

SUGARCANE INTERCROPPING DRILL

By

DR. ABDUL REHMAN

**Assistant Professor Agronomy, University College of
Agriculture, University of Sargodha**

SUGARCANE INTERCROPPING DRILL



Back Ground

There are three general planting methods for sugarcane in Pakistan

Single row strip (60 cm apart rows)

Double row strip (90 cm apart double rows)

Triple row strip (120 cm apart triple rows)

In all methods no of rows/acre are same

(Dr. Shafi Nazir late)

- Farmers mostly use single row strip method for sugarcane and intercrop fodder or some other crops manually.



- There are many drawbacks of conventional methods of intercropping.



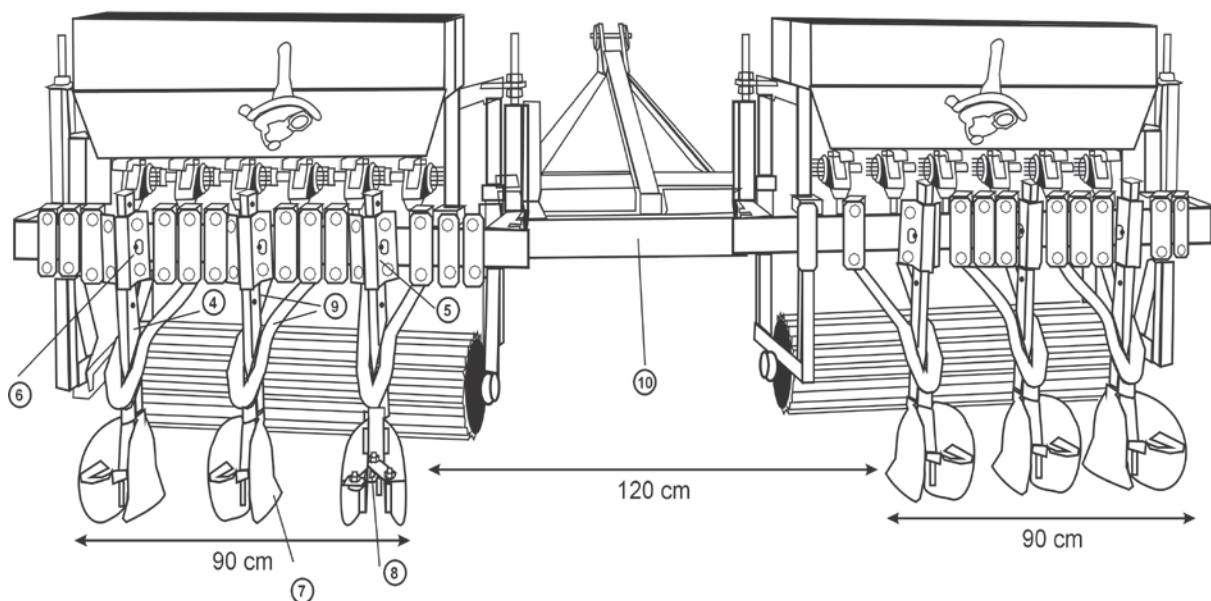
- Farmers could not adopt triple row strip planting due to unavailability of implements.
- Triple row strip planting is a best method for intercropping without much decreasing sugarcane population and yield per acre.
- Sugarcane yield and yield attributes produced by 120 cm apart triple row strip planting was higher than 60 cm apart single row trenches (Chattha et al., 2007)
- Triple row strip planting of sugarcane gave maximum income than conventional method of planting (Bhullar et al., 2008)
- Population is increasing day by day and cultivated land is decreasing rapidly due to urbanization and roads constructions.
- There is immense need to develop strategies and techniques for maximizing output per unit area.
- Sugarcane intercropping drill has been designed by me to achieve the said objectives.

