



Technical Note # 87

Seed Drying Cabinet

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Published 2002



Introduction

Seed storage is often a problem in the tropics. However, if seeds can be properly dried, they will remain viable for a longer period of time. The seed drying cabinet described here can help improve the viability of seeds in storage.

Description

The cabinet described in this Technical Note is approximately 32 in (80 cm) wide, 40 in (100 cm) high, and 8 in (20 cm) deep. These dimensions may be varied to suit the material you have to work with.

The cabinet consists of two chambers (see Diagram 1). The upper chamber contains four sixty-watt electric light bulbs to furnish heat, and a radial or squirrel cage fan to produce air movement throughout the cabinet. The lower chamber is built to accommodate drying trays that have wire mesh bottoms or bins or canisters with perforated sides and that can be stacked one on top of another. Baskets can also be used but should not be woven too tightly.

The two chambers are separated by a fiberglass filter or other appropriate filter. The fan moves the heated air from the upper chamber into a plenum which encompasses one entire side of the cabinet (see Diagram 1). This plenum is approximately 2 in (5 cm) wide. The height and depth dimensions are the same as those of the cabinet.

The air moves downward and under the plenum wall. It moves under and upwards through a latticed floor, then upwards through the drying trays or other containers, and finally through the filter into the upper chamber to be reheated and recirculated.

Each electric light bulb contributes heat to the chamber and each is controlled by a separate toggle switch so that the amount of heat produced can be controlled. The fan is controlled by a separate switch. See Table 1 for information about how the amount of wattage used (at different ambient temperatures and relative humidities) impacts the cabinet temperature and relative humidity.

The cabinet top cover is not fastened to the top chamber. This facilitates filter and bulb changing or fan servicing. Thermometer and humidity gauges are placed in the upper chamber on top of the filter. The upper front panel is attached permanently to the upper cabinet chamber. Do not try to make the top cover or doors hermetically tight. Air leakage (escape) from these areas is necessary for humidity control. Single or double side swinging doors are mounted under the switch panel to protect the integrity of the drying chamber when in operating mode.

Diagram

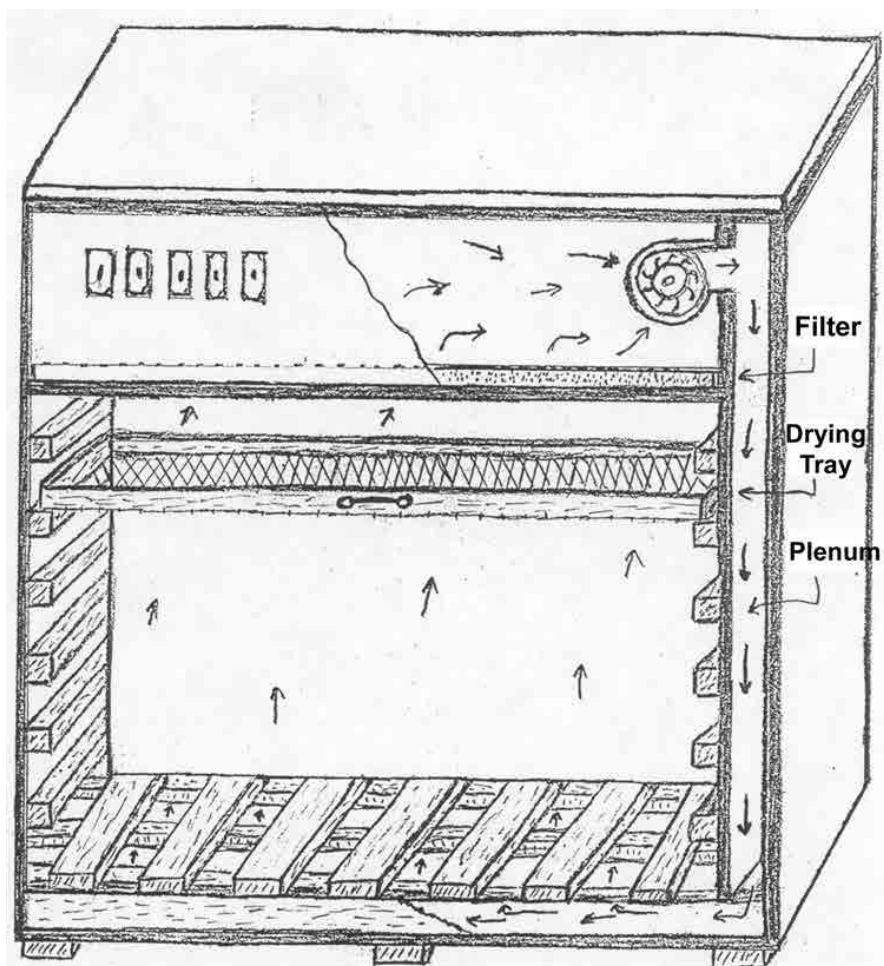


Diagram1: Front view of seed drying cabinet

Observations

Table 1: Temperature and relative humidity observations. Compiled from cold start. Operating figures depend on ambient temperature, relative humidity, and nature of the cabinet load.

Wattage Start	Cabinet Temperature (°C)	Cabinet Relative Humidity (%)	Ambient Temperature (°C)	Ambient Relative Humidity (%)
240	28	48	31	72
240	40	20	32	60
240	42	18	32	58
240	42	16	31	56
180	42	15	29	55
120	38	21	31	60
120	39	19	31	62
60	37	19	27	74
60	27	19	25	44

Note: When cabinet temperature and humidity figures can be practically achieved and maintained so that their sums total 46 or less, one may expect viable seed storage for a year or more.