

Extension Brochure : FPARP No. 2

Irrigation Scheduling at Critical Growth Stages of Sugarcane to Save Water



Prepared by

D. V. Yadav, R. P. Verma
Kamta Prasad, A.K. Sah
Rajendra Gupta, K. P. Singh



**Indian Institute of Sugarcane Research
Rae Bareli Road, Post Dilkusha,
Lucknow – 226 002, India**

Sugarcane being one year crop, has to survive through all the seasons of the year. The initial crop growth stages coincide with hot and desiccating summer due to which crop requires frequent irrigations. Thus, water requirement for sugarcane is as high as 1500–2500 mm/year depending upon soil, climate and crop conditions. At the same time, maintenance of an optimum soil moisture during the initial growth phases is the most important to obtain good yield. Experimental results have indicated that sugarcane has certain growth stages in its entire crop cycle on which if crop is not irrigated, growth and yield are affected adversely. These stages have been termed as **critical growth stages**. Such identified stages are emergence and the first, second and third orders of tillering. In the areas of limited water supply, ensuring irrigation to sugarcane at its critical growth stages increases irrigation water use efficiency without any loss in cane yield.

Operational Steps

- ❑ Prepare the field well for planting sugarcane.
- ❑ Cut the healthy seed cane stalks of a recommended variety in 3 or 2 budded setts.
- ❑ Prepare a solution by dissolving 200 gram bavistin in 100 liters water.
- ❑ Dip the cut setts in bavistin solution for 10-15 minutes to control the sett borne diseases.
- ❑ Apply 75 kg urea, 130 kg DAP and 100 kg muriate of potash per hectare in the furrows at the time of planting.

- Place the treated setts in the furrows in bud-to-bud or end to end sett placement systems.
- Prepare a solution by dissolving 5 liters Chlorpyrifos 20 EC in 1500-1600 liters water for one ha area.
- Spray the Chlorpyrifos solution over the setts placed in the furrows to control termites.
- Plank the field to cover the furrows.
- Carry out the weeding and hoeing operations as and when required.
- Apply 100 kg urea per ha along the rows after the first irrigation and do hoeing.
- By the third week of June, apply 100 kg urea per ha along the cane rows.
- In the last week of June, apply 33 kg Furadan 3G per hectare along the cane rows.
- Follow plant protection measures as per the need.
- Do earthing-up before the onset of monsoon.
- Tie cane of each clump during the 1st or 2nd week of August with lower dry leaves.
- Tie the clumps of opposite rows together during September.
- Remove lower dry leaves.
- Harvest the cane close to the ground level to raise a good succeeding ratoon crop and to avoid yield loss.

Irrigation Schedule

If water is available for following number of irrigations	Growth stages on which irrigation to be applied			
	Emergence	First order of tillering	Second order of tillering	Third order of tillering
4	Apply irrigation	Apply irrigation	Apply irrigation	Apply irrigation
3	-	Apply irrigation	Apply irrigation	Apply irrigation
2	-	-	Apply irrigation	Apply irrigation
1	-	-	-	Apply irrigation



Performance of sugarcane crop grown with 4 irrigations at 4 critical growth stages



Performance of sugarcane crop grown with 6 irrigations under conventional method

Advantages

- ❑ Irrigation water is saved to the extent of 30-35 per cent.
- ❑ Water use efficiency is increased by 35-40 per cent
- ❑ Weed infestation is reduced considerably.
- ❑ Normal cane yield and quality is obtained with less irrigation water.
- ❑ The cost of cultivation is reduced due to saving in irrigation water and less expenses incurred in weed control.



Published by
The Director
Indian Institute of Sugarcane Research
P.O. Dilkusha, Lucknow-226002
Tel.: 0522-2480726, 2480735-37
Fax: 0522-2480738
e-mail: iisrlko@sancharnet.in
Website : www.iisr.nic.in