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REFERENCES

- Lakshminarayana M 2010. Eco-friendly management of insect pests of castor. In: *Research and Development of Castor: Present Status and Future Strategies*, D M Hegde (Ed.), Directorate of Oilseeds Research, Hyderabad, pp. 141.
- Madhuri C, Rao R G, Arjun R P and Srinivasa R V 2006. Incidence of lepidopteron pests of castor (*Ricinus communis* L.). *The Andhra Agricultural Journal*, **56**: 2-15.
- Naik M I, Kumar M A A, Manjunatha M and Shivanna B T 2010. Survey for the pests of castor and natural enemies. *Environment and Ecology*, **28**: 558-563.

Evaluation of storage containers and botanical oils for bruchid management in groundnut

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ABSTRACT

Storage containers and botanical oils were evaluated for managing bruchids in groundnut. After six months storage, damage to pods in airtight plastic container, APC was less (34.0 and 35.0%, respectively for neem and castor oils) than air-permeable galvanized iron tin, APGIT (75.8 and 73.8%, respectively). Similarly, weight loss of pods stored in APC was less (33.5 and 31.4%, respectively for neem and castor oils) than APGIT (77.8 and 76.1%, respectively). When tested alone, APC was superior to APGIT while, neem and castor oils were statistically non-significant. It was noted that treatments and length of storage had no impact on germination.

Keywords: Botanical oils, Bruchid, Groundnut, Management, Storage containers

Bruchid, *Caryedon serratus* Oliviera is the primary pest of stored groundnut in India. They inflict both quantitative and qualitative losses. Generally, farmers save some portion of their groundnut produce as seed (in the form of pods) for the next cropping season. Jute and plastic interwoven bags offer no protection from bruchids. An economical and feasible storage practice can save a lot of money to farmers, at least the seed cost. Hence, this study was undertaken to evaluate locally available storage containers and botanical oils.

About 7 kg of insect- and damage-free groundnut pods (cv. GG-20) were treated with either neem oil 5% (v/w) or castor oil 5% (v/w) at 50 ml/kg pod and stored, in either APC or APGIT. Initial seed germination was recorded from a sub-sample of 50 g pods from each treatment combination. Freshly emerged adult bruchids were released into the container at 10 pairs/kg pod. Similarly, bruchid adults were released into two container types having 7 kg of untreated pods. Entire set up was incubated at ambient room temperature in the field laboratory. Pod samples (100 g) drawn at the end of 180 days of storage were used to record following observations: number of damaged and undamaged pods, and weight of damaged and undamaged pods. Pod damage (%) and weight loss of pods (%) was calculated by following Harish *et al.* (2012). Final seed germination (%) was also recorded from another sub-sample of 50 g pods drawn from of each treatment combination.

After 180 days of storage, damage and weight loss in pods of APC + untreated (57.1 and 56.4%, respectively) were less than that of APTIG + untreated

(98.5 and 98.5%, respectively). This was largely due to reduced availability of oxygen for bruchids in APC. Neem oil and castor oil treatments were at statistically par and registered lowest damage and weight loss in pods. This may be attributed to the physico-chemical properties of oils (Harish *et al.*, 2012). However, damage and weight loss in pods of APC + neem oil (34.0 and 33.5%, respectively) and APC + castor oil (35.5 and 31.4%, respectively) were less than APTIG + neem oil (75.8 and 77.8%, respectively) and APTIG + castor oil (73.8 and 76.1%, respectively). This may be ascertained to additive effect of containers and oils. There was no significant loss in the seed viability as there was only a slight reduction germination values from initial (92-100%) to final (88-94%). Results were in congruence with that of Murlidhar *et al.* (2013). These findings may be helpful to farmers for the safe and economical storage of groundnut seed.

REFERENCES

- Harish G, Nataraja M V, Prasanna H, Thirumalaisamy P P, Jadon K S, Savaliya S D, Padavi R D, Koradia V G and Gedia M V 2012. Efficacy and insecticidal properties of some essential oils against *Caryedon serratus* (Oliver)-a storage pest of groundnut. *Journal of Food Science and Technology*.
- Murlidhar D M, Narayanan G and Harish G 2013. Storage structures-sustained storage and managing insect-pests of groundnut. *DGR Newsletter*, **12** (1-2): 4.