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Nanoparticulate encapsulation of neem oil and NSKE for the effective control of peanut seed beetle

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Peanut (*Arachis hypogaea L*) seed beetle (*Caryedon serratus O*) causes damage to the peanut seed to the extent of 20% over a period of 5 months of storage. Consequently, the economic loss recorded there by meets more or less to the production cost of the peanut. Therefore, there is an urgency to address this problem to boost the economic status of the farmers. Nanoscale materials (measured size is less than 99 nm in at least one dimension with quantum confinement) pose unusual properties compared to their bulk counter parts and use of these materials in agriculture and allied sectors is still at its infancy stage. Neem oil and neem based products are well known for their antifeedant properties against insects and are been widely used in controlling stored grain pests. However, the efficacy of neem based products in doing so is considerably low. Herein, we formulated nanoscale zinc oxide and nanoscale chitosan based neem oil and NSKE formulations for the first time and evaluated these nanoparticulate formulations against peanut seed beetle over a period of 6 months. The results revealed that up to 4 months there was no infestation, no pod damage and adult emergence with nanoparticulate formulation treatments which was more unlikely with the control (No application). Peanut pod weight loss (54.61%) and pod damage by count (3.82%) was significantly low with nanochitosan encapsulated NSKE compared to control (83.7%, 49.3% respectively). Thus nanoparticulate encapsulation of neem based products significantly affects the infestation of peanut beetle and pod damage thereby.

Biography

J Manjunath has obtained his Master's degree from Acharya N G Ranga Agricultural University, India and has been working as a Scientist of Plant Protection, especially in Entomology. He has been involving in research in insect pest management and screening of hybrids and varieties of major crops like, foxtail millets, paddy, jowar, tobacco, and groundnut and sun flower. He is also actively involved in artificial screening of many varieties like, SiA 3085 and SiA 3156 of foxtail millets, Nandyal senaga-1 of chickpea and Nandyal pogaku-1 of tobacco which were recently released, labeled and notified in India. He published several national and international peer reviewed research papers and numerous popular articles. He used to organize several public meetings with the farmers to disseminate the crop based plant protection information to the farming community. At present, his research interest is on nano based molecules for insect management in stored grains.

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