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Efficacy of food grade synthetic amorphous silica in small farms

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ABSTRACT

There are few available techniques to control stored products insects in small farms, which account for about 30% volume of stored grain in China. This research evaluated application of synthetic amorphous silica dust on small farms at the dosage of 100 mg/kg. Populations of *Sitophilus zeamais* Motschulsky, *Cryptolestes ferrugineus* (Stephens), *Rhyzopertha dominica* (F.), *Tribolium castaneum* (Herbst), and *Sitotroga cerealella* Olivier reduced 90.4%, 78.3%, 100%, 100%, and 76.9% after 50 d of application, respectively. After 70 d of application, populations of *S. zeamais*, *C. ferrugineus*, *R. dominica*, *T. castaneum*, and *S. cerealella* reduced 81.9%, 100%, 100%, 100% and 50%, respectively. The losses caused by insects and molds were 1.67±0.16% and 0.46±0.12% in the treatment groups, whereas 3.55±0.33% and 1.29±0.33% in the control groups. This study provided the information of a new non-chemical technology for pest management in small farm grain storage.

Keywords: Food grade, Synthetic amorphous silica, Stored grain insect pest, Small farm storage