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Cono Weeder - A Best Weed Management Tool in System of Rice Intensification (SRI)

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Abstract

Weed management is one of the traditional operations in crop production. Due to labour costs, time and fully manual weeding is unfavourable. Competition in the early stage of growth and failure to control weeds in the first three weeks after transplanting, reduce the yield by 50 percent in rice. Manual weeding requires huge labor force and accounts for about 25 percent of the total labor requirement which is usually 900 to 1200 man h/ha. Using mechanical weeders in rice cultivation and other row crops have been common practice in now a day. Cono weeder is one of best tools for weeding in SRI Rice cultivation which compare with hand weeding causes a considerable reduction in labour costs and time consuming.

Introduction

Weeding is the one of the critical stages in rice cultivation and affects yield and quality of rice. Weeds decrease crop yields from 15 to 50 % depending on species, density and weeding time through competition with main crop for light, water and nutrition. One third of cost of cultivation is spent on weeding alone when carried out with manual labour. The arduous operation of weeding is usually performed manually with the use of traditional hand tools in upright bending posture, inducing back pain for majority of labours. Losses caused by weeding cotton ranges from 40 to 75 % depending upon nature and intensity of weeds (Konda *et al.*, 2017). Weed control is becoming an expensive operation in crop production. Weed competition is one of the prime yield-limiting biotic constraints in SRI. Weeds compete with crops for water, light, nutrients and space. Weeds are the important competitors in their early growth stages resulting in reduced the growth of crops and finally grain yield (Shukla *et al.*, 2014). Cono weeder is one of best tools for weeding in SRI Rice cultivation which compare with hand weeding causes a considerable reduction in labour costs and time consuming.

Function : For weeding between rows of paddy crop

Type : Manually operated

Number of : Two rotors

Number of : One operators

Overall di- : 37 cm x 1.4 m mensions

Weight : 5 to 6 kg

The cono weeder has two conical rotors mounted in tandem with opposite orientation. Smooth and serrated blades

mounted alternately on the rotor uproot and burry weeds because the rotors create a back and forth movement in the top 3 cm of soil, the cono weeder can satisfactorily weed in a single forward pass without a push pull movement. The approximate cost is Rs. 1,500.00 (Subsidy is available, for details contact local agricultural office).



Figure 1: Cono weeding at 25 days after transplanting

When do Weeding?

The critical period of crop-weed competition is 15-45 days after transplanting. Hence, moving the cono weeder with forward and backward motion to bury the weeds and as well to aerate the soil at 7-10 days interval from 10-15 to 40-45 days after planting on either direction of the rows and column.

Advantages of Cono Weeder

- Better soil working efficiency.
- Easy to operate by single operator.
- Weed control at low cost.
- Weed control without use any chemicals.
- Weed control without any chemical residue.
- Facilitates proper aeration in the soil due to push/ pull action.
- Uprooted and buried weeds function as manure for the crops.

- Enhances the utilization of biomass.
- Promotes healthy growth of the root system and consequently the plant.
- Provides earthing up effect facilitating plants to produce new roots which help additional nutrients uptake.
- Increased yields as a result of more productive tillers, large panicle size, more number of grains per panicle and increased grain weight.
- The weeder does not sink in puddled soil.
- The field capacity 0.18 ha/day.

Limitations of Cono Weeder

- Not suitable for black and loamy soils.
- The axle hole gets widened upon continuous use.
- Weeds in closer to rice root zone are not possible.

Conclusion

Due to increasing labour costs, unavailability labour for agricultural operation, time and fully manual weeding is not possible. Moving the cono weeder with forward and backward motion to bury the weeds and as well to aerate the soil at 7-10 days interval from 10-15 days after transplanting on both the (North-South and East-West) direction of the rows and columns. Cono weeder is one of the best tools for weeding in rice cultivation that in compare with hand weeding causes a considerable reduction in labour costs time consuming and registered higher grain yield.

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