Meera Srivastava, J Food Process Technol 2017, 8:10 (Suppl)
DOI: 10.4172/2157-7110-C1-070

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Food and environment safety: Pesticides vs botanicals

Diet of an individual mainly comprises of cereals and pulses. Pulses are the most important source of protein not only in India but around the globe. Herbivorous insects are said to be responsible for destroying one fifth of the world's total crop production annually, may it be crop fields or store houses. The storage of pulses is more difficult than cereals; as stored grain pests pose a major threat to them. The stored grain pests are difficult to manage with the chemical insecticides because of the health hazards associated with their use. By their very nature, most insecticides create some risk of harm to humans, animals or the environment. Unfortunately, some of the highly hazardous insecticides are continually and indiscriminately used globally. The small farmers prefer them because they are cost-effective, easily available and display a wide spectrum of bioactivity. It is for sure that insecticides, once enter the environment will have negative impacts on air, water, soil, human beings and animals. These include health hazards to human from direct or indirect exposure to pesticides, development of resistance and pest resurgence due to destruction of natural enemies, pesticide residues in food, water, soil and fodder, poisoning of wild-life and livestock, environmental pollution and ecological imbalance. This has forced to change the approach of pest management and dictate the need for effective and biodegradable pest control strategy as an alternative; the use of botanical insecticides seems to have a distinctive advantage over all other management approaches. Among fourteen important insect pests of stored grains, the pulse beetle Callosobruchus chinensis Linn., (Coleoptera: Bruchidae) is one which causes considerable qualitative and quantitative loss to stored pulses. A large number of plants have been screened for their activities against insects and have been reported to possess insecticidal, repellent or anti-feedant properties by various workers. Our laboratory has screened certain plant formulations and based on the observations it could be concluded that some of the formulations employed were very effective against the pest insect, suggesting that these could be used as a cheap, safe and eco-friendly alternate, especially against the pulse beetle C. chinensis.

Biography

Meera Srivastava is presently working as the Head of Post Graduate Department of Zoology, Govt. Dungar College, India. She has over 32 years of experience in Post-Graduate teaching and Research in the field of zoology, especially entomology, besides sheep, camel and elephant. She is also a Convener of Board of Studies in Zoology and Member of Academic Council, MGS University, India. She has contributed to more than 154 research publications published in journals of national and international repute and in Conferences. She is Life Member of different academic bodies and is a Member of Editorial Board of different national and international journals. She is a recipient of various distinguished awards and honors.

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