality seeds: The price of quality seed is comparatively higher than the traditional variety as quality seed production is a specialized activity. Quality seed production is more or less a costly process. Therefore, the price of certified seed is high and it is not affordable to most of the farmers, who are marginal and small, to buy such seed. Moreover, the certified seeds are not available at their locality. So transportation cost is also high. These forced farmers to use own seed.

c. Inadequate supply of seed: Due to inadequate supply of certified seed, farmer used same paddy seed year after year. The seed distributors are often few due to which it is difficult for farmers to get quality seed timely. Seed certification programme or quality seed production is not in much scale due to which quality seed is not adequately available in the local area. Besides this due to volume of seeds, seed vendor did not keep paddy seed for sale.

d. The importance attached to traditional varieties: Due to various reasons, farmers preferred traditional varieties. For various cultural occasions, farmers need traditional varieties. Besides this, as coping mechanism against natural calamities like drought, flood, etc. they also preferred this. Since these are not certified seeds, so farmers always retained, such seed for future used. This is also a one of the reasons of low seed replacement rate. Singh and Kumar (2014) also reported that the level of awareness of suitable and adaptable HYV variety seeds in Adiwasis community is very low and farmers mostly use desi (traditional) varieties of rice seeds.

e. Economic status of the farmer: One of the reasons of low SRR is the economic status of farmers. It was observed that there is a direct relationship between economic status and SRR. It was seen that farmers, those having large land holding generally purchase certified seed, though it may not be in recommended interval and could purchase quality seed from agencies even it was at distance place. For them, price and transportation cost were not a matter. Verma and Sidhu (2009) reported that there was a direct relationship between seed replacement rate and farm size.
f. Too much dependency on farm saved seeds: It was observed that the main sources for paddy seed is self-retained seed. Therefore, farmer depend too much farm saved seed for planting next year. So, most of the farmers did not prefer for purchasing of certified paddy, which lower the SRR.

g. Isolated from market services: For paddy seed in Assam, generally Assam Seed Corporation, different Krishi Vigyan Kendras, Regional Research Station and Assam Agricultural University are the main sources. However, they have no retail outlet at farmers’ doorsteps. These are located either in the district headquarters or in the distance places. Due to lack of transportation facility or transportation cost, farmer found it difficult to purchase seed from these organizations. Singh and Prasad (2014) observed that the farmers at many locations need to travel a long distance (12 km) for the purchase improved quality variety seeds.

h. Traditional way of cultivation: Farmers continue the same practices for seed selection and cultivation, i.e. using of own seed. Most of the cases, new seed was received by farmers when Govt. Dept. supplies seed material either free of cost or at subsidized rates. The farmer got the pure or improved varieties for seed material. In this way, some SRR was made in the case of paddy. However, if farmers satisfied with the variety then they again repeat the same practice by retaining their own seed.

i. Lack of extension services: Due to poor extension services, they do not get aware about the benefit of seed replacement ratio. It was observed that no effort was made to make farmer aware about SRR. Very little training was given to farmers in this aspect, due to which farmers did not get enough information about it. Many agencies did not supply seed in time, so farmers cultivated their land with their own seed. Poor farmers also hesitated to cultivate with seeds supplied by government organizations due to a history of poor quality seed supplied by such agencies. According to Rawat (2014) weak extension machinery is also responsible for low seed replacement rate.

j. Adoption of a new variety: It is observed that the adoption of a new variety is very slow. It is observed that most of the farmer of a community adopts a variety when more than half of farmers adopted it due to which Seed Replacement Rate was low.

Conclusion

It is observed that quality seeds were not easily available to farmers, which was one of the important reasons behind low Seed Replacement Rate. Therefore, it is more important to provide quality seed to farmers in time. Special attention should be given by the extension personnel to increase the seed replacement rate progressively with the objective of expanding the area in a phase wise manner by identifying the potential farmers. Special attention to be given to the need to upgrade the quality of farmer’s saved seeds through interventions such as the Seed Village Scheme. Extension personnel should provide training not only on SRR, but also to make each farmer as a seed grower. Then such farmers may replace their seed at regular interval from their own produced quality seed. It will also solve the problem of transportation cost of the seeds. It is suggested that seeds of newly developed varieties must be made available to farmers with a minimum time gap. Seed producing agencies will be encouraged to tie up with Research Institution for popularizing and commercialization of these varieties. Extension personnel should encourage community based seed production and seed replacement at regular interval. Though different good varieties were developed, if farmers do not used its quality seed, then yield will be reduced. If the quality seeds are used by replacing it at regular interval, then only farmers will get the benefit.

References