

EVALUATION OF REACTION OF SOME IRANIAN MELON ACCESSIONS TO CUCURBIT YELLOW STUNTING DISORDER VIRUS*

T. KESHAVARZ¹, M. SHAMS-BAKHS^{1**} and K. IZADPANA²