Introduction

- Sugarcane Intercropping Drill is tractor drawn implement having multi functions and multi operations from planting of sugarcane to sowing of different intercrops (wheat, pulses, gram and potato etc).
- **It consists of following parts:-**
 - Cultivator
 - Drill tubes
 - Seed and Fertilizer Boxes
 - Transporting wheel
 - Crumber/roller
 - Furrow maker
 - Ridger
 - Marker

Sugarcane Intercropping Drill

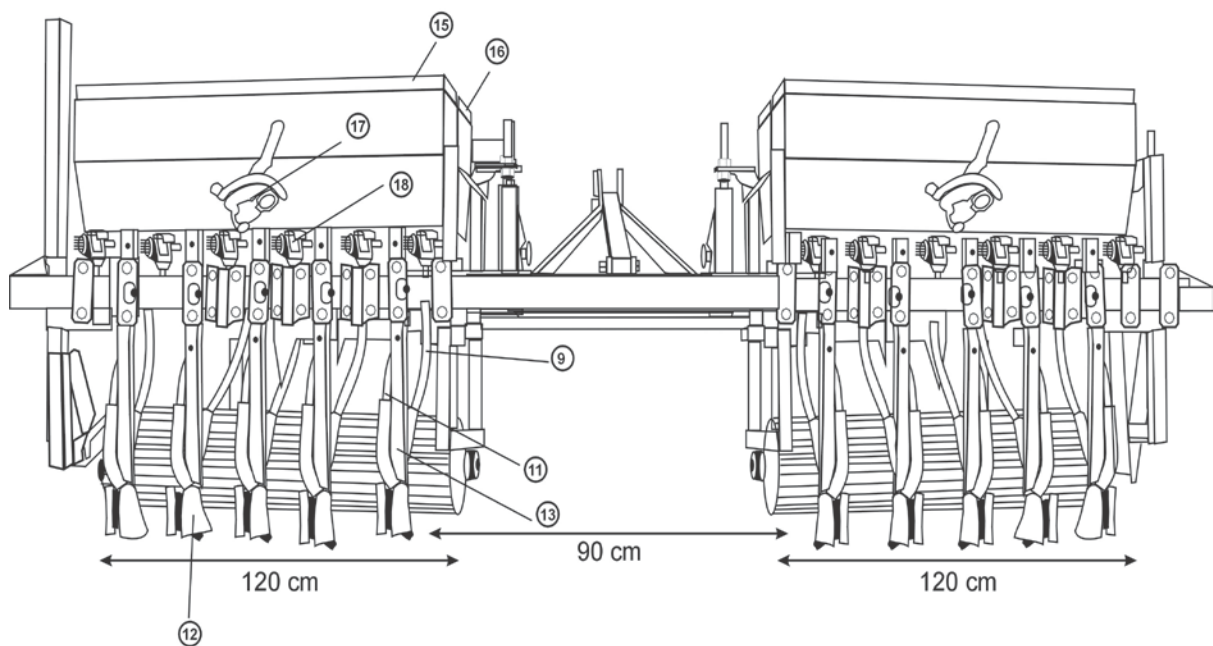
Fig: II



Back view along with furrow maker / Ridger

Sugarcane Intercropping Drill

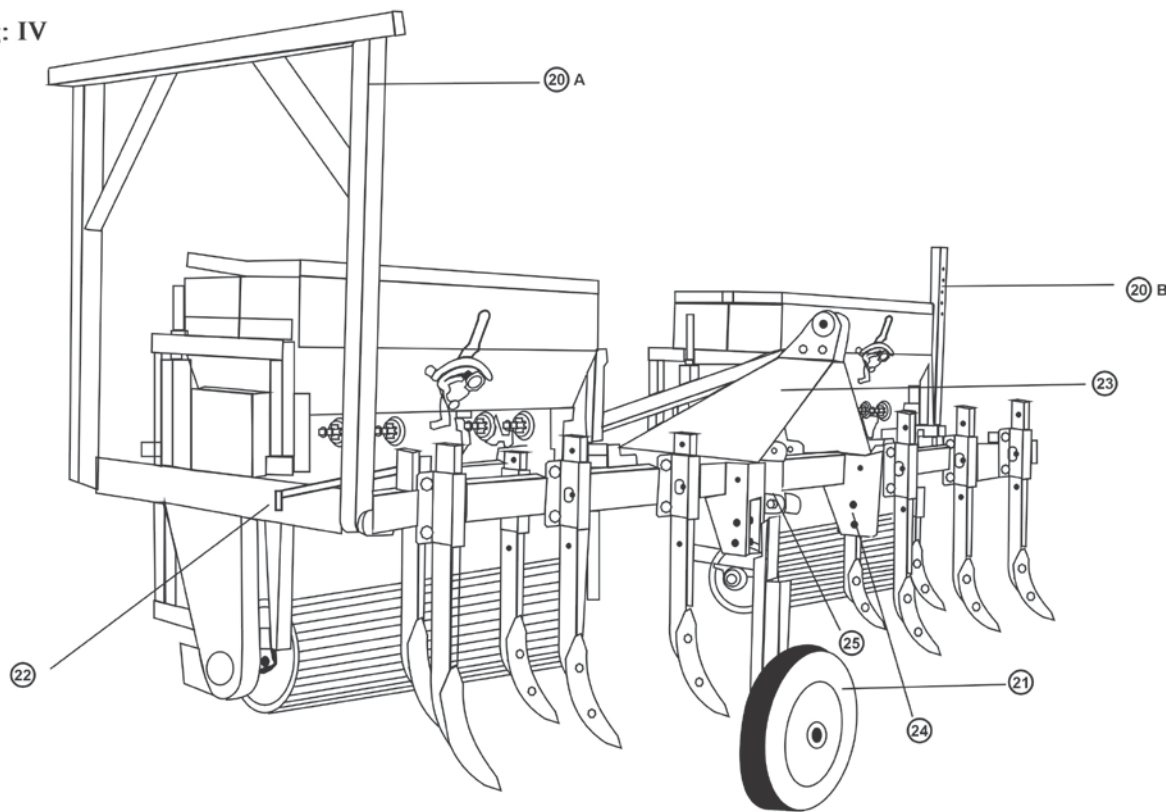
Fig: III



Back view along with seed and fertilizer drill tubes

Sugarcane Intercropping Drill

Fig: IV



Lateral view along with Transporting wheel

- **Cultivator**
- First portion of drill consists of cultivator. It performs functions just like ordinary cultivator having ten (10) tines in two groups, 5 in each group.
- **Crummber/roller**
- Second part of the drill consists of two crumblers/rollers behind the cultivator.
- Break clods made during cultivation in between sugarcane triple row strips.
- Soil leveling to make fine seed bed.
- To support the weight of whole drill for facilitation of tractor operation.
- To rotate the drill box shaft through chain for seed/fertilizer drilling.
- **Drill tubes**
- The third part of drill consists of ten (10) drill tines with tubes separated 90 cm apart into two groups, 5 in each group.
- To drill the seed of wheat, maize and gram between sugarcane strips.
- Fertilizer application (band placement).
- **Furrow/Ridger**
- The 4th portion of drill is furrow/ridge maker.
- Fertilizer application in furrows (band placement).
- **Seed/fertilizer box**
- There are four (4) boxes on the top of the drill. Each side contains two boxes; front boxes are used for fertilizer storage while seed is stored in rear boxes of both sides.
- **Transportation of drill**
