



Review Article

Management strategies for storage, disinfestation and insect detection of grains and seeds

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ABSTRACT : Agricultural products such as grains are the major source of food for human and most domesticated animals. In many developing countries, overall postharvest losses of cereals and legumes about 10–15% are quite common. Consumption of cereals and legumes by pests such as insects during storage and microbial spoilage or contamination may make these totally inedible. During storage, quantitative as well as qualitative losses occur due to insects, rodents, and micro-organisms. For protection of grain damage and quality of food grains, various storage and disinfestation methods are used. Natural contamination of food grains is greatly influenced by environmental factors such as type of storage structure, pH, temperature, moisture, etc. At any given time 60-70% of grains are stored on the farm in traditional structures like jute sacks, baskets, earthen pots, metal drum and underground pits. Few important disinfestation methods such as microwave, gamma ray, infra-red and radio frequency energy, pheromone baited traps, and use of entomopathogens proved highly effective against stored grain insects. Besides this, aeration cooling and low temperature treatments proved much safer pest management tools that represent a potential alternative of fumigants to control insects. Further development of various detection technologies such as acoustic detection, X-rays images, near-infrared (NIR). Spectroscopy and electronic nose is the promising tool for detection of insect.

KEY WORDS : Qualitative loss, Quantitative loss, Disinfestation, Infra-red energy, Electromagnetic radiation, Aeration cooling, Acoustic detection, X-rays imaging, Electronic nose, NIRS

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