

## Drip irrigation technology followed by the sugarcane growers

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■ **ABSTRACT** : The present study was studied to investigate the suitability of drip irrigation technology in sugarcane crop. The study showed that sugarcane growers were completely by adopting the distance between two ridges 25 to 30 cm (Single eye bud) in paired rows method. Sugarcane growers adopted chemical reasons and biological reasons of clogging of emitters. Majority of sugarcane growers (93.33 %) faced the constraints viz., higher initial cost for installation of drip irrigation unit followed by cracking and clogging of emitters (90.83 %), damage due to rats/rodents (81.66 %) . Mostly the sugarcane growers suggested needs to availability of drip irrigation unit in low initial cost (94.16 %). 91.66 per cent Sugarcane growers suggested the needs of technical knowledge about remedies against the clogging of emitters.

■ **KEY WORDS** : Drip irrigation, Sugarcane

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**D**rip irrigation in sugarcane is a relatively new innovative technology that can conserve energy and increase profits (Singh *et al.*, 2010). Thus, drip irrigation may help to solve three of the most important problems of irrigated sugarcane-water scarcity, rising pumping (energy) costs and farm profits (Singh, 2001). Drip irrigation is defined as the precise, slow and frequent application through point or line source emitters on or below the soil surface at a small operating (20-200kPa) and at a low discharge rate (0.6 to 20 LPH), resulting in partial wetting surface.

Under the services at College Development Block, the extension personnel are engaged in the transfer of agril. and allied innovations at the farms of the farmers by using the various and suitable extension teaching methods. Hence, to study of drip irrigation technology followed by the sugarcane growers are taken. The present study was designed with the following objectives to study the extent of knowledge and adoption of drip irrigation technology followed by the sugarcane growers to study the constraints faced by the sugarcane growers for adoption of drip irrigation technology and to obtain the suggestions from the farmers for efficient use of drip irrigation technology in sugarcane.

### ■ METHODOLOGY

The study was conducted in the College Development Block situated in Hatkanangle, Radhanagari and Bhudharghar

tahsils of Kolhapur district. In all 12 villages from college development block were selected randomly. From these selected villages, 10 farmers from each village were selected randomly. The farmers were interviewed with the help of structured interview schedule personally. In all 120 farmers were interviewed for this study.

The data were tabulated and processed through the primary and secondary tables. The statistical tools like frequency, percentages, and means of the averages was used for interpreting the data and inferences were drawn.

### ■ RESULTS AND DISCUSSION

The data regarding a study of drip irrigation technology followed by the sugarcane growers.

#### **Knowledge and adoption of drip irrigation technology :**

Knowledge and adoption regarding drip irrigation technology by sugarcane growers of Kolhapur district are shown in Table 1.

#### **Knowledge :**

The data from the Table 1 reveal that almost all the sugarcane growers had knowledge about paired rows method, Alternate rows method, lateral fitting, clogging of emitters (physical reasons/remedies, chemical reasons and biological reason/ remedies) and care and maintenance of drip irrigation

**Table 1 : Distribution of farmers according to knowledge and adoption of drip irrigation technology followed by the sugarcane growers**

Sr. No.	Drip irrigation technology	Knowledge (N=120)		Adoption (N=120)		
		Yes	No.	Complete	Partial	No
1.	Paired rows method					
	2.5 to 3 ft. broad ridges and furrows.	120(100.00)	-	119(99.17)	01(0.83)	-
	Distance between two ridges 25 to 30 cm(Single eye bud method)	120(100.00)	-	120(100.00)	-	-
	Skipping one row after every two rows	120(100.00)	-	119(99.17)	01(0.83)	-
	Placing laterals on two ridges	120(100.00)	-	119(99.17)	01(0.83)	-
	Distance between teo laterals 2.25 to 2.70 mts.	120(100.00)	-	120(100.00)	-	-
2.	Alternate rows method					
	Breadth of Ridges 90 cm	120(100.00)	-	105(87.50)	15(12.50)	-
	Skipping one row after every four rows	120(100.00)	-	116(96.67)	04(3.33)	-
	Planting Sugarcane sets in every four rows	120(100.00)	-	111(92.50)	07(5.83)	02(1.67)
	Placing one laterals for every two rows	118(98.33)	02(1.67)	114(95.00)	06(5.00)	-
	Emitter fitted at every 75 cm on lateral	120(100.00)	-	115(95.83)	05(4.17)	-
	Burying main and submain line at one ft. depth.	120(100.00)	-	117(97.50)	-	03(2.50)
2.	Laterals fitting					
3.	Underground	120(100.00)	-	-	-	-
	On surface of land	120(100.00)	-	120(100.00)	-	-
4.	Clogging of emitters					
	Reasons					
	Physical reasons					
	Poor quality water with sediment	120(100.00)	-	112(93.33)	08(6.67)	-
	Chemical reasons					
	Sediment of calcium, magnesium, iron etc. salts	120(100.00)	-	114(95.00)	06(5.00)	-
	Biological reasons					
	Macro, Micro bacteria and Algae	120(100.00)	-	114(95.00)	06(5.00)	-
	Remidies					
	Physical					
	Use of Filters	120(100.00)	-	114(95.00)	06(5.00)	-
	Cleaning of filters	120(100.00)	-	113(94.17)	07(5.83)	-
	Chemical					
	Treatment with Conc. HCl solution	106(88.33)	14(11.67)	73(60.83)	29(24.17)	18(15.0)
	Qty-10 ml/lit.	103(85.83)	17(14.17)	69(57.50)	32(26.67)	19(15.83)
	Dipping emitters for 10-15 min. in solution	118(98.33)	02(1.67)	69(57.50)	21(17.50)	30(25.0)
	After above treatment rinse with water	120(100.00)	-	78(65.00)	20(16.67)	22(18.33)
	Biological					
	Use of bleaching powder	120(100.00)	-	72(60.00)	35(29.17)	13(10.83)
	35% chlorine powder 45gm/1000 lit. water	120(100.00)	-	71(59.17)	35(29.17)	14(11.66)
	Flushing of water in irrigation unit for 20 min.	120(100.00)	-	90(75.00)	30(25.0)	-
	Close irrigation unit for 24 hrs. and on next day irrigation unit rinse with water.	120(100.00)	-	120(100.00)	-	-
5.	Care and maintenance of drip irrigation unit					
	Before installation of unit testing of soil and water.	120(100.00)	-	117(97.50)	03(2.5)	-
	3 to 4 ppm iron in water danger for unit.	120(100.00)	-	120(100.00)	-	-
	Regular checking of pump set, fertilizer tanks, filter units and pressure gauge	120(100.00)	-	119(99.17)	01(0.83)	-
	Cleaning of filters by back flushing	120(100.00)	-	120(100.00)	-	-

