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Studies on the replacement and management of wheat seed by farmers of Udham singh nagar district of Uttarakhand

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Abstract
The present study comprised of various sources of wheat seed, replacement of seed by wheat growers and the management of wheat seed by the farmers of Udham Singh Nagar district of Uttarakhand. The shares of private seed plant owners have been found maximum (35%) followed by Tarai Development Corporation (27%), private seed dealers (20%) and self retained (15%). The shares of other sources like fellow farmers, relatives and small shopkeeper and state agriculture department has been found (2-3%). The overall seed replacement has been found to be about 35 percent. There was a direct relationship between the size of the farm and the replacement rate of seed, the seed rate has been slightly lower to the recommended level in the district. Determination of seed quality has been replaced by the experience of the farmers followed by the advice of the fellow farmer and the advice of the extension workers of Pantnagar University. The study suggested that extension agencies of the state Govt. of Uttarakhand and Pantnagar University educated the farmers about the benefits of quality seed and their replacement along with their procurement from the reliable source.

Keywords: Wheat seed, seed replacement, seed management, seed rate

Introduction
In India, Before the Green Revolution (marked as 1965), most Indian wheat varieties were tall types with weak stems, susceptible to major diseases, and thus unfit for intensive agriculture with high inputs. The dwarf wheat varieties were first introduced from CIMMYT, Mexico and later improved to suit the Indian consumers (Kulshrestha and Jain 1982) [5]. Three species of wheat are cultivated: Triticum aestivum, Triticum durum, and Triticum dicoccum. Bread wheat accounts for approximately 95% of the wheat grown, while 4% is durum wheat and 1% is dicoccum wheat (Gupta 2004) [4]. Wheat researchers in India, in active collaboration with CIMMYT, Mexico, succeeded in providing varieties adapted to variable conditions in different agro-ecological zones of India and neighboring countries such as Nepal and Bangladesh (Evenson *et al*. 1999) [2].

High quality of the seed is the basis of the high productivity as seed is the basic input in the production of crops. Besides the insignificant input on seed, the major costly inputs included farm machinery, chemical and fertilizer, pesticides, irrigation and the labour etc. The production of quality seed is a specialized activity opted by the farmers. The general produce of the farm generally lack genetic potential and poor quality of germination and it cannot be a replacement of the quality seed (Singh *et al* 1990) [6].

The reason for the replacement of seed at low level may be due to higher cost of the certified, foundation and breeder seed which cannot be afforded by small stake holders. The National Commission of the Agriculture (1976) has recommended the replacement of wheat seed at every 3 year. The present study has been conducted to study the various sources of wheat seed, seed replacement rate by wheat grower and management of wheat seed by the farmer in the Udham Singh Nagar district of Uttarakhand.

Methodology
Wheat is the major crop of Rabi season in Udham Singh Nagar district. It occupied *99586* hectare out of 110980 hectare cultivated land during the Rabi season in 2015-16. For the present study the all 7 Tehsil viz. Rudrapur, Kichha, Bajpur, Jaspur, Kashipur, Sitarganj and Khatima were selected where the wheat was found to be major Rabi crop occupying about 39 percent of the total area of the Udham Singh Nagar district during the year of 2015-16. One block from each *tehsil* and two villages from each block were selected randomly. From each village data were collected from ten farmers in each farm category. The farmers were categorized in small medium and large categories on the basis of their land holding.

The total samples collected were about 140. The data collected from the selected farmers was related to the size of land holding, variety of seed with sown area, source of seeds, seed rate, seed replacement rate, chemical treatment and seed treatment.

The seed rate for certified seed was calculated as per the formula given below.

$$SRR = \frac{C \times 100}{A \times K}$$

Where,

SRR = seed replacement rate for wheat crop
C = certified seed used by the farmer
A =area under the wheat crop
K = seed per unit of area

Results and Discussion

The major sources of seeds in India included seed purchased from formal seed industry, seed procured from other farmers and self retained seed from previous year crops. Verma and Sandhu (2009) [7] have reported the different source of the wheat seed viz. seeds from the national agency like National Seed Corporation, Agricultural University, formal seed industry, self-retained seed and from the follow farmers. More than 80% of seed used in India is produced by the farmer himself (Banerjee 1984) [1]. The study revealed that seeds used by farmer were 38 percent from private seed plants. It could be due good contacts of the private dealers and farmers. Also the presence of large number of seed companies in *terai* region of Uttarakhand and adjoining areas of Uttar Pradesh lead to the easy availability of high quality seeds to the farmers. Most of the farmers were already involved in the seed programmes of the various private and government institutions. Thus, resulted in high adaptability of quality seeds provided by the seed plant owners from the previous season. The second major source of seed for the farmers was Tarai Development Corporation followed by the seed production unit of Pantnagar University. Other major sources of the seed supply were private seed dealers and self retained seeds by the farmers from the previous season.

