

A NEW BULLOCK DRAWN ZERO-TILL DRILL

For realizing the yield potential of the crop it is important to establish a good crop stand timely. In many rice-wheat areas particularly the field occupied by scented rice, sowing of wheat is delayed because of long growing season or due to the excessive moisture not congenial for obtaining early tilth. Zero tillage is one of the options that RWC/CIMMYT that provide options for timely sowing, control *Phalaris minor* Retz and to reduce residue burning, beside improving the use efficiency of costly external inputs. In the Eastern parts of the "IGP" and the hills where tractor density is still low, need of animal drawn zerotill drill has been realized. In order to meet the long felt need of this implement RWC/CIMMYT has developed a new bullock drawn zero-till drill.

The drill: The new drill has a capability of sowing several small and large seeded crops (wheat, rice soybean, peas, Indian mustard, lentil, okra, maize, mungbean, Bengalgram, urdbeans) seeds along with fertilizer. Due to the narrow width of the drill (60 cm), it allows the farmers to use it on the narrow terraces in hilly regions closer to the **rising wall** of the terrace.

This drill mainly consists of three components.

1. Seed container and the metering device
2. Variable fertilizer placement device
3. Power transmission and gear system

1. Seed container and metering device: The seed cum fertilizer box mounted on an iron frame is basically divided into two chambers, each to hold seeds and fertilizer separately. The capacity of each chamber is 10-15 kg, to avoid the need for frequently refills and facilitate seed placement of appropriate depth, which could also be adjusted, with the bulb of screw type levering system. There is a provision to stop the flow of fertilizer and seed. To stop seed / fertilizer flow, just pull the clutch cable and push the rear press wheel forward. This brings the machine in neutral and lifts the machine, ready for moving to other fields.

The seed metering mechanism is innovative in the sense that it allows the farmer to use this drill for many dry sown crops ranging from maize to finger millet. The metering mechanism can handle even rice grain seed in order to wipe out any extra seed dropping from the seeding cup (dye casted, according to grain size) a nylon brush has been provided at the top of the seed slit inside the seed box. Screwing in will also lift the brush up to increase the seed rate. The seed rate control is also provided through a 3-gear chain type system that increases or reduces the revolutions of the seeding cups. The gears can be changed by mounting the chain of any one of the three combinations provided to vary seed rate by releasing the spring tension on the chain.

2. Seed placement mechanism:

The new improved machine has chisel type split openers. Seed and fertilizer tubes are fitted behind the opener. The mechanism is similar to the zero tillage machines currently in use with many farmers. The tines are fitted to the main body of the drill. It helps the farmer to vary the inter-row spacing and allows seeding in 2-3 rows. He can fit extra number of tines if the situation demands. Basically three tines are provided at a spacing of 20 cm. The press wheel made of nylon betters seed to soil contact and avoids the bird damage. Phosphatic 7 potassic fertilizers can be drilled along with the seed. With the new drill, it is now possible for the small and poor farmers to

- Seed different crops early in the season with residual moisture of rice crop.
- Apply fertilizer along with the seed
- Better metering of the seed and fertilizer
- Better controls for depth and amount of placement of seed and fertilizer.
- Cover more area per unit time

Current status:

The drill will be introduced for direct seeding of rice in the coming kharif season for vigorous field-testing on farmer's fields. The new drill costs INR 5000 about

\$120 a piece. The RWC Drill developed in close cooperation by M/s Ass foundry is obtained from

It can be obtained from:

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