

## Disinfestation of food products using microwave energy: A review

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The presence of insects/pests in stored food products, such as, grains, nuts and spices is a major factor causing quantitative and qualitative losses. Annual losses of food products due to insects and pests have been estimated to be around 10% in North America and 30% in Africa and Asia. To move food grains/spices from an infested area to a non-infested market, the produce must first be treated with an acceptable quarantine treatment procedure. Since 1950s, chemical insecticides have been used extensively in stored food grain facilities to control insects and pests. However, regulatory issues, insect resistance, environmental concerns and increase of the organic market require non-chemical alternatives. The present and potential non-chemical treatments for both domestic and international markets include Ionizing Radiation, Controlled Atmosphere, Cold Storage, Thermal Treatment (Hot air and Hot water) and Dielectric Heating using Radio Frequency and Microwave (MW) energy. Every method has its own advantages and disadvantages but recent studies on disinfestation of agricultural products have reported that MW treatment is a potential means of replacing other quarantine methods. It has several advantages, such as, selective heating, compactness of equipment, speed of switching ON and OFF and pollution free environment, equivalent or better quality retention, energy minimization and killing of microorganism. This paper reviews the recent advances in MW disinfestation of stored food products especially spices and nuts, its principle, experimental results from previous studies, so as establish the state of art in relation to MW heating applications for disinfestation of food products. Keywords: Disinfestation, Insects, Microwave, Stored Food Products.

### Biography

Ipsita Das did M.Tech. & Ph.D. from IIT Kharagpur in Food Process Engineering. She is presently working as Scientist in Department of Electrical Engineering, IIT Bombay. She has authored about 25 technical publications in peer reviewed journals and proceedings. She has published Two Book Chapters (Taylor and Francis Group & In Tech Publishing House) and Two Monographs with LAP LAMBERT Academic Publishing GmbH & Co, Germany. Her areas of research interest include Food Drying & Disinfestation.

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