a) Disc Harrow

A disc harrow consists of a series of concave metal discs mounted on a common shaft. These discs rotate as the harrow is pulled forward, cutting through soil clods and breaking up compacted soil.

Disc harrow

Mechanized Planting

Pyrethrum planting requires a uniform depth of 15 cm and consistent spacing of 60 cm between rows and 30 cm between plants. This ensures that each plant has sufficient space to grow and access the necessary nutrients. It is used to plant seedlings.

Tractor-drawn seedling planters

This planter uses precision planting technology.

Advantages

- Increased Efficiency: increase acreage planted per day
  Uniform Seedling placement: consistent seedling placement and spacing.
- Reduced Physical Strain:
- Reduced cost of planting

Tractor-drawn seedling planter planting pyrethrum (source Collins and Micah, KENTEGRA)

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PYRETHRUM MECHANIZED LAND PREPARATION AND PLANTING

KENTEGRA

NAVCDP
NATIONAL AGRICULTURAL VALUE CHAIN DEVELOPMENT PROJECT

Introduction

The success of pyrethrum production largely depends on proper land preparation. The purpose of land preparation is to provide the necessary soil conditions that enhance the successful establishment of the crop. By employing mechanization, pyrethrum farmers can increase the speed and efficiency of land preparation while reducing labour requirements. The level of adoption is highly dependent on the scale of operations and available resources.

Mechanized land preparation

1. Ploughing

Ploughing or tilling is the process of turning over, breaking up, and loosening the soil. Pyrethrum field requires proper tillage before planting. The practice helps improve soil structure, aeration, and drainage, facilitating better root growth and nutrient uptake by plants. Ploughing helps manage pests and diseases by disrupting their habitats and life cycles. Proper land preparation can be achieved through mechanization using tractor-drawn machinery such as disc plough, moldboard disc and chisel plough for breaking hard pans.

a) Disc Plough

It consists of a series of concave discs mounted on a common shaft, which is then connected to a tractor or draft animal for pulling. These discs are angled to cut through the soil, breaking it up and turning it over as the implement moves forward. The advantages of a disc plough is its ability to work well in different soil conditions as well as its relative resistance to clogging compared to other ploughs.

Disc plough (source KALRO MOLO)

b) Chisel Plough

A chisel plough is used to break up and loosen soil without completely turning it over. It consists of a series of narrow, wedge-shaped blades or chisels mounted on a frame. These blades penetrate the soil vertically, creating furrows or channels while leaving most of the soil undisturbed. This preserves soil organic matter, reduces erosion, and maintains soil moisture and nutrient levels.
It is commonly used for deep tillage in areas with compacted soils or where soil erosion is a concern.

Chisel Plough (source Agromaster)

c) Moldboard Plough

It consists of a curved metal blade, called a moldboard, attached to a frame and a cutting blade that cuts into the soil. It is designed to lift and turn over a slice of soil as the plough is pulled forward by a tractor or draft animal. The flat bottom covers the entire width of the tillage zone, thus all soil down to the depth of tillage is cut, lifted, and loosened.

Moldboard Plough (Source Agromaster)

2. Harrowing

The pyrethrum field requires loose tilt which enables water infiltration, soil aeration and adequate root penetration.. This is achieved through harrowing. Harrowing helps to further break down soil clods, remove weeds, and create a tilth suitable for crop establishment.