



P-ISSN: 2349-8528

E-ISSN: 2321-4902

IJCS 2019; 7(4): 1128-1130

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Received: 18-05-2019

Accepted: 22-06-2019

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To study the seed health status of farmers' saved seed of paddy in respect to storage insect pests

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Abstract

Rice (*Oryza sativa* L.) is one of the major food crops of the world. Due to lack of awareness, the farmer's do not distinguish the seed grain and hence the quality of farmers saved seed remains below standard. One hundred farmers's saved seed samples were randomly collected from different villages of five districts in Eastern Uttar Pradesh. Ninety eight percent paddy seed samples were infested with *Sitotroga cerealella* Oliv. The presence of other insects i.e. *Sitophilus oryzae* L. and *Rhyzopertha dominica* Fab. were also observed in samples of paddy seed. The maximum seed moisture content (12.10 %) was recorded in the samples of Bahraich district and minimum seed moisture content (11.30 %) in samples of Sultanpur district. The maximum insect infestation (3.08 %) was recorded in samples of district Bahraich and the minimum (1.88 %) sample was infested in Sultanpur district. The maximum germination (80.08 %) was noticed in seed sample of Sultanpur district and the minimum (60.75 %) in sample of Bahraich district. However, the maximum 1540 and minimum 996 seed vigour index were observed in Sultanpur and Bahraich seed samples of paddy, respectively.

The keeping above in view, overall average performance of seed samples collected different villages of five districts were 11.61 % seed moisture content, 2.27 % seed damaged, 73.19 % seed germination and 1276 seed vigour index.

Keywords: Farmers' saved seed, Paddy and seed health

Introduction

Rice (*Oryza sativa* L.) is a very important cereal crop belongs to the family Poaceae. India is one of the leading rice producing countries in the world. About 90% of all rice grown in the world is produced and consumed in the Asian region. India has the largest area 43.39 million hectare constituting 28.01% of the land under rice in the world and rank second in total production 111.50 millions tonnes next to china (187.490 million tonnes) with an average productivity of 2804 Kg/hectare (Anonymous 2017-18) [3]. Asia has an area of only 140.036 million hectare and productivity as 5.32 tonnes / hectare (Anonymous 2017-18) [3]. In Indian more than half of the population depends on the rice for their food (Prasad *et al.*, 2012). The seed replacement rate in our country is very low because farmers are used to save the seed for next crop season in different crops.

Prakash *et al.* (1984) [8] reported seventeen species of insect-pests infesting rice in storage of which Angoumois grain moth (*Sitotroga cerealella*), rice weevil (*Sitophilus oryzae*) and red rust flour beetle (*Tribolium castaneum*) predominate in parboiled rice. Ahmad and Ahmad (2002) [2] reported loss of about 15.0 per cent rice in storage. On an average 60-90 % of stored commodities last six months to one year, during which food grain losses especially under poor storage conditions and in the absence of post-harvest management practices have been reported to reach between 25.0-40.0 %. Shfique Ahmad (2003) and reported 4.09-12.61 % losses in rice varieties during storage. Under poor storage conditions and in the absence of post-harvest management practices during paddy storage the losses have been reported between 25.0-40.0 percent.

Material and Methods

Collection of paddy seed sample: The Hundred paddy seed samples (500 g. seed for each sample) from randomly selected villages of five districts namely; Bahraich, Faizabad, Mahrajganj, Sultanpur and Sidharthnagar of eastern Uttar Pradesh were collected from the farmers after the harvest of the crop in different village to the investigate the seed health status

of farmers' saved seed of paddy in respect to storage insect pests during storage. The observation recorded that Insect infestation, Seed moisture content, Seed Germination, Seedling length and Seed vigour index.

Evaluation of seed for insect infestation and Seed Moisture Content: The presence of insect pest complex were observed in farmers saved paddy seed samples, collected from various villages of five districts of Eastern Uttar Pradesh. Seed moisture content in all sample were recorded with the help of Steinlite Electronic Moisture-Meter (MT-Pro).

Evaluation of seed germination and seedling vigour: The germination of paddy sample was observed by using the towel paper (Germination paper) as per ISTA (1976) method. One hundred randomly selected seed from each sample were taken and placed on water soaked towel paper and which was rolled after covering them by another water soaked towel paper. The rolled towel papers was covered with butter paper and thereafter, kept in seed germinator at $28 \pm 2^\circ \text{C}$ and 75 ± 5 per cent RH for seven days. The germination percent was work out by counting the number of germinated seed.

Seedling vigour index was computed by adopting the following formula as suggested by Abudul-Baki and Anderson (1973)^[1] and was expressed in whole:

$$\text{Vigour Index I} = \text{Germination\%} \times \text{Seedling length (cm)}$$

$$\text{Vigour Index II} = \text{Germination\%} \times \text{Seedling Dry Weight (g)}$$

Result and Discussion

Out of one hundred farmers' saved paddy seed samples were collected from different village of five districts in eastern Uttar Pradesh. Among them ninety eight percent sample were found infested with *Sitotroga cerealella*, *Sitophilus oryzae* linn. and *Rhizopertha dominica*.

The maximum seed moisture content (12.10 %) was recorded in Bahraich and minimum 11.30 % in Sultanpur district. The maximum 3.08 % insect infestation was recorded in Bahraich and minimum 1.88 % in Sultanpur district. The maximum 80.08 % seed germination was recorded in Sultanpur and minimum 60.75 % in Bahraich district. The maximum 1540 seed vigor index was recorded in Sultanpur and minimum 996 in Bahraich district. In eastern Uttar Pradesh the average; 11.61 % seed moisture content, 2.27 % insect infestation by *Sitotroga cerealella*, *Sitophilus oryzae* linn., *Rhizopertha dominica*, 73.19 % germination and 1276 of vigor index were recorded among total collected paddy seed samples of five districts in eastern Uttar Pradesh. These results were also similar to Lal *et al.*, 2000^[7]; Haque *et al.*, 2007^[4]; Karthikeyen *et al.*, 2009^[6] and Hossain *et al.*, 2013^[5].

Table 1: Overall mean infestation, seed moisture content, germination and vigour index of farmers' saved paddy seed samples of Eastern Uttar Pradesh

S. No.	Name of Districts	Overall mean				
		Insect infestation (%)	Seed moisture content (%)	Seed Germination (%)	Seedling length (cm)	Seed vigour index
1.	Bahraich	3.08	12.10	60.75	16.18	996
2.	Faizabad	1.95	11.36	76.59	15.59	1200
3.	Mahrajganj	2.08	11.57	75.33	18.55	1412
4.	Sultanpur	1.88	11.30	80.08	19.17	1540
5.	Sidharthnagar	2.36	11.74	73.23	16.85	1233
	Mean	2.27	11.61	73.19	17.26	1276

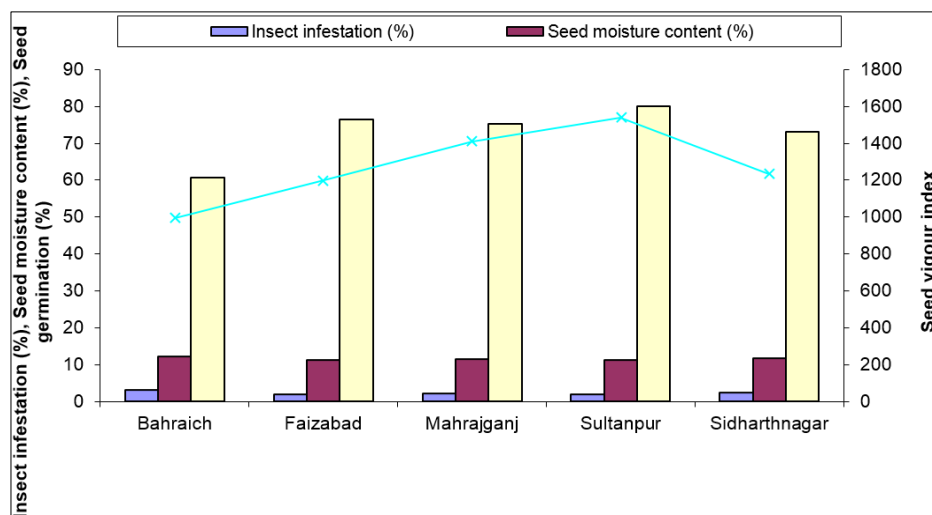


Fig 1: Overall mean infestation, seed moisture content, germination and vigour index of farmers' saved paddy seed samples of Eastern Uttar Pradesh

Conclusion

One hundred farmers' saved seed samples were randomly collected from villages of five districts in eastern Uttar Pradesh namely Bahraich, Faizabad, Maharajganj, Sultanpur and Sidharthnagar, ninety eight percent samples were found infested with mainly by *Sitotroga cerealella* however, *Sitophilus oryzae* linn. and *Rhizopertha dominica* were also observed in sample. In a country like India having large acreage under cultivation, the public and private seed sectors

both can not fulfill the requirement of seed to raise major crops. Therefore, the use of farmers saved seed in major crops is to be continued. Training of farmers regarding production and post production activities for healthy, disease free quality seed is very crucial for high productivity but the quality of farmers' saved seed is below standards, hence it is essential to create awareness among farmers regarding frequent replacement of their seed with quality seed to increase SRR for quality production.

References

1. Abdul-Baki AA, Anderson JD. Vigor determination in soybean seed by multiple criteria. *Crop Sci.* 1973; 13:630-633.
2. Ahmad M, Ahmad A. Storage of food grains. *Farming Outlook.* 2002; 1:16-20
3. Anonymous. Annual report, AICRP-NSP (Crops), Directorate of Seed Research, ICAR, Kushmaur, Mau, 2017-18.
4. Haque AHMM, Akon MAH, Islam MA, Khalequzzaman KM, Ali MA. Study of seed health, germination and seedling vigour of farmers produced rice seed. *Int. J Sustain. Crop prod.* 2007; 2(4):34-39.
5. Hossain MM, Rahman MM, Howlader MM, Khatum MR. Effect of farmers' storing progress on seed quality germination category and rate of germination index of rice. *Eco- friendly Agril. J.* 2013; 6(2):17-20.
6. Karthikeyen C, Veeraragavathatham D, Ayisha Firdouse S. Indigenous storage structures. *Ind. J Traditional Knowledge.* 2009; 8(2):225-229.
7. Lal R, Vaidya DN, Mehta PK. Relative abundance and extent of losses on unhusked rice due to stored grain insect-pests in Kangra district of Himanchal Pradesh. *Pest Management and Economic Zoology.* 2000; 8(2):129-132.
8. Prakash A, Pasahu IC, Jagadiswari R. The pest status of insects infesting rice stored in Orissa (India). *Tropical stored prod. Inf.* 1984; 47:15-20.
9. Prasad MS, Ladhaxmi D, Prakasam V, Laha GS, Krishnaveni D, Viraktamath BC. Disease management in rice: Directorate of Rice Research, Rajendranga, Hyderabad, 2012, 1-3.