

Research Notes

STUDIES ON THE COMPARATIVE EFFECT OF **PITCHER** IRRIGATION  
AND POT WATERING IN CUCUMBER

Scarcity of irrigation water is the major yield constraint in vegetable production during summer season. Pitcher method of irrigation is reported to be efficient in economising water use in certain selected crops (Mondal, 1974). In the present study, an attempt has been made to compare the effect of pitcher method of irrigation with conventional pot watering on the growth, yield and water requirement of cucumber during summer season.

The field experiment was conducted on sandy loam soil of Agronomic Research Station, Chalakudy with cucumber (*Cucumis sativus*) as the test crop in the summer season (January to May) of 1979-80. Pitcher irrigation referred in this article involves the supply of water in porous earthen pots having a capacity of 9 litres dug in the soil neck deep and the mouth covered with gunny pieces. The pots used in this study were presented for their homogeneity in discharge which worked out to 425 ml/day. Four seeds were sown around each pitcher buried at a spacing of 4 m. The spacing and number of plants were kept the same in the conventional pot watering treatments also.

The experiment was laid out in randomised block design with six treatments and four replications. The treatments were:  $I_1$ —pitcher irrigation with soil application of fertilizer,  $I_2$ —pitcher irrigation with application of nitrogen and potassium through water in pitcher and phosphorus through soil,  $I_3$ —pot watering 1 l per irrigation with soil application of fertilizer,  $I_4$ —pot watering, 3 l per irrigation with soil application of fertilizer,  $I_5$ —pot watering, 5 l per irrigation with soil application of fertilizer and  $I_6$ —pot watering, 7 l per irrigation with soil application of fertilizer. The irrigation was scheduled once in two days in all the treatments up to harvest. The water level was brought to neck level in pitchers at each irrigation and the quantity of water required to fill the pots was measured. A uniform dose of 56 kg each of N,  $P_2O_5$  and  $K_2O$  per hectare was applied in all plots in 5 equal splits at fortnightly intervals. Urea, superphosphate and muriate of potash were the sources of nutrients.

Results presented in Table 1 reveal that none of the treatments influenced the fruit yield significantly. However, the pot watering treatments ( $I_4$  to  $I_6$ ) appeared to have more favourably influenced the yield as compared to pitcher irrigation. But there was considerable saving in water under pitcher irrigation. Although not significant, the application of fertilizer through irrigation water ( $I_2$ ) produced more

fruits than soil application ( $I_1$ ) probably due to better absorption of nutrients by the crop favoured by their increased availability.

Among the yield attributes only the number of fruits per plant was influenced significantly by the treatments.  $I_1$  &  $I_3$  treatments produced significantly lesser number of fruits per plant than that of the others. Such a depressing effect was not reflected in the final yield of fruits due to comparatively higher mean weight of single fruit in those treatments. The effect of treatments on vine yield was significant. Pitcher irrigation with application of nitrogen and potassium through irrigation water ( $I_2$ ) recorded the least vine yield with the highest harvest index.

The results of the experiment indicated that maximum **economy** of irrigation water in cucumber during summer can be achieved by adopting pitcher method of irrigation. When pot watering is practised 1 l of water per basin on every alternate day is adequate for its successful cultivation.

The authors express their sincere thanks to Sri. T. P. George, Special Officer (Ag. Engg.) College of Horticulture, Vellanikkara for the guidance and encouragement during the course of **study**.

Table 1

Fruit yield **attributes** and irrigation requirements of cucumber as influenced by the treatments

Treatments	Number of fruits per plant	Weight of single fruit (kg)	Yield of fruits (q/ha)	Yield of vine (q/ha)	Harvest index	Irrigation requirement (hamm)	Percentage increase in irrigation requirement over $I_1$ and $I_2$
$I_1$	1.44	2.21	76.57	25.78	0.740	1.87	—
$I_2$	1.94	1.96	89.85	17.19	0.835	1.87	—
$I_3$	1.50	2.22	81.25	35.16	0.704	2.44	30.5
$I_4$	2.00	2.00	96.88	34.22	0.729	7.31	290.9
$I_5$	2.25	2.23	119.65	40.63	0.744	12.19	551.9
$I_6$	2.13	1.86	97.66	34.69	0.725	17.06	812.3
CD (0.05)	0.395	NS	NS	10.55	NS	—	—
SEm $\pm$	0.131	0.281	8.63	3.50	0.123	—	—

**സംഗ്രഹം**

പിച്ചർ ജലസേചനരീതിയും (മണ്ണിൽ കുഴിച്ചിട്ട കൂടം മുഖാന്തിരമുള്ള ജല സേചനം) തടം നനച്ചുള്ള ജലസേചനരീതിയും വെള്ളരിയുടെ വിളവ്, വളർച്ച, ജലോപയോഗം എന്നിവയെ എങ്ങനെ സ്വാധീനിക്കുന്നു എന്നതിനെപ്പറ്റി ഒരു താരതമ്യ പഠനം ചാലക്കുടി അഗ്രോണമിക് റിസർച്ച് സ്റ്റേഷനിൽ നടത്തുകയുണ്ടായി. പിച്ചർ ജല സേചനം *enrolroil* സ്വീകരിക്കുന്നതുമൂലം പരമാവധി ജലം ലഭിക്കാമെന്നു കണ്ടു. തടം നനച്ചുള്ള ജലസേചന രീതിയിൽ, തടം ഒന്നിനു് ഒന്നിടവിട്ട ദിവസങ്ങളിൽ ഒരു ലിറ്റർ വെള്ളം നൽകി വെള്ളരി വിജയകരമായി കൃഷിചെയ്യാമെന്നും കണ്ടു.

**Agronomic Research Station.**  
Chalaky 680307, Kerala.

**K. N. Balakumaran**  
**Jose Mathew**  
**G. R. Pillai**  
**Kuruville Varghese**

**Reference**

Mondal, R. C, 1974, Farming with a pitcher : a technique of water conservation. *World Crops.* **26**, 94-97