

## THE EFFECT OF PLANT NUTRITIONS (N,P,K AND CA) ON CUCURBIT ROOT AND CROWN ROT DISEASE CAUSED BY *FUSARIUM OXYSPORUM* IN SOME CUCUMBER CULTIVARS

Mehdi Mohamadian Sarcheshmeh<sup>1</sup> and Ahmad Reza Ahmadi<sup>2</sup>

1-Faculty of science, Abarkouh Branch, Islamic Azad University, Yazd, Iran

2- Department of Plant Pathology, Faculty of Agriculture, Khorasgan (Isfahan) Branch, Islamic Azad University, Isfahan, Iran

Mehdimohamadian898@yahoo.com

### INTRODUCTION:

THE FUNGAL PATHOGEN *FUSARIUM OXYSPORUM* AFFECTS A WIDE VARIETY OF HOSTS OF ANY AGE. *FUSARIUM OXYSPORUM* GENERALLY PRODUCES SYMPTOMS SUCH AS WILTING, CHLOROSIS, NECROSIS, PREMATURE LEAF DROP, BROWNING OF THE VASCULAR SYSTEM, STUNTING, AND DAMPING-OFF. ROOT AND CROWN ROT DISEASE CAUSED BY *FUSARIUM OXYSPORUM* IS ONE OF THE MOST IMPORTANT DISEASES OF CUCUMBER (*CUCUMIS SATIVUS*) (AGRIOS, G.N. 1988). THE DISEASE CAUSES A LOT OF DAMAGES TO GREENHOUSE CROPS IN YAZD PROVINCE. DISEASE SEVERITY CAN BE DECREASED BY PLANT NUTRITION MANAGEMENT (SANGO S. ET AL. 2001). THE MOST IMPORTANT ELEMENTS IN THIS REGARD ARE NITROGEN, PHOSPHORUS, POTASSIUM AND CALCIUM. PLANT NUTRITION AFFECTS BOTH THE PATHOGEN AND THE HOST (ROUSTAEI A. 2005).

### MATERIALS AND METHODS:

The effect of plant nutrition on reduction of root and crown rot disease in several cultivars of cucumber was studied in this research. Different levels of N, P, K and Ca on three current cultivars (Tezier, Super2000 and U.S.A) of cucumber were investigated at the presence of *Fusarium oxysporum* using a factorial analysis based on completely randomized design with three replications.

### RESULTS AND DISCUSSION:

Significant differences were observed among the different levels of elements used in different treatments. Increasing the nitrogen level (20 meq/l  $\text{NO}_3^-$ ) and decreasing the calcium level (0 meq/l  $\text{Ca}^{++}$ ), increased the disease susceptibility in cucumber, whereas increasing of phosphorus (4 meq/l  $\text{H}_2\text{PO}_4^+$ ) and potassium (9 meq/l  $\text{K}^+$ ) levels decreased the susceptibility to the disease. The effects of different levels of N, P, K and Ca were also investigated on growth of *Fusarium oxysporum* *In vitro* at a completely randomized design with three replications. Variance analysis of fungus growth showed significant differences among different levels of the elements. The highest area of fungus growth was occurred at 0.1 gr/l of KCl and  $\text{Ca}(\text{NO}_3)_2$  (44.15 and 43.15  $\text{cm}^2$ ), respectively. The factors investigated, clearly suggested the occurrence of a wide interaction between cucumber nutrition (N, P, K and Ca) and *Fusarium oxysporum* and showed the importance of plant nutrition management for decreasing the disease severity.

**Keywords:** Cucumber, Disease, Fusarium, Interaction and Nutrition management

**REFERENCES:**

- 1- Agrios,G.N.1988.Environmental Effects on Infectious Plant Disease Development.Plant Pathology25:152-155.
- 2-Roustae,A.,Mohamadian Sarchemeh,M.2005.Study of interaction between plant nutrition(N,P,K and Ca)and Cucurbit Wilt disease caused by *phytophthora drechsleri* Tucker in some cucumber cutivars.seed and plant21:457-466.
- 3-Sango,S.,and Yang,X.B.2001.Relation of sand content,PH and potassium and phosphorus nutrition to the development of sudden death syndrome in soybean.canadian of plant pathology23:174-180.



The 1st International Conference on New Ideas in Agriculture  
Islamic Azad University Khorasgan Branch  
26-27 Jan. 2014, Isfahan, Iran

