shows that the presence of these elements in the medium influences the physiology of the pathogen and appear to enhance the growth rate. Similar results were recorded by Verona and DeMarchi (1939) who reported that a minute quantity of boric acid exert a stimulatory action on the development of *Phoma betae*.

Growth regulator

It is obvious (Table 1) that when Indol-3 yl butyric acid (IBA), Indol-3yl-acetic acid (IAA) and Alpha naphthyl acetic acid (NAA) were omitted, the growth of the fungus was superior than the presence of all the growth regulators. It shows that in the presence of IBA, IAA and alpha-NAA there might be some inhibitory action on the growth of the fungus. The omission of 2-Naphthoxy acetic acid (2- NAA) and 2,4-dichlorophenoxy acetic acid (2,4-D) from the medium gave fair growth. However, poor growth was observed by omission of Indol-3yl-propionic acid (IPA) and gibberellic acid(GA). It indicates that IPA and GA play an important role among all the growth regulators tested to increase the growth of the pathogen.

Vitamin

It is evident (Table 1) that fungus yielded maximum growth in the presence of all vitamins and minimum growth in the absence of all vitamins. Omission of thiamine, folic acid, calcium pantothenate and biotin gave good growth of the pathogen. It indicates that the growth of the fungus is not influenced much by the absence of these vitamins in the medium. The growth was fair by omission of riboflavin, ascorbic acid, nicotinic acid and B-carotine. However, the growth was affected greatly by omission of minetin, pyridoxine and cyanocabalamine, which shows that these three vitamins are more responsible for the growth of the fungus than the other vitamins. The results are in conformity with those of Misra and Mahmood (1961) who reported stimulated mycelial growth due to cyanocobalamine in *Colletotrichum* capsici.

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Madras Agric. J., 81(12): 678-679 December, 1994 https://doi.org/10.29321/MAJ.10.A01614

DRIP IRRIGATION IN ANNUAL MORINGA

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ABSTRACT

An experiment was conducted to study the performance of drip method of irrigation in annual moringa. The results revealed that the highest water use efficiency (30.58 kg/m^3/ha) was achieved through drip irrigation with 4 l/day/tree.

Drip irrigation is one of the modern methods of irrigation. At Rahuri, Maharastra State, it was observed that there was a substantial water saving in drip irrigation ranging from 40 to 70 per cent in different crops (Anon, 1991). Annual moringa is a vegetable crop which can be harvested from 6 months and upto 14 months. Even then, cutting back the trees to 90 cm height, from ground level after the last harvest, ratoon crop will be coming for harvest in another 4 to 5 months and this type of ratoon cropping can be taken for 3 to 4 crops. The present study was carried out with the objective to study the performance of drip irrigation and the water use efficiency (WUE) of annual moringa.

MATERIALS AND METHODS

The experiment was conducted at the Agricultural Research Station, Bhavanisagar in sandy loam soils. The details of the treatments were as follows:

Table 1. Yield of moringa

Treatment	Average weight of moringa (in g)	Yield of moringa (Nos./tree)	Weight of moringa (t/ha)
T1	63.15	254	28.85
T2	71.75	290	33.36
T3	64.32	250	25.86
T4	58.80	225	21.39
T5	55.17	212	17.99
T6	41.02	102	7.69
SEd	2.31	11.48	
CD	4.93	24.45	

T1 : 16 litres/day/tree by basin method of irrigation
T2 : 16 litres/day/tree by drip method of irrigation
T3 : 12 litres/day/tree by drip method of irrigation
T4 : 8 litres/day/tree by drip method of irrigation
T5 : 4 litres/day/tree by drip method of irrigation
T6 : Rainfed (No irrigation)

The experiment was designed in randomised blocks design with four replications.

RESULTS AND DISCUSSION

It was revealed that the treatment T2 recorded the highest weight and largest number of annual moringa. When the quantity of irrigation water increased from 4 l to 16 l, the weight of fruit was significantly more. In the case of number of moringa fruits the treatments T1 to T5 are on par and superior over the treatment T6. Annual moringa is responding to irrigation and the yield can be doubled in weight (vegetable moringa fruit) by drip irrigation compared to rainfed crop.

Table 2. WUE of annual moringa

Treatment	weight of moringa (t/ha)	Irrigation water (m^3/ha)	WUE (kg/m^3/ha)
T1	28.85	2595.3	9.50
T2	33.36	2595.3	12.05
T3	25.86	1946.5	12.71
T4	21.39	1297.5	17.16
T5	17.99	648.8	30.58
T6	7.69	-	-

It was observed (Table 2) that though the production (i.e. yield of moringa) was the highest in the treatment T2 (i.e. drip irrigation with 16 l/day/tree), the water use efficiency was the highest (30.58 kg/m^3/ha) in the treatment T5 (i.e. drip irrigation with 4 1/day/tree). When comparing the rainfed method of cultivation with the minimum water application of 4 l/day/tree through drip irrigation, there is on increase in yield of 57 per cent under drip method. With the same quantity of water used in basin irrigation, four times of area can be irrigated under drip irrigation with 4 l/day/tree and the yield can be increased three folds. Or (1991) also reported that drip irrigation gave better results than flood irrigation and helps to increase area by 80 to 83 per cent.

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Madras Agric. J., 81(12): 679-684 December, 1994

EVALUATION OF PIGEONPEA ACCESSIONS FOR RESISTANCE TO *Callosobruchus maculatus* (F)

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ABSTRACT

Two hundred and eight pigeonpea accessions were screened for their resistance to *Callosobruchus maculatus* (F) by free choice test. The number of eggs laid ranged from 4 to 60 and the number adults emerged varied from 0 to 35. Hundred per cent survial of *C.maculatus* was observed in six accessions (PR 5326 UQ-50, PR-5492, PR-5300, PR-5576 and PR-6035) where as it failed to develop on PRN-270. Oviposition was not influenced by the level of resistance in the seed and the rate of development was faster in susceptible accessions. Based on the suitability index, seven accessions were classified as resistant, 26 as moderately resistant, 84 as susceptible and 91 as highly susceptible to *C.maculatus*.

Ranking from backyard crop to a major field crop, pigeonpea, *Cajanus cajan* (L) Millsp is grown by subsistence farmer in the tropics. In India, where about 90 per cent of the crops, global growing area