

ABSTRACT

DESIGNING SEMI-MECHANICAL SOLAR DRYING SHELF

By

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Under sun rays drying activity is usually drying products on cement floor, plastic sheeting, or drying shelf. Drying product by using drying shelf is the most effective drying because products will be dried faster and cleaner. However, moving product after drying is consuming a lot of time and manpower. The objective of this reasech was to make semi-mechanical solar drying shelf to move and compose shelves semi-mechanically to save time and manpower. This semi-mechanical drying device contained of two frames, four shelves, two ropes,two box movement holdings, boxes, spring, big pulley and small pulley. Mechanism of this device worked by releasing hook from the shelves so that the spring would pull other components connected to the shelves and automatically each shelf would move into boxes. Big and small pulley were used to set up movements between shelves and boxes so that when each shelf moved into the box, the box would move lower as far as one shelf height. The shelf which had entered into the box would cause bigger pulling power causing next shelf faster movement speed and the box movement holding functioned to slow movement of the fourth shelf.

The performance of this solar drying device was tested to dry cassava and soybean. The result showed that speed of movement per shelf to transfer product and shelves being composed in the boxes semi-mechanically was 1,19 seconds. This result could save time and manpower compared to manual movement by lifting the shelves by operators which required approximately 11,83 seconds for each shelf.

Keywords: Drying under sun rays, semi-mechanical drying device, shelves.