SHORT NOTE

SIMPLE TECHNIQUE FOR IDENTIFYING AND SEPARATING MANGO STONES INFESTED WITH MANGO STONE WEEVIL

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Mango stone weevil, *Sternochetus mangiferae* (Fabricius) (Coleoptera: Curculionidae) is a serious pest of mango (*Mangifera indica*) that affects both fruit and seed quality. Seed is more important than fruit pulp in cultivars that are used as rootstocks. Infested fruits are difficult to detect since usually no damage is visible externally. Incisions made on immature fruits by ovipositing females are small and generally soon heal (Kalshoyen, 1981). After hatching, the larva burrows through the flesh and into the seed. As fruit and seed develop, the tunnel and seed entry are completely obliterated so that later on it is impossible to distinguish infested from non-infested seeds unless they are cut open (Balock & Kozuma, 1964). Inside the infested stone, the cotyledons turn black and remain merely a rotten mass. Seeds, in which the embryo is damaged and the reserve food in the cotyledons is greatly reduced, fail to germinate. Shelling of stones to get sound kernels is suggested for planting (O’Connor, 1969) but it is laborious and may damage the soft embryo. Planting infested stones means poor germination and waste of space and manure. Keeping stones for 8-10 days after depulping may help in identifying infested stones as the weevils come out of stones, but results in poor germinations due to rapid loss of seed moisture even in shade and rotting. Hence, there is a need for sowing seeds immediately after extraction. This necessitates removal of infested stones before weevil comes out of stones. In this study we tried to find out a technique that can separate non-infested from infested stones easily without opening the stones.

Olur and Bappakai are the two most commonly used rootstock cultivars in India due to their polyembryonic nature and hence, they were selected for this study. The stones were extracted from fully ripened fruits obtained from the Orchard grown at IHRL, Bangalore in 2004 season. The flesh surrounding the stones was completely removed and stones were washed thoroughly in water. Immediately after washing the stones were placed one by one in a bucket containing clear water and observed the position of stones in still water. Based on the position of stones in still water, 3 categories were made viz., Floaters (stones floating in water); Sinkers 1 (stones settled completely flat at the bottom) sinkers 2 (stones settled at bottom but with concave edge facing completely/slightly upward). The stones from each category were cut open to see the presence of weevils or damage caused by weevils inside. Eight replicates of 5 seeds each were used for observations. The percentage was worked out for healthy and damaged seeds in each of the category. The percentage data were subjected to angular transformation and analysed by ANOVA technique with CRD.

The data on proportion of different categories of stones is given in Table 1. In Olur,
sinkers 1 was found in majority (67.8%) and sinkers 2 and floaters were almost of same proportion. In case of Bappakai, sinkers 1 constituted only 17% whereas floaters were in majority with 47% and rest 36% were sinkers 2. When tested for weevil infestation in each category of seed, it was found that sinkers 1 had 92.5% of stones free from weevils whereas sinkers 2 and floaters had only 7.5 and 2.5% of stones free from weevils, respectively in case of Olur. In sinkers 1 and 2, damage in weevil-infested stones was partial and in floaters damage was almost complete. In case of Bappakai also similar trend was observed. Sinkers 1 had 85% stones without weevils and sinkers 2 and floaters had negligible percentage of healthy stones. Bagle and Prasad (1985) observed 48 and 87% weevil infestation in mango cultivars of India and opined that all cultivars are susceptible to weevil. The sinkers 1 could settle down flat at the bottom of water because of no damage inside the stone. Whereas in case of sinkers 2, the stone was partly damaged by weevil; the damaged part (mostly the concave edge from where the radicle emerges out) tended to face upright as it was light and filled by air. The floaters were badly damaged by weevils hence they floated on the surface of water. This showed that by employing this technique, the stones infested by weevils can be eliminated up to 85-90% by selecting only the sinkers 1 and in the process 5–10% of good stones will be lost by rejecting sinkers 2 and floaters. Elimination of infested stones before sowing serves two purposes. It prevents introduction of stone weevil to new areas, which are devoid of this pest thus serving the quarantine purpose. Secondly, it would save a lot of sowing space and manure in nursery and results in nearly 90% seedling emergence.

REFERENCES