unit. Majority of sugarcane growers (88.33 %) had knowledge about emitters treatment with conc. HCl, use of conc. HCl 10 ml/lit. (85.83 %) and dipping of emitters for 10-15 min. in HCl solution (98.33 %).

#### Adoption :

The data further revealed that almost all the sugarcane growers were completely adopting the distance between two ridges 25 to 30 cm (Single eye bud) in paired rows method, lateral fitting on surface of land, close irrigation unit for 24 hrs. and on next day irrigation unit rinse with water in biological remedies, 3 to 4 ppm iron in water danger for unit and cleaning of filters by back flushing in care and maintenance of drip irrigation unit. The study further showed that technologies viz., 99.17 per cent sugarcane growers were in complete adoption about 2.5 to 3 ft. broad ridges and furrows, skipping one row after every two rows, placing laterals on two ridges in paired rows method. The 95.00 per cent sugarcane growers were in complete adoption about chemical reasons and biological reasons of clogging of emitters.

#### Constraints:

Constraints faced by the sugarcane growers are given in Table 2.

Majority of Sugarcane growers (93.33 %) faced the constraints higher initial cost for installation of drip irrigation unit followed by cracking and clogging of emitters (90.83 %), Damage due to rats/Rodents (81.66 %).

#### Suggestions:

Suggestions made by the Sugarcane growers about adoption of Drip irrigation technology was given in Table 3.

Mostly the sugarcane growers suggested needs to

availability of drip irrigation unit in low initial cost (94.16 %). 91.66 per cent sugarcane growers suggested to needs to given technical knowledge about remedies against the clogging of emitters and Needs to available the rat/Rodent proof drip irrigation unit material viz., laterals, emitters etc. (90.00 %).

#### Conclusion:

– Almost all the sugarcane growers had knowledge about paired rows method, alternate rows method, lateral fitting, clogging of emitters (physical reasons/remedies, chemical reasons and biological reason/ remedies) and care and maintenance of drip irrigation unit.

– The 99.17 per cent sugarcane growers was complete adoption about 2.5 to 3 ft. broad ridges and furrows, skipping one row after every two rows, placing laterals on two ridges in paired rows method. The 95.00 per cent Sugarcane growers was complete adoption about chemical reasons and biological reasons of clogging of emitters.

– Majority of sugarcane growers (93.33 %) faced the constraints higher initial cost for installation of drip irrigation unit followed by cracking and clogging of emitters (90.83 %), damage due to rats/rodents (81.66 %).

– Majority of sugarcane growers suggested needs to availability of drip irrigation unit in low initial cost (94.16 %).

#### Implications :

– Lack of technical knowledge about use of proper method regarding clogging of emitters. More extension efforts can done like organization of method demonstration and group discussion.

– Need to availability of drip irrigation unit in low initial cost.

Sr. No.	Constraints	No. of sugarcane growers (n = 120)	Percentage
1.	Higher initial cost for installation of drip irrigation unit	112	93.33
2.	Cracking and clogging of emitters	109	90.83
3.	Damage due to rats/ Rodents	98	81.66
4.	High cost of spare parts	96	80.00
5.	Salt encrustation	92	76.66

Sr. No.	Suggestions	Sugarcane growers (N = 120)	Percentage
1.	Needs availability of drip irrigation unit in low initial cost	113	94.16
2.	Needs to given technical knowledge about remedies against the clogging of emitters.	110	91.66
3.	Needs to available the rat/rodent proof drip irrigation unit material viz., laterals, emitters etc.	108	90.00
4.	Needs to supply the spare parts of drip irrigation unit at reasonable price.	104	86.66

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