

Development of Disinfestation System for Low Cost Food grain

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Abstract

Disinfestations of food grains are becoming increasingly demanded, due to the harm caused to food grains during processing and storage. This project proposes a solar aided food grain disinfestation scheme for drying food grains with direct solar drying and hot air desiccation combining effects. This decreases the moisture content of the grains to the recommended level, helping to store and preserve grains for a longer period of time and avoiding spoilage during storage. The system is intended, created and manufactured with appropriate materials. Wherever needed, food grade materials should be used. The device is anticipated to dry food grains in a shorter time than traditional direct solar drying and also cost-effectively, with very less electricity.

Keywords-disinfestation, desiccation

INTRODUCTION

Issues like urbanization and pollution and urbanization cause land to decrease day after day. The income is 2-3 times a year, but there is a constant and steady increase in consumption. Losses due to insects, rodents, and humidity etc. during storage in food grains are high. During multiple phases of seeding, development, harvesting and storage, the product is spoiled. It has been discovered that approximately 30% of this spoilage is caused during storage. Solar energy, abundant in nature, can be used economically to disinfect food grains. The primary benefit of this scheme is that no food grains are chemically handled and subjected exclusively to sunlight, which heats and disinfects the grains in the machine [1]–[4]. This scheme will assist farmers, food processors and farmers in the conservation of food grain disinfestation and drying by low-cost moisture elimination and is energy effective. Disinfection or disinfestation is a classic food preservation technique that gives longer shelf life, lighter weight and little storage room. In this technique, microbial substances are destroyed by using means such as heat, ultraviolet rays or microwaves and moisture content reduced (this would promote microbial activities). It is discovered that approximately 30% of this spoilage happens while the product is stored [2], [5]–[8]. An innovative technique for disinfection of food grains with the use of solar radiation is being used in this project. The abundant solar energy in nature can be used economically to disinfect food grains. The primary benefit is that food grains are not chemically handled; they are subjected only to sunlight, which heats up air, heats and disinfects grains. Efficient energy, too, is technology. This scheme will assist farmers and farmers to preserve food grains, disinfect and dry them by

removing low cost humidity levels. It can be extended to any level needed. The adoption of this scheme will also assist the food industry to dry food grains and other food goods more quickly.

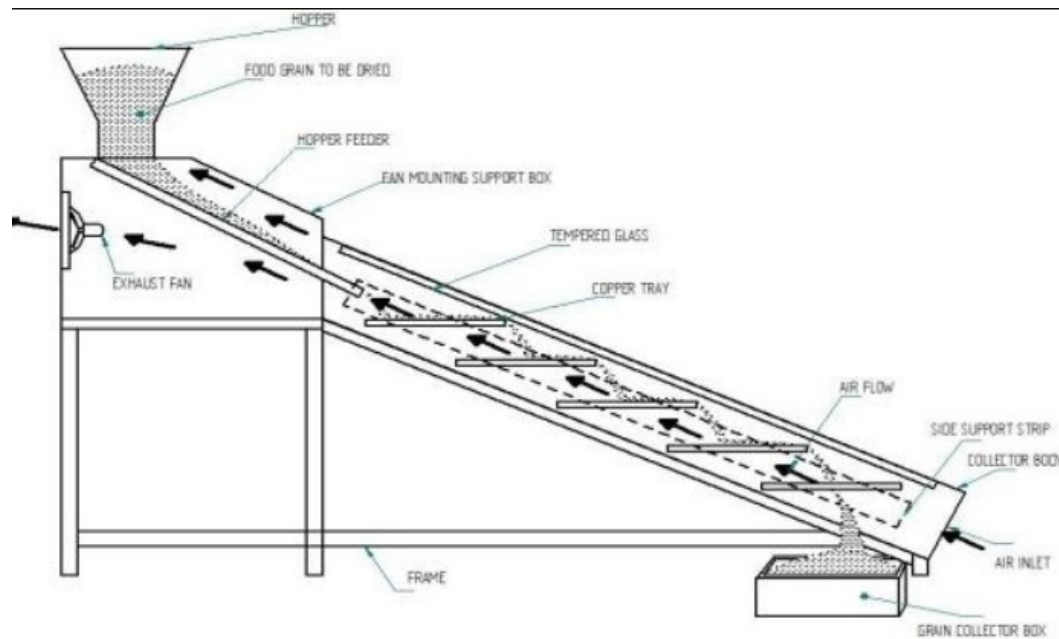


Figure-1 Schematic diagram and working disinfestation system

RESULT

Experimental data show that moisture in comparison to standard sun drying can be removed in a smaller time interval. You can also see that decent temperature even with mild amounts of sunlight is achieved on copper trays. For testing use were the Moisture Meter grain and the IR camera. The loss of weight of grains also indicates this indirectly. The heat also kills micro-organisms.

CONCLUSION

The discussed device is an affordable way of using only a few electrical quantities. Even under cloudy circumstances, this equipment can be used efficiently. The use of counter-flow and insulation principle increases the efficiency of machinery. If the removed moisture is not good enough, the grain or air flow rate can be different or the necessary moisture content can be obtained through various passes. The lack of chemicals can make food safer for consumption.

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