Solar Heater Box

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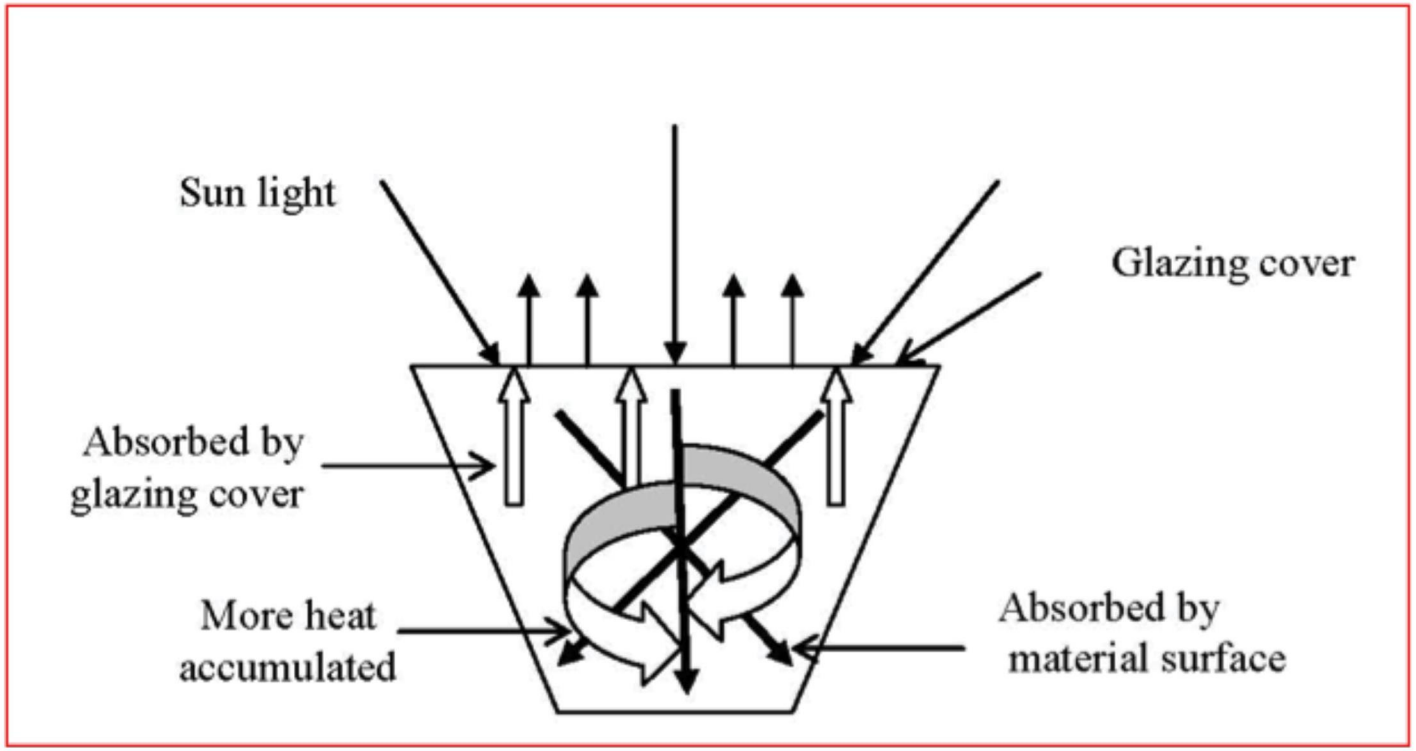
Stored-product insects at high densities can consume a considerable amount of grains and pulses. Hence it could cause losses which are estimated to be between 10 - 50%. Infestation of stored products by storage insect pests may result in reduction of nutrient, weight and quality of the product, in particular germination. They may be vectors of bacteria and other pathogenic protozoa that carry diseases. Insect resistance to insecticides and market demand for residue-free products (grain and pulses) have increased the importance of alternative structural treatments and disinfestations methods such as heat disinfestations. Solar (green energy) heat disinfestation is a suitable and efficient method for management of stored-product insects in tropical countries like Malaysia where there is abundance of sunshine throughout the year. The working principle of

this green technology is trapping and concentrating solar radiation in a predetermined space that can be used to heat products to a predetermined temperature and maintaining the said temperature for a predetermined period of time that ensure high insect mortality, preventing infestation and at the same time preserving the original qualities of the product. The box comprises of storage compartment with an optimized shape that allows solar energy to be captured and trapped, a receiving platform for the product to be disinfested and a transparent top cover. Walls of the box comprise of two functional layers: an outer layer made of a low thermal conductivity material and an inner layer acting as solar radiation-reflecting layer made of highly reflecting materials. Solar heater boxes preserve (dry) agricultural products perfectly within a shorter time without affecting the quality of the product and it requires no electricity to work.



HEATING PROCESS IN THE SOLAR BOX

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