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Effect of pre-harvest sanitation sprays on seed quality characters of greengram

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ABSTRACT
Effect of pre-harvest sanitation sprays revealed that, spraying of endosulfan 0.07% ten days before harvest of the crop was the most effective in preventing bruchid infestation totally on pods and seeds both immediately after harvest and after 25 days of storage. The trials conducted during winter and summer seasons expressed that summer season was favourable for production of insect free seed.

Key words : Endosulfan, Sanitation sparays, Seed quality, Greengram.

INTRODUCTION

Seed quality is a complex character and is determined by both field and storage factors. Among the field factors, season of cultivation, availability of nutrients, soil moisture, plant density and incidence of pests and diseases play a major role in production of quality seed (Agrawal, 1995). Of which the occurrence of pest and diseases often cause major reduction both in yield and quality in any seed production programme. In pulses the bruchids are the main pests of stored seeds. bruchids (*Callosobruhus spp.*) are field carry over pest as they lay eggs in the field before harvest and get manifested during storage and cause pronounced loss (Howlader and Matin, 1988).

As per the ancient adage, "Prevention is better than cure", controlling these pests in the field prevents them from entering godowns and spreading further to uninfected seeds. Pre-harvest sanitation spray is a novel method to arrest these pathogens / insects in the field itself thereby delimiting the damage during storage. It involves the spraying of fungicides and / or insecticides during the formation and development of pod and seed at needy concentrations at suitable intervals (Vijayakumar, 2001).

Bruchids,*Callosobruchus spp*. belonging to the family bruchidae, order Coleoptera is the most destructive field carry over pests of stored pulses especially whole seeds (Howlader and Matin, 1988). Prevett (1961) reported that at last stage of maturation, seeds are infested by bruchids either from field or by the bruchids migrating from infested seeds of adjacent granaries or from seed godown which do not have expression at field. Hence studies were initiated with greengram cv. CO 6 to evaluate the influence of pre-harvest sanitation sprays on bruchid infestation and seed quality characteristics of resultant seeds as a step for insect free seed production.

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MATERIALS AND METHODS

Genetically pure, freshly harvested breeder seeds of greengram (*Vigna radiata* L.Wilczek) cv. CO 6 obtained from Agricultural Research Station, Bhavanisagar (11°29' latitude, 77°08' longitude) served as the base material for the field experiments.

The field trials were conducted during winter 2004 and summer 2005 at farmer's field (Semmanich-ettipalayam village of Coimbatore district) with greengram cv. CO 6 adopting Randomized Block Design with five treatments and three replications. The crop was raised with recommended package of practices in a plot size of 4 x 5 m^2 under irrigated condition. Ten days before harvest i.e.60 days after sowing the crop was imposed with pre-harvest sanitation sprays using endosulfan 0.07%, neem oil (TNAU neem formulation) 3%, neem dust (TNAU formulation) @ 25 kg ha^{-1} and Neem Seed Kernal Extract @ 5% (NSKE) with knapsack sprayer as prophylactic measure against bruchid infestation. The unsprayed plots served as control. At harvest, 10 plants were selected randomly in each of the treatment and replication and observed for the following parameters *viz*.,pods $plant^{-1}$, infested pods $plant^{-1}$ (%), eggs (infested) pod^{-1}, eggs100 $seed^{-1}$.

The infested pods as such and seeds separated from infested pods obtained were stored in paper bag for a duration of 25 days (2 days after the life cycle of bruchids) and were evaluated for bruchid emergence pod^{-1} (%) and following seed quality characters.

The damaged seed (%) was calculated by dividing number of damaged seed by total number of seeds taken for counting which is multiplied by 100 (Mohan,1993). The germination test was carried out with 100 x 4 seeds (ISTA, 1999). Ten normal seedlings are selected from