The selected farmer purchase 2-3 percent of wheat seeds from their follow farmers and relatives. It is indicated that selected farmers did not opt for the use of self retained seed or the seed available at cheaper rate or free of cost from the fellow farmers and relatives. Another reason for this by harvesting the crop by threshing and combine where the percentage of the broken grain/seeds was higher than manual operations. Moreover storage of seed for the use of next crop was not preferred due to the damage of the outer covering of seed which deteriorized the quality of seed. Village shopkeepers were not preferred as the source of seed as wheat seed procured by farmer was one percent of the total seed obtained by them. Different institutional seed agency (NSC, TDC and G.B. Pant University) together contributed about 27 percent of wheat seed requirement of the farmers. Among them most preferred was private dealers who supplied 35 percent to wheat seed requirement of the farmers followed by TDC and Pantnagar University (27%) and (15%) self retained.

According to farmers category analysis it was indicated that all the farmers prefer to procure wheat seed directly from the seed plants. The small medium and large farmers purchased 40, 50 and 41 percent respectively from the seed plants. Only small and the medium farmer purchased 2 percent and 1 percent from the fellow farmers respectively. However the large farmers did not prefer to purchase the seed from the fellow farmers.

The private seed plant also provides the facility of on farm delivery of seed at the doorsteps of selected farmers. Most of them were large farmers who took the seed programme of the different companies which assure the provision of quality seeds and buy back after harvesting.

Dependence on the private dealer for seed requirement was maximum for larger farmers (20%) followed by medium (14%) and small farmers (10%). This could be due to the better contact of large farmer with authorized dealers who provides them various facilities and technical knowledge also.

Practice of using multiple varieties at a time was also found among large and medium farmers. This may due to the unavailability of the lead varieties in appropriate quantity or due to the proactive nature of the farmers to switch to new recommended varieties.

Seed Replacement rate

The important aspect for the maintenance of crop productivity is the number of the progenies upto which seed could be used. Deterioration in the seed quality may occur due to loss of genetic vigor, germination power and physical admixture which may occur in field, threshing yard and during storage. Germination power may go down due to physical damage of the seed through insect and fungal infestation, moisture and breakage of grain due to prolong exposure of seeds due to adverse environment. The overall value of SRR was found to be 24 percent. There was a direct relation between SRR and the size of farm. It was highest for large farm (31.5 percent) followed by medium (22.0 percent) and small (18.0 percent). It was due to better economic condition of the large farmer due to purchase of the seed from institutional sources and their awareness about the quality of seed.

Management of wheat seed

About 15 percent of selected farmers paid attention to wheat crop at the time of harvesting and no one preferred the selection of seed at the time of threshing because of the prevalent trend of harvesting and threshing with combines in majority of cases in the district. Only about 3 percent of the farmers paid attention to the crop at pre storage time and about 2 percent at post storage time.

Storage of seeds

Storage structure used by the farmers and the care taken during the storage period may lead to the losses in the quality of seeds (Gill 1984) [3]. The storage practices followed by the farmers revealed the use of modern as well as traditional methods including metal bin (70 percent) and gunny bags (20%) and oil drums (5%) or all three together. It was found that about 20 percent of the farmers applied chemical treatment to the wheat seeds during storage.

Seed rate

The seed rate used for crops depend upon the seed multiplication rate. The seed rate for wheat used by the farmers is 38.5 Kg/acre. Wheat seed rate recommend by GB Pant University is 42 kg/acre for all the varieties of seeds. Majority of the large and the medium farmer were following the recommendation made by University regarding seed rate of wheat while the in case of small farmers the seed rate was lower than the recommended seed rate.

Conclusion

It was concluded that about 35 percent of the seed requirement of the farmers was met by private seed plant

owners. It may due to good personal contact of the farmers with seed plant owners. Study revealed that farmers obtained 27 percent seeds from the govt. agency, 20percent seed from the private dealers and 15 percent self retained seed 2 percent from fellow farmers and 0.5 percent from village shopkeepers. The dependence on authorized dealers of wheat seed was maximum of large farmers (20 percent) followed by medium (14 percent) and small (10 percent) farmers. The seed replacement rate was highest for large farmers (31.5%) followed by medium (21.5%) and small (18 percent) farmers. Study suggested that extension agencies should educate the farmers about the benefits of quality seed and their replacement from the seed taken from the reliable sources like GB Pant University, National Seed Corporation and Tarai Development Corporation and department of agriculture.

References

1. Banerjee SK. Seed in Indian Agriculture. Indian Agriculture. 1984; 28:115-20.
2. Evenson RE, Pray CE, Rose grant MV. Agricultural research and productivity growth in India. IFPRI, Washington, DC, 1999.
3. Gill KS. Food grain losses at farm level in Punjab Research Bulletin. Department of Economics and Sociology, Punjab Agriculture University, Ludhiana, 1984, 1-72.
4. Gupta RK. Quality of Indian wheat and infrastructure for analysis. In: Joshi AK, Chand R, Arun B, Singh G (eds) A compendium of the training program (26-30 December, 2003) on wheat improvement in eastern and warmer regions of India: Conventional and non-conventional approaches. NATP project, (ICAR), BHU, Varanasi, India, 2004.
5. Kulshrestha VP, Jain HK. Eighty years of wheat breeding in India: Past selection pressures and future prospects. Z Pflanzenzuchtg. 1982; 89:19-30.
6. Singh G, Ashokan SR, Asopa VN. Seed industry in India – a management in perspective. Oxford and IBH publishing company, New Delhi, 1990.
7. Verma S, Shidhu MS. Sources, replacement and management of paddy seed by farmers in Punjab. Agricultural Economics Research Review. 2009; (22):323-328.