



5.SUMMARY

Field experiments were conducted using two green-houses at El-Bostan Experimental Station on a sand soil (89 % sand; 2 % clay) There were 2 experiments one for tomato and one for cucumber. Three sources of conditioners were tested namely: polyacrilic acid (PA), composite conditioner (a mixture of polyacrilic acid and bentonite with a ratio of 1 : 5 by volume), (CC) and chicken manure (CH). The application rates were as follows:

Soil conditioners	Application rate (g/m ²)		
	Low	Medium	High
Polyacrilic acid	100	200	300
Composite	500	1000	1500
Chicken manure	2000	3000	6000

There were 3 treatments of water representing 3 water regimes as follows: W1 irrigation every day; W2 irrigation every 2 days; and W3 irrigation every 3 days. The design was a factorial randomized complete block which included 3 factors i.e. conditioner type; conditioner rate; and water regime.

Cucumber seeds (*cucumis Sativus* c.v Basendra) were sown on the first September (1996) and harvested at last December. Tomato seedlings (*Lycopersicon esculentum* c.v Karmello) were transplanted on the first October (1997) and harvested at the first May (1998).

Results are as follows:

1.Dry weight of stem, leaves and fruits of tomato and cucumber decreased with the increase in water stress giving the lowest at

W3, and in the case of cucumber causing complete wilt to plants where no conditioner was given or where the rate of addition was lowest.

2. All conditioners enhanced plant growth and gave more dry weights of stem, leaves and fruits for both crops and also enhanced plant height for the cucumber crop.

3. CH was the most effective conditioner; most probably due to its superior properties as a conditioning agent and because it is a source of plant nutrients; it was followed by CC then PA conditioners.

4. Height of cucumber plants after 35 and 90 days from transplanting markedly decreased with increasing water stress.

5. Increasing water stress markedly reduced fruit yields of cucumber and tomatoes with greatest yield given by W1 and lowest by W3.

6. Soil conditioners gave their greatest yield at the highest rate. Non treated soil gave the lowest yield of tomato, being 8.9, 6.2 and 2.3 kg/m² at W1, W2 and W3, respectively; cucumber yields were 3.2, 2.6 and 0.0 kg/m² for the same water regimes, respectively. Average yields of conditioner treatments were: tomato: 15.5, 11.7 and 6.5 for W1, W2 and W3, respectively; for cucumber, yields were 5.2, 3.7 and 2.4, respectively.

7. CH was the most effective on weight of plants and yield of fruits (average tomato fruit yields "kg/m²" = 10.8, 11.9, and 11.4 for PA, CC, and CH treatments respectively). (average cucumber fruit yields "kg/m²" = 3.44, 3.60, and 4.82 for PA, CC, and CH treatments respectively).

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8. Uptake of N, P and K in plant tissues was decreased by water stress and increased by conditioners.

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