SOIL CONDITIONS SUITABLE FOR HARVESTING

The TEK MCH harvester performs best, especially during the peak of the dry season when the soil is very hard. Soils that are too moist or very soft soils do not promote mechanical harvesting technology as the tractor wheels face traction and wheel slip problems. In moist and soft soils, cassava roots can be manually uprooted with ease.

PRIOR TO MECHANICAL HARVESTING

Cassava stems should be coppiced (stems cut to reduce height) to about 25 cm or lower than the ground clearance of the tractor prior to harvesting to comply with mechanical harvesting. Cut stems serve as handles for easy removal of excavated or harvested tubers.

Coppiced cassava stems before mechanical harvesting

SOIL PREPARATION AFTER HARVESTING CASSAVA

After harvesting, the field is already ploughed and the farmer can just harrow and plant a rotation crop. This saves fuel, time and costs in subsequent seedbed preparation and other operations.

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FURTHER READING

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Mechanical Cassava Harvesting Technology

agriculture, forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

BACKGROUND

Harvesting is a major constraint for cassava commercialisation in Sub-Saharan Africa. Manual cassava harvesting is a time-consuming activity, stressful and full of drudgery, especially during the dry season. Until recently, there have been no commercial mechanical cassava harvesters in use by cassava growers in Africa. This makes cassava production to be full of drudgery, unattractive to the youth and dependent on aging farmers, who produce limited output.

OPPORTUNITIES IN CASSAVA PRODUCTION

Cassava has a number of attributes that make it attractive as a crop to promote under the climate change adaptation strategy for Sub-Saharan Africa. The crop also provides an excellent insurance against famine for farming communities.

MECHANICAL CASSAVA HARVESTING TECHNOLOGY

A mechanical cassava harvester known as “TEK Mechanical Harvester (TEK MCH)” was developed in Ghana and is currently being demonstrated through cassava trials in the Limpopo, KwaZulu-Natal and Mpumalanga provinces in South Africa. This implement, which is attached to a tractor, goes down to about 30,5 cm under the cluster of roots, excavates the soil, raises the tubers up, and lays them down on the soil surface. The machine is efficient; prevents root damage and meets other demands for effective harvesting operations.

Mechanical cassava harvesting

ADVANTAGES OF MECHANICAL HARVESTING OVER MANUAL HARVESTING

- Saves time and fuel

The TEK Mechanical Harvester can uproot one plant per second and cover a hectare within two hours.

- Quality of tubers

The mechanised and manual harvesting methods differ with regard to degree of damage to the tubers during the process of harvesting. In dry and hard soils, mechanical harvesting damage is reported to be minimal when compared to manual harvesting. Manual harvesting also barely meets the demands of the market and the developing cassava industry.

Mature cassava in 14 months after planting

REDUCE DRUDGERY

Agricultural labour is aging and requires innovation and mechanisation to reduce the drudgery. Drudgery in cassava harvesting was evaluated by measuring the heartbeat of the labourers (manual workers and tractor operators) before, during and after harvesting. The ease of mechanical harvesting is explained by the low heart rate profiles of the tractor operators as compared to the working heart rates of the manual harvesters.

Manual harvesting takes time and it is full of drudgery

PLANTING SYSTEM FOR MECHANICAL HARVESTING TECHNOLOGY

Row planting, preferably on ridges spaced 1,2 to 1,5 meters or wide enough to take the track width of the tractor pulling the harvester is recommended. The planting of cassava on ridges is not necessarily for yield impact but to serve as a compass for the harvester operator during the harvesting. The ridging technology is recommended, especially for large scale production. This planting method was also reported to be more suitable in heavy soils or on light grey and sandy soils which are low in soil moisture.

Planting cassava on ridges to support mechanical harvesting