

Research Paper :

## Performance evaluation of paddy drum seeder

SUMATI P. CHAVAN AND SHWETAMBARI M. PALKAR

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### ABSTRACT

Direct seeding and transplanting are the two general methods of planting rice. The traditional method followed from many years in Konkan region is transplanting of seedlings raised in nursery. Transplanting method involves seedbed preparation, nursery growing, care of seedlings in nursery, uprooting of seedlings, hauling and transplanting operations. The preparation of seedbed and sowing are done 30 days before planting. The rice farmers practicing transplanting are facing problems like shortage of labour during peak time, hike in labour charges, small and fragmented land holdings etc. direct seeding is becoming increasingly popular now days in India. The wet seeding of rice is generally followed in irrigated areas. For wet drum seeding the paddy seeds are soaked in water for 24 hours and incubated for 24-48 hours. These sprouted seeds are sown in puddled field 1-2 days after puddling using perforated drum seeder. Eight-row paddy seeder is manually operated low cost equipment. Drum seeder can be used in the Konkan region for seeding in both *Kharif* and *Rabi* season with proper irrigation practices. Drum seeder tested was manually operated. The laboratory calibration was carried out with different combinations of drum fills viz., 90, 75, 50 per cent, and travel speed viz., 1 km/h, 1.2 km/h, and 1.5 km/h. From the laboratory calibration test the combination of 75 % drum fill and 1 km/h speed were selected for field evaluation of drum seeder. The drum seeder was tested on puddled field. The theoretical field capacity was calculated as 0.2 ha/h. while effective field capacity of the drum seeder was observed to be 0.11 ha/h. The field efficiency of the seeder was found to be 55 per cent. The cost of operation of drum seeder is Rs. 32.73/- per hour and Rs.297/- per hectare.

See end of the article for authors' affiliations

Correspondence to:  
**SUMATI P. CHAVAN**  
Dr. Budhajirao Mulik College  
of Agricultural Engineering  
and Technology, Chiplun,  
RATNIGIRI (M.S.) INDIA

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The rice plant belongs to the genus *Oryza* of Gramineae family. Out of 24 species of rice only two species *Oryza sativa* and *Oryza glaberrima* are cultivated. Further *sativa* species is grouped in three sub species viz., *indica*, *japonica*, *jaanica*. The rice grown in India belongs to *Indica* sub species. Rice is one of the most important crops of India and occupies 23.3 per cent of gross cropped area of the country. Rice contributes 43 per cent of total grain production and 46 per cent of total cereal production. India has largest area under rice crop and it is about 45 million hectares. The total rice growing area in Maharashtra state is about 1.519 million hectares. Major districts producing rice in western Maharashtra are Thane, Raigad, Ratnagiri and Sindhudurg. The total geographical area of Konkan region is about 3.0746 million hectares. The average annual rainfall of the region is about 3000 millimeters, which contributes about 46 per cent of the total rainfall of Maharashtra. The monsoon starts at late fortnight of May and continues up to the end of October. Therefore, most of farming is done in *Kharif* season. Rice being a tropical and sub-tropical crop requires fairly high temperatures ranging from 30<sup>0</sup> C to 40<sup>0</sup> C. The optimum temperature required is 30<sup>0</sup> C.

Direct seeding and transplanting are the two general methods of planting rice. The traditional method followed from many years in Konkan region is transplanting of seedlings raised in nursery. Transplanting method involves seedbed preparation, nursery growing, care of seedlings in nursery, uprooting of seedlings, hauling and transplanting operations. The preparation of seedbed and sowing are done 30 days before planting. The seedbed area required is about 10 per cent of the main area of the field (Khan and Majid, 1989). The transplanting of paddy at right time is also important parameter. A delay in transplanting by one month reduces the yield of rice by 25 per cent and delay by two months results in 70 per cent reduction in yield (Khan and Majid, 1989). The rice farmers practicing transplanting are facing problem of shortage of labour during peak time, hike in labour charges, small and fragmented land holdings, lack of technical knowledge, non-availability of ample water and other inputs. To tackle all these problems direct seeding of rice has been found most appropriate alternative to transplanting. It not only avoids seedbed preparation, nursery raising and transplanting but also gives better yield than existing manual transplanting. Therefore, direct seeding is