How does the KALRO small wheat thresher work?

KALRO-Njoro, in partnership with strategic partners, have recently developed a small wheat thresher.

Sickled, dried wheat heads are fed into the thresher through the feeding aperture. A rotating drum is manually operated by a pedal, chain, and pulley system. The impact from the peg tooth detaches the grain from the ear and separates the straw.

The wheat heads are discarded through an outlet at the back of the drum. The grains fall through a chicken wire mesh at the bottom and they are separated from the husks by a winnowing fan. The husks and chaff are blown away while clean grains are collected at the bottom of the machine.

The fan speed is a function of the pedalling speed, but through the pulley ratio the speed increases 100 times in order to develop sufficient pressure to displace chaff from seed.

Special Features

- Can thresh approximately 100kg wheat per hour
- Manually operated
- Pedalled at 60rpm
- Easily transportable on a small vehicle
- Easily assembled for use
- Can be operated by two people, one to pedal and another to feed

Installation and Maintenance

- Place on flat ground or stabilise with wood planks
- Insert the bicycle
- Place stabiliser bars in their respective positions
- Adjust the seat to your height
- Check machine for loose screws and bolts before each operation
- Check tension of belt
- Once a month, use a grease gun to grease the nipples on bearings on either side of the drum and fan
- Oil the chain frequently
- Store under shed

Advantages

- Affordable to small scale farmers
- Caters for small scale wheat harvesting
- Allows for timely harvesting
- Reduce field losses due to sprouting and shattering
- Only basic skills required to operate
- Can be operated at any site

- Has low energy requirement as the drum provides the flywheel effect (inertia)
- Spare parts are locally available
- Can be manufactured by local artisans
- With small changes to the threshing drum other crops such as sorghum or rice may also be threshed

Technical Data

- Power requirements: 0.2 hp
- Pedalling speed: 60 rpm
- Threshing drum speed: 500 rpm
- Winnowing fan speed: 6000 rpm
- Average output: 110 kg/hour
- Cleaning efficiency: 85%
- Cracking: < 2%