

Preliminary Evaluation of Cucurbits for Resistance to the Yellowing and Stunting Disorder

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Key words : Cucumis melo, Cucumis sativus, Citrullus lanatus, Yellowing and Stunting, Resistance.

Cucurbits are widely grown in the U.A.E. and represent the most important group of vegetables in the country. Nevertheless, their production has been recently seriously threatened by a yellowing and stunting disorder (YSD). Hassan and Duffus (1990) described symptoms of the disorder, reviewed available information on its epidemiology, etiology and control, and concluded that it is probably caused by a new virus of the closterovirus-like group similar to lettuce infectious yellows virus. Long flexuous filamentous virus particles were observed in 15 out of 16 affected samples examined by electron microscopy (Lecoq, 1986). Epidemics are associated with extremely large populations of the tobacco whitefly, Bemisia tabaci Genn.

The Department of Agriculture and Animal Production at Al-ain (Salih, 1988) reported a low

level of susceptibility in five melons cvs, Maskotaly, Maggar Kings, Caribe F1, Rocky Sweet F1 and Midstar F1.

The objective of this study was to evaluate some commercial cvs and U.S.D.A. introductions of cucumber (Cucumis sativus L.), melon (Cucumis melo L.) and watermelon (Citrullus lanatus [Thumb.] Mansf.) for resistance to the YSD.

The trial was conducted at the Research and Agricultural Education Center of the Faculty of Agricultural Sciences, U.A.E. University, at Al-Oha (near Al-Ain) during the autumn of 1987. Seeds of 120 accessions were sown on October 11, 1987. They were as follows :

Cucumber :

P.I. 105340, P.I. 164734, P.I. 64816, P.I. 164819,
P.I. 164951,
P.I. 165029, P.I. 169352, P.I. 169400, P.I. 171604,
P.I. 173892,
P.I. 175111, P.I. 175120, P.I. 175121, P.I. 175680,
P.I. 175686,
P.I. 179260, P.I. 179676, P.I. 181874, P.I. 181910,
P.I. 183231,
P.I. 183967, P.I. 188807, P.I. 192940, P.I. 193496,
P.I. 197085,
P.I. 197087, P.I. 197088, P.I. 200815, P.I. 200818,
P.I. 202801,
P.I. 206043, P.I. 211988, P.I. 212233, P.I. 220791,
P.I. 220860,
P.I. 222782, P.I. 223841, P.I. 227207, P.I. 227208,

P.I. 227209,
P.I. 227210, P.I. 234517, P.I. 250147, P.I. 251520,
P.I. 261608,
P.I. 263082, P.I. 263083, P.I. 267197, P.I. 267741,
P.I. 267742,
P.I. 267744, P.I. 267943, P.I. 269480, P.I. 271326,
P.I. 271331,
P.I. 279465, P.I. 283899, P.I. 288238, P.I. 321011,
P.I. 391569,
P.I. 391571, P.I. 391573, P.I. 400270

Melon : Topmark, PMR45, WR 29, AR 5, AR HBJ, AR Topmark, PMR Honeydew, PI 414723, Juan Canari, Persian, Parquito, Ranjadew, Aladin, Rasto, Pancha, Honey Dew, Venus Hybrid, Burpee's Ambrosia, Burpee Hybrid, Summet, Moko, HSR 237, HSR 296, Eldorado, Jupiter, Yellow No.2, Saticoy Hybrid, Dixie Jumbo, Gold King, Magnum, Galligum, Hicross-Gulf Sweet and Honeybush.

Watermelon : Charleston Gray, Burpee's Fordhook, Sweet Treat, Summer Glory, Sunset, Summer Ace, Summer Favorite, Non Striped Giant Boy, Empress Non Striped, Red Baby (Midget), Tora, Sugar Boy, Carmen, AU-Producer, Calsweet, PSR 38285, PSR 38385, PSR 36385, Fabiola, XPH 5081, Madera, Assal, Mirage LS and XPH 5077.

Seeds were kindly provided by the U.S.D.A. through C. Block, Plant Introduction Station, Iowa State Univ., Ames (cucumber entries), J.D. McCreight, U.S.D.A., Agricultural Research Station, Salinas, CA (some melon entries) and commercial seed companies (most melon and watermelon entries). Cucumber

genotypes evaluated were U.S.D.A. plant introductions with reported resistance or tolerance to one or more of the following viruses : tobacco green mottle mosaic virus, tobacco ringspot virus, cucumber mosaic virus and watermelon virus-2. Each entry was represented by 12-16 plants spaced 40 cm apart along the drip irrigation line. Melon plants with typical observed symptoms and severe whitefly infestation were collected from commercial fields and distributed close to seedlings two weeks after sowing to enhance natural infection. Plants were given fertilizers through the irrigation systems as commonly practiced. Data were collected from cucumber, melon and watermelon entries 6, 7 and 8 weeks after exposure to natural infestation, respectively. Plants were classified into diseased (showing typical symptoms) and symptomless.

Nearly 100% infection was observed in most genotypes evaluated. Typical severe symptoms of the disorder developed on most plants of most entries. All genotypes evaluated were rated susceptible. Symptoms of the disorder were relatively slight on cucumber P.I. 188807 and P.I. 271326 and on melon cv. Rasto, while nearly 50% of plants evaluated were symptomless in melon cvs Rasto and Jupiter and in watermelon cv. Sweet Treat. However, their susceptibility was confirmed in a subsequent test conducted in a similar manner during the 1988 fall planting.

The method used in this trial to enhance natural infection proved to be simple and very effective. However, it does not provide information on

resistance to a specific virus, but rather to the endemic YSD as it occurs naturally in U.A.E.

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تقييم أولى لبعض أصناف وسلالات القرعيات للمقاومة لظاهرة الاصفرار والتقزم

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ملخص

أجرى اختبار تحت ظروف الحقل لتقييم ١٢ صنفاً وسلالة من القرعيات للمقاومة لظاهرة الاصفرار والتقزم .. وهي الظاهرة التي ذكر أنها تعزي إلى الإصابة بفيروس خيطي جديد ، اشتملت الدراسة على ٦٣ سلالة من الخيار ، و ٣٣ صنفاً وسلالة من الشمام و ٢٤ صنفاً من البطيخ ، وقد كانت جميعها قابلة للإصابة حيث ظهرت عليها أعراض الظاهرة بوضوح .