

SUMMARY AND CONCLUSION

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EFFECT OF SOME CUCURBITS ROOTSTOCKS ON GROWTH, YIELD AND RESISTANCE TO SOME SOIL PESTS OF CUCUMBER UNDER PLASTIC HOUSES

Two field experiments were carried out in plastic green house (60m.L. X 9m.W. X 3m height) at Kaha Research Station, Horticulture Research Institute, Agricultural Research Center, Ministry of Agriculture, Giza, during the two autumn and spring successive seasons of 1996 - 1997 and 1997 - 1998.

This study was conducted to elucidate the effect of grafting cucumber Passandra F₁ hybrid which is a susceptible to fusarium wilt disease and nematode on four cucurbitaceous rootstocks i.e., figleaf gourd, bottle gourd, pumpkin and squash on plant growth, flowering, yield, leaf chemical composition and fruit physical and chemical characteristics as well as the effect of infection with fusarium and nematode on eleven cucurbitaceous rootstocks.

The obtained results can be summarized as follows :-

- 1- The obtained results showed that figleaf gourd is the best rootstock for resistance to fusarium wilt and nematode infection percentages and diseases severity followed by bottle gourd and pumpkin.
- 2- Successive transverse section in grafted union of different four rootstocks showed that figleaf gourd and pumpkin were the best stocks regarding the degree or ratio of successful grafting and physiological compatibility.
- 3- Lateral roots were obtained at all rootstocks especially from the scion grafted on squash and bottle gourd. Once the grafting was completely succeeded the development of lateral roots was blocked before the lateral roots become morphologically visible.

- 4- Grafting cucumber onto figleaf gourd or pumpkin increased percentage of successful grafting.
- 5- Grafting on figleaf gourd and bottle gourd had the most promotive effect on plant length in both autumn plantations. Meanwhile, the figleaf gourd and pumpkin as rootstocks had the most increasing effect on plant length in both spring plantations.
- 6- Grafting cucumber on the used four rootstocks on the number of leaves per plant, data indicated that grafting had no significant effect on increasing the number of leaves in the autumn and spring plantation except in the second spring season.
- 7- The figleaf gourd and pumpkin as rootstocks showed the highest values of leaf area in both spring and first autumn plantation but did not reach to the level of significancy.
- 8- Concering the effect of grafting on fresh and dry weight of stem, leaves and total foliage, figleaf gourd and bottle gourd had the highest effect on fresh and dry weights of plant foliage at both autumn plantation. Meanwhile, cucumber grown onto figleaf gourd and pumpkin had the highest values at both spring plantations.
- 9- Cucumber grafted on figleaf gourd and pumpkin resulted in the significantly highest values of chlorophyll a, total chlorophyll and carotenoids while, bottle gourd had a highest value of chlorophyll b at both autumn plantations. Meanwhile, cucumber grafted on figleaf gourd and pumpkin had the highest values of chlorophyll a,b, total chlorophyll and carotenoids content in plant leaves at both spring plantations.
- 10- Figleaf gourd had the highest values for the effect of grafting on total phenols and indoles of scion leaves than other rootstocks and control.

- 11- Using figleaf gourd followed by pumpkin as rootstocks significantly increased the values of such plant foliage constituents of macro elements at both seasons of this work except first autumn plantation figleaf gourd followed by bottle gourd for plant foliage constituents of N.P. K. Ca and Mg.
- 12- Concerning the effect of grafting on protein analysis scion leaves, the results of the water soluble protein, the presence of seven novel protein bands that were absents in control plant leaves. The results of the water nonsoluble protein indicated the presence of five novel proteins that were absent in the control leaves. These results suggest the possible migration of some proteins across the graft union via the connecting area.
- 13- Grafting on different rootstocks led to the decrement in the number of days required for appearance of the first flower specially at the use of figleaf gourd.
- 14- Grafting on four rootstocks increased the number of flowers per plant compared with cucumber without grafting specially pumpkin at autumn plantation while figleaf gourd came at the first rank at both spring plantations.
- 15- Grafting cucumber onto figleaf gourd or pumpkin increased percentage of fruit set while the grafting cucumber onto bottle gourd led to decrement in percentage of fruit set during both autumn and spring plantations.
- 16- Using figleaf gourd and pumpkin as rootstocks significantly increased the number of fruits per plant at both autumn and spring seasons.
- 17- Bottle gourd as rootstock had the highest value for the fruit weight at both autumn and spring plantations.

- 18- The maximum early and total yield per plant as well as total yield kg/m^2 were obtained from plants grafted on figleaf gourd and pumpkin compared with those plants grafted on the other rootstocks.
- 19- Fruit quality:
- A- Concerning fruit quality, it was found that grafting led to a significant increment in fruit length and diameter especially in autumn season. The Bottle gourd was distinguished compared with the control or the other used rootstocks. However, grafting had no significant effect on fruit length particularly in the first season of the spring plantation.
 - B- The total soluble solids was significantly increased in fruits resulted from the cucumber grown onto pumpkin or figleaf gourd in either autumn or spring seasons.
 - C- Using figleaf gourd rootstocks increased the total carbohydrates in fruits in either autumn or spring seasons.
 - D- Fruits produced from cucumber plants that grown onto Bottle gourd showed high physical characteristics expressed in colour, shape, flavour, smell and touch compared with the other used rootstocks. Figleaf gourd and pumpkin came in the second and third rank respectively. Meanwhile, The control followed by squash came in the following ranks.
- 20- Evidently, from these results, it may be concluded that all rootstocks are nearly superior at all parameters compared with control (cucumber without grafting) especially figleaf gourd and pumpkin or bottle gourd. Generally, it is advisable to use figleaf gourd and pumpkin as rootstocks for maximum growth and yield while it may be recommended to use figleaf gourd or bottle gourd to avoid infection with fusarium disease and nematode.