

## Eco-Friendly Approach in the Management of Stored Sorghum Insect Pests in Small-Scale Farmers' Storage Structures of Northern Nigeria

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**Abstract :** Farmers' storage structures in Pauwa village of Katsina State, Northern Nigeria, were simulated and incorporated with the application of leaf powders of *Euphorbia balsamifera* Aiton, *Lawsonia inermis* L., *Mitracarpus hirtus* (L.) DC. and *Senna obtusifolia* L. to search for more eco-friendly methods of managing insect pests of stored sorghum. The four most commonly grown sorghum varieties in the study area, namely "Farar Kaura" (FK), "Jar Kaura" (JK), "Yar Gidan Daudu" (YGD), and ICSV400 in threshed forms were used for the study. The four varieties (2.50 kg each) were packed in small polypropylene bags, mixed with the leaf powders at the concentration of 5% (w/w) of the plants, and kept in small stores of the aforementioned village for 12 weeks. Insect pests recovered after 12 weeks were *Sitophilus zeamais*, *Rhyzopertha dominica*, *Tribolium castaneum*, *Cryptolestes ferrugineus*, and *Oryzaephilus surinamensis*. There were significantly fewer insect pests in treated sorghum than in untreated types ( $p < 0.05$ ). More weight losses were recorded in untreated grains than in those treated with the botanical powders. In terms of varieties, grain weight losses were in the order  $FK > JK > YGD > ICSV400$ . The botanicals also showed significant ( $p < 0.05$ ) protectant ability against the weevils with their performance as  $E. balsamifera > L. inermis > M. hirtus > S. obtusifolia$ .

**Keywords :** botanical powders, infestations, insect pests, management, sorghum varieties, storage structures, weight losses

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