Article ID 4240253

Ratoon Management Through IISR RMD Device

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Ratooning is the agricultural practice of harvesting a monocot crop by cutting most of the above-ground portion but leaving the roots and the growing shoot apices intact so as to allow the plants to recover and produce a fresh crop in the next season. Ratooning is a farming method that allows for two harvests in a single cropping season by growing a second crop from the first stubble, which has the potential to be more resource-efficient and profitable than direct-sown crops. This is also referred to as "stubble cropping". Ratoon cane is very important in sugarcane production. After the harvest of sugarcane, the underground portion of the strikes gives rise to a succeeding crop, which is known as ratoon crop. Sugarcane ratooning is a planting system that is generally adopted by each sugarcane-producing country. Ratoon management device was procured from IISR, Lucknow and tested for its feasibility in research plots of ZARS, V.C. Farm, Mandya and specifications were recorded. The performance of the device was compared with manual method of ratoon management in sugarcane.

Treatment details

T1: Ratoon management by manual method

T2: Ratoon management by IISR RMD

Figure 1. Glimpse of ratooning by manual labour and IISR RMD

Results and Discussion

Sugarcane ratoon crop productivity could be improved by performing cultural operations like stubble shaving, cutting of side old roots (off barring) and application of fertilizer near to root zone during initiation of ratoon after harvesting. Disc type ratoon

Figure 2. Glimpse of PFT of IISR RMD conducted at research station

management device (Disc RMD) designed and developed by IISR, Lucknow was procured and tested

for its feasibility at Research station. This device performs stubble shaving, fertilizer application and off barring and pruning of side old roots simultaneously in single pass. It consisted of main frame, stubble shaving, off barring, fertilizer metering and power transmission unit. A concave disc with replaceable serrated cutting blades mounted on disc periphery was designed to spin through power take off (PTO) drive of the tractor for shaving stubbles close to ground level. Concave disc having re hardened sharpened edges has been provided at either side of stubbles for cutting and pruning of side old roots (off barring). Cutting and pruning of side old roots were performed by rolling action of sharpened edges of disc without dragging and clogging of surface trash. The performance data of the IISR RMD was recorded at research station are as given below:

Inference: Studies have indicated that leaving trash in the field after sugarcane harvesting improves soil health and sustain ratoon yield. The performance of the device was good and appreciable, when, the straw length or volume is less or for low cane yielding varieties. If the trash is more in the field, it is choking the cutting blade. So before stubble shaving, there is need to shred the sugarcane leaves/trash.

Table 1. Comparative performance evaluation of IISR RMD

Parameters	**Farmer's practice**	**IISR RMD**
Variety	VCF 517	VCF 517
Mean length, mm	2700	2700
Mean diameter, mm	28	28
Mean cane weight, kg	1.58	1.58
Field parameters		
Length of field, m	100	100
Type of soil	Red Sandy loam	Red Sandy loam
Moisture content, % d.b.	13	13
Performance parameters		
Mean height of stubbles left after harvesting, mm	50-76	50-76
Stubble shaving	Manually	Mechanically
Fertilizer application	Manual broadcasting	Mechanically near root zone
Off barring	MB plough/ Bullock pair	Discs
Prerequisite field condition	Trash removed/ burned	Trash leftover after harvesting
Depth of tyne/ disc penetration during off barring, mm	100-120	Adjustable (80-110)
Weight of fertilizer in the fertilizer box, kg	NA	20-25
Mean forward speed, m/s	0.67	0.67
Effective width of coverage, m	3.0	1.50
Theoretical field capacity, ha/h	0.22	0.28
Effective field capacity, ha/h	0.20	0.20
Field efficiency, %	70	71
Labour requirement, man h/ha	30	-
Fuel consumption, l/h	-	3-4
Cost of operation of ratoon initiation, Rs/ha	15000	2400
Mean plant population after 45 days of ratoon initiation per ratoon	10-12	16-20

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