

REACTION OF *Cucumis melo* CULTIVARS TO RACES OF *Fusarium oxysporum* F.SP. *melonis* THE CAUSE OF MELON VASCULAR WILT

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Abstract

Reaction of 180 cultivars of *Cucumis melo* including cantaloupe, long-melon, snake melon, and dudaim collected from various parts of Iran and other countries were evaluated against races 0, 1, 2 and 1, 2 of *Fusarium oxysporum* f. sp. *melonis* using different inoculum potential under greenhouse conditions. Many of the Iranian cultivars were resistant to races 0 and 2 which have not been reported yet from Iran. Few cultivars were found to be resistant to race 1 prevalent in Khorasan and Semnan provinces. None of the Iranian cultivars were resistant to race 1, 2 prevalent in Fars and Isfahan provinces. Some cultivars from Japan and China like Golden Crispy and Ogon no 9 found to have low degree of tolerance to race 1,2. The inoculum potential of the races was important in cultivars reaction to races. Some cultivars were resistant or tolerant at low inoculum while becomes susceptible at higher levels.

Keywords: Long melon, cantaloupe, race 0,1, 1,2 and 2 of melon *Fusarium* vascular wilt.

See persian text for figures and tables (Pages ۱۱-۲۲).

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References

- ANONYMOUS, 2006. Statistics for crop year 2004-2005. Department of Statistical Information Technology, Ministry of Jihad Agriculture, Tehran, Iran.
- BANIHASHEMI, Z. 1968a. **The Biology and Ecology of *Fusarium oxysporum* f. sp. *melonis* in Soil and the Root Zone of Host and Non-Host Plants**. PhD. Thesis, Michigan State University 114pp.
- BANIHASHEMI, Z. 1968b. The existence of *Fusarium* wilt of melon in Iran. Proc. First. Nat. Cong, Plant Med. 47-48.
- BANIHASHEMI, Z. 1969. Cucurbit wilt and root rot diseases in Iran. **Proc. 2nd Plant Med. Cong., Shiraz, Iran**, 97-98.
- BANIHASHEMI, Z. 1982. A new physiologic race of *Fusarium oxysporum* f.sp. *melonis* in Iran. **Iran. J. Plant. Pathol.** 18:1-6
- BANIHASHEMI, Z. 1986. Reaction of long melon and cantaloupe cultivars to race 1,2 of *Fusarium oxysporum* f.sp. *melonis* at various chlamydospores population. **Proc. 8th. Plant Protec. Cong., Esfahan, Iran**. 69(Abst.)
- BANIHASHEMI, Z. 1989. The existence of race 1 of *Fusarium oxysporum* f.sp. *melonis* on long melon in Garmsar and its virulence to different cultivars of *Cucumis melo*. **Proc. 9th. Plant Prot. Cong., Mashhad, Iran**. 88(Abst.)
- BANIHASHEMI, Z. and deZEEUW, D. J. 1969. Tow improved methods for selectively isolating *Fusarium oxysporum* from soil and plant roots. **Plant Dis. Rep.** 53: 589-591.
- BANIHASHEMI, Z. and deZEEUW, J. D. 1973. The effect of soil temperature on survival of *Fusarium oxysporum* f.sp. *melonis* (Leach and Currence) Snyder and Hansen. **Plant and Soil** 38: 465-468.
- BANIHASHEMI, Z. and deZEEUW, J. D. 1975. A new physiological race (Race 4) of *Fusarium oxysporum* f. sp. *melonis*. **Iran. J. Agric. Res.** 3: 41-47.
- DANESHVAR, M. H. 2000. **Vegetable Growing (Principles and Applied)**. Shahid Chamran University Press., 461 p.
- FICCADENTI, N. SETELE, S., ANNIBALI, S. and CAMPANELLI, G. 2002. Resistance to *Fusarium oxysporum* f. sp. *melonis* race 1,2 in muskmelon lines. **Plant Dis.** 86: 897-900.
- GORDON, T. R. and MATYN, R. D. 1997. The evolutionary Biology of *Fusarium Oxysporum*. **Annu. Rev. Phytopathol.** 35: 111-128
- GORDON, T. R. and Okamoto, D. 1990. Colonization of crop residue by *Fusarium oxysporum* f. sp. *melonis* and other species of *Fusarium*. **Phytopatology** 80: 381-386.
- GUBLER, W. D., and GROGAN, R. G. 1976. *Fusarium* wilt of muskmelon in the San Joaquin Valley of California. **Plant Dis. Rep.** 60: 742-744.
- JACOBSON, D. J. and GORDON, T. R. 1990. Further investigation of vegetative compatibility with in *Fusarium oxysporum* f. sp. *melonis*. **Can. J. Bot.** 68: 1245-1248.
- KATAN, T., KATAN, J., GRODON, T. R. and POZNIAK, D. 1994. Physiologic races and vegetative Compatibility groups of *Fusarium oxysporum* f. sp. *melonis* in Israel. **Phytopathology** 84:153-167.
- OKAMOTO, D. 1977. Characterization of Pathogenic race of *Fusarium oxysporum* f. sp. *Melonis* Causing *Fusarium* wilt of melon in New York. **Plant Dis.** 81:592-595.
- PERCHEPIED, L. and PITRAT, M. 2004. Polygenetic inheritance of partial resistance to *Fusarium oxysporum* f.sp. *melonis* race 1,2 in melon. **Phytopathology** 94: 1331-1336.
- PEYVAST, G. 2005. **Vegetable Production**. Danesh Pazeer Pub., Third print. 487p. (in Farsi).
- POOSTCHI, I. 1972. **Cucurbit and Cucurbit Cultivation**. Franklin Pub., 330 p. (In Farsi).
- REID, J. 1957. **Studies of *Fusarium* Which Cause wilt in Melons**. Doctoral Dissertation, University of Toronto, Canada.
- RISSER, G. 1973. Etude de la heredite de la resistance du melon (*Cucumis melo*) aux races et 2 de *Fusarium oxysporum* f. sp. *melonis*. **Ann. Amelior Plant** 23: 259-263.
- RISSER, G. and MAS, P. 1965. Missen evidence de plusieurs race de *Fusarium oxysporum* f.sp. *melonis*. **Ann. Amelior Plantes (Paris)** 15: 405-408.
- RISSER, G. BANIHASHEMI, Z. and DAVIS, D. W. 1976. A proposed nomenclature of *Fusarium oxysporum* f. sp. *melonis* races and resistance genes in *Cucumis melo*. **Phytopatology** 66: 1105-1106.