- Two wheels are attached on both sides of drill length wise and these wheels facilitate the transportation of drill from place to place.
- **Markers**
- Two markers are attached on the both sides of drill.

Importance

- It is multipurpose as well as multi functions drill.
- This drill can make furrows for triple row strip planting of sugarcane.
- Seed of wheat, gram and pulses can be drilled on 120 cm area between triple row strips.
- Ridges can be made for sowing of potato and vegetables on 120 cm space in between triple row strips of sugarcane.
- All parts of drill are removable and adjustable manually according to the requirement.
- It cultivates/ploughs the soil, breaks soil clods and drills seed and fertilizer in a single operation.
- Beside of intercropping in sugarcane it can also be used for general sowing of different crops (wheat, maize and gram), furrow making (sugarcane), ridging (potato), seed and fertilizer drilling.
- It can easily be operated by any tractor ordinary used in farming.
- It is also much cheaper as compared to purchase different implements for different operations, which can perform it alone.

Objectives

- By using this implement more than **1.5 million** acres of existing sugarcane area (1.12 mha) can be utilized for intercropping (pulses, wheat, gram and potato etc)
- Herbicides demand, about 60 % can be decreased through this technology in sugarcane.



Daab method of weeds control



- Net income will be increased more than 38 % per acre.
- Water use efficiency will be increased due to maximum land utilization.
- Lodging of main crop (sugarcane) and intercrop (wheat) will be decreased.
- 50 % fertilizer use efficiency can be increased using this drill due to band placement.

Deep band placement



Procedure Ready for furrow making



Furrows for September Sugarcane



Ready for Intercropping



Wheat intercropped in Sugarcane



Germinated Wheat in Sugarcane





March Sowing

