

Title           Wheat disinfestation using microwave energy  
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### **Abstract**

Disinfestation of grains using microwaves can be an alternative method to pesticides in killing insects. A method to control insects in grains using microwave energy is described in this manuscript. An industrial microwave system operating at 2.45 GHz was used in this study to determine the mortality of three common types of stored-grain insects namely *Tribolium castaneum* (Herbst), *Cryptolestes ferrugineus* (Stephens) and *Sitophilus granarius* (L.). Wheat samples of 50 g each at 16% moisture content (wet basis) were infested with 5, 10 and 15 adult insects. The infested samples were then exposed to microwaves at four different power levels of 0.25, 0.3, 0.4 and 0.5 kW/kg for two exposure times of 28 and 56 s. A 100% mortality was achieved for *T. castaneum* adults at 0.5 kW/kg power level for both exposure times of 28 and 56 s. The mortality rates were lower at the lower power levels. For instance, at 0.25, 0.3 and 0.4 kW/kg power levels, the mortality rates were 45, 58 and 85%, respectively. Similar results were obtained for the other two insects. Germination tests were conducted for different samples and it was determined that the germination of wheat kernels that were treated with microwave energy was lowered.