

Flat-Bed Dryer, 1t

What is a flat-bed dryer?

A dryer is a machine that removes the water from wet grains by forcing heated air through the grain bulk. In a flat bed dryer the same quantity of grain is kept stationary in a holding bin until drying is completed.

Why use a flat-bed dryer?

Flat bed dryers produce better grain quality than sun-drying, especially in the wet season. They are more affordable than re-circulating batch dryers or continuous flow dryers of the same capacity and have simple design. The disadvantage is a moisture gradient that develops in the fixed bed grain bulk during drying from the air inlet to the air outlet.



How to use the flat-bed dryer

Features

- Easy to operate.
- Can be used for rice and corn.
- Produces better quality than sun drying.
- Simple design allows local production of the drying bin, blower and furnace and ensures easy maintenance and repair.
- Compact, mobile, can easily be disassembled.
- Can be operated with an engine if electricity is not available or too expensive.
- Automatic shut-off in case of power failure.

How to operate a flat bed dryer

- Check oil and fuel levels of the engine, kerosene level, pulley tension and make sure the dryer is operational. Consult your manual.
- Load the drying bin evenly. If the grain contains lots with different MC, mix before drying.
- Start the motor or engine.
- For very wet grain aerating the grains for 30-60 minutes before drying will improve quality.
- Start the heater.
- Monitor moisture content and temperature hourly. Stop drying when the moisture content in the middle of the bulk (half grain depth) reaches the desired final moisture content.

For checking whether a flat-bed dryer has sufficient and even air flow: A sheet of letter sized paper placed on top of the grain must float atop the grain at all locations of the drying bin.

Considerations

- For seeds don't exceed 43°C drying air temperature.
- Increasing the temperature reduces drying time but increases the moisture gradient.
- Increasing the airflow shortens drying and reduces the moisture content but increases energy cost.
- Mixing during drying reduces the moisture gradient.

Technical Specifications

Drying performance

Capacity 1t/batch
 Grain depth, m: 0.33-0.46
 Drying air temperature 43° C
 Drying rate 1.5-1.8 %/h

Drying bin

Steel drying bin
 Dimensions (L*W*H): 2.77m*1.9m*0.9m
 Weight: 220 kg

Wooden drying bin

Dimensions (L*W*H): 2.54m*2.54m*1.09m
 Weight: 200 kg

Grain floor

2.38 mm diameter perforated steel sheet 0.76 mm thick
 7.9 mm mesh expanded steel sheet 0.61 mm thick

Fan and heater options

Fan:
 Axial vane type
 Diameter and speed: 470 mm diameter operating at 2200 rpm
 Airflow: 0.85 m³/s at 8 mm H₂O static pressure
 Weight: 35 kg
 Dimensions, (L*W*H): 0.9m*1.1m*0.6m

Pot type kerosene burner	Rice hull furnace
Fuel consumption: 2.00 l/hr Weight: 5 kg	Fuel consumption: 3-4 kg/hr ¹ Weight: 290 kg

¹ One ton of paddy contains approx. 200 kg of rice hull

Drive options

Gasoline engine 3 hp
 Fuel consumption 0.75 l/hr
 Electric motor 2 hp

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