

Short Communication

### Design and Development of Tractor Drawn Ridge-Furrow Type Seed-cum-fertilizer Drill for Arid Region

Harpal Singh, Dinesh Mishra and H.L. Kushwaha  
Central Arid Zone Research Institute, Jodhpur 342 003, India

Arid region of Rajasthan is characterized by harsh climatic conditions with active dunal activities. Conservation of moisture at pre and post sowing stages is important for kharif crops. Most of the kharif crops fail due to frequent droughts in the region (Singh *et al.*, 2002). The crops in the region are generally sown on flat surface by creating small furrows with the help of tractor drawn seed drill provided with shovel type furrow openers. There is very little scope to conserve rain water through this planter. Under irrigated conditions furrows saved the irrigation water and increased the yields of crops planted on ridges (Kushwaha, 2001).

Therefore, a tractor drawn ridge-furrow type (six rows in three furrows) seed-cum-fertilizer drill was designed and developed

for improving crop establishment and growth under rainfed conditions. The crop was sown on slant surfaces of a furrow (Fig. 1) with a view to harvest rain water in it to create high soil moisture in the plant root zone.

The ridge-furrow seed drill consists of four main parts, i.e., frame, seed-cum-fertilizer box with metering device, three main furrow openers for creating 300 mm wide and 200 mm deep furrows and wooden press wheels for compaction (Fig. 2). The frame 2200 mm long and 450 mm wide was made of 50 x 50 x 3 mm angle iron. The complete seed drill assembly was mounted on three-point linkage system of the tractor. The seed drill has a provision for row-to-row adjustment of furrow openers. The seed-cum-fertilizer box (1250

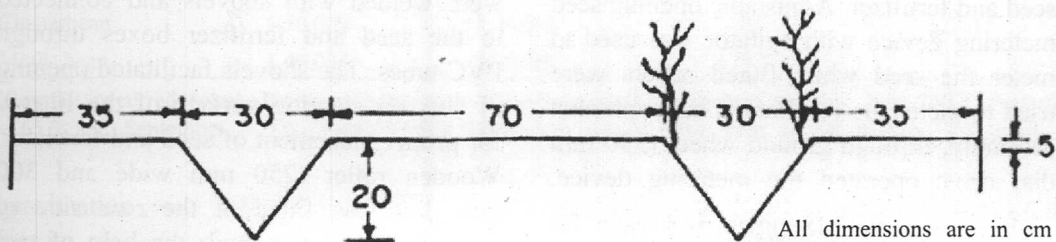


Fig. 1. Method of sowing.

During 2003, being normal rainfall year, crop did not experience water stress. The yields of crops sown using ridge-furrow seed drill were higher compared to control in all the crops except pearl millet (Table 2). Higher plant population under control adversely affected grain yield particularly in legume crops.

## References

- Anonymous 2000. CAZRI, Annual Report 2000, CAZRI, Jodhpur, pp. 65.
- Kushwaha, S.S. 2001. Improved technique of wheat cultivation on ridges saves 40% irrigation water. Office of the Joint Director Agriculture Sriganaganagar (Rajasthan), personal communication.
- Singh, H., Mishra, D. and Nahar, N.M. 2002. Energy use pattern in production agriculture of a typical village in arid zone, India, Part-I. *Energy Conservation and Management* 43(16): 2275-2286.