- SARPELEH, A. and BANIHASHEMI, Z. 2000. Vegetative compatibility group within races of *Fusarium oxysporum* f. sp. *melonis* in Iran and *Fusarium oxysporum* from weeds in Maharlou region of Fars province. **Iran. J. Plant Pathol.** 36: 31-45. (In Farsi With English Summary).
- TAPLEY, W. T. ENZIE, W. D. and Van ESELATINE, G. N. 1937. **The Vegetables of New York.** Vol 1-part IV. The cucurbits. Albany J. B. Lyon Company Printers. 131p.
- TOUSSN. T. A. and NELSON, P. E. 1968. **A Pictorial Guide to the Identification of *Fusarium* Species According to the Taxonomic System of Snyder and Hansen.** The Pennsylvania State University Press, University Park. Pa. 51 p.
- WELTY, R. E. 1968. Factors influencing wilt of muskmelon caused by *Fusarium oxysporum* f.sp. *melonis* (Leach and Currence), Snyder and Hansen. **Dis. Abst.** 27: 1695-B
- WENSLEY, R. N. and McKeen, C. D. 1963. Populations of *Fusarium oxysporum* f. sp. *melonis* and their relation to the wilt potential of two soil. **Can. J. Microbiol.** 9: 237-249.
- WHITAKER, T. W. and Davis, G. N. 1962. **Cucurbits: Botany, Cultivation and Utilization.** Leonard Hill (Books) Limited, London, Inter-Science Publisher Inc., New York. 250p.
- ZAKERI, A. and BANIHASHEMI, Z. 1996. The role of weeds in cultivated and virgin on activity and perpetuation of *Fusarium oxysporum* f.sp. *melonis* in Fars province. **Iran. J. Plant Pathol.** 32: 28-24. (In Farsi With English Summary).
- ZINK, F. W. 1983. Reaction of muskmelon germ plasm to inoculation with *Fusarium oxysporum* B.Y. Mar race 2. **Plant Dis.** 67: 1251-1255.
- ZINK, F. W. 1992. Genetics of resistance to *Fusarium oxysporum* f.sp. *melonis* race 0 and 2 in muskmelon cultivars Honey Dew, Iroquois and Delicious 51. **Plant Dis.** 76: 162-166.
- ZONIGA, T. L., ZITTER, T. A., GARDON, T. R., SHROEDER, D. T. and OKAMOTO, D. 1977. Characterization of pathogenic race of *Fusarium oxysporum* f.sp.*melonis* causing Fusarium wilt of melon in New York. **Plant Dis.** 81: 592-5.