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Studies on optimum sieve size and type of screen for grading soybean seed

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ABSTRACTS

In order to standardize the genotype and sieve size for grading soybean seed and to determine the optimum sieve size for maximum recovery and seed quality values, the experiments were conducted at seed Technology Research Unit, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola, M.S., India for three years 2002-03, 2003-04 and 2004-05. Efforts were made to study of four cultivars of soybean viz. JS-335, MACS-13, MACS-124 and PK-472 which are under cultivation in present days in Maharashtra State. On the basis of three years data, it was observed that for grading soybean cultivars a sieve size of 3.6 mm (s) is more effective and economical than presently recommended 4.0 mm sieve. Using the proposed sieve of 3.6 mm the recovery of good seed is found to increase to extent of 6.0 to 7.0 per cent along with germination percentage and physical purity percentage above acceptable limits.

Key words : Sieve size, Soybean seed, MSCS level.

INTRODUCTION

Seed size is an important parameter of seed vigour as it influences the performance of seed in soil. Seed bulk at harvest contains a wide range of seed sizes but these may not all be of equal value for sowing. Farmers have always realized the necessity of using uniform seeds of good viability to obtain high emergence and growth. The presently recommended sieve size *i.e.* 4mm for grading soybean seed is based on old varieties which are out of cultivation in seed production chain and moreover this sieve is not matching with any of the high yielding varieties which are under cultivation. Present method of grading aims to remove the non-viable seeds so that sound healthy disease free seed of uniform size will be available for sowing, which will give rise to optimum plant population and higher yields.

Determination of optimum sieve size and type of screen is one of the criteria in the Minimum Seed Certification standard (MSCS) for seed approval by Govt. of India. The sieve size recommended for processing different crop seeds under the minimum seed certification standard appear more general and not appropriate for all the newer varieties resulting in poor seed recovery (Anonymous, 1998).

At present the sieve size of 4.0 mm has been suggested by Seed Certification Agency to process the soybean seeds. It is often observed that the seed growers are loosing considerable quantity of good seed which is treated as a rejection and considering the huge demand from farmers for certified seed of soybean, therefore, there is a urgent need to standardize the sieve size for grading soybean seed. Hence the present research on optimum sieve size and type of screen for grading soybean seed was planned and undertaken.

MATERIALS AND METHODS

The experiments were conducted at Seed Technology Research Unit, Dr. PDKV, Akola, M.S., India during the year 2002-03, 2003-04 and 2004-05. The soybean seed of four genotypes *viz.*, JS-335, MACS-13, MACS-124 and PK-472 were collected from the Seed Processing Plant of Maharashtra State Seed Corporation Ltd. Akola. The collected seed were tested for germination percentage, moisture content, physical purity percentage, seedling length (cm) and test weight (100 seed wt. gm). The unprocessed raw seed of each cultivar were graded by a slotted hole sieve of 2.8 mm, 3.2 mm, 3.6 mm, 4.0 mm and 4.4 mm size. A sieve of 8.0 mm (r) were used as a top screen for all the cultivars. For grading the seeds of above varieties a seed cleaner cum grader having two screens and one fan was used. The Seed retained over each sieve were collected separately and tested for quality parameters *i.e.* recovery percentage, physical purity percentage, moisture content percentage, seedling length (cm) and test weight (100 seed wt. gm.) All the seed quality parameters were tested by conducting the standard procedure as mentioned in a the International Rule for Seed Testing (Anonymous, 1985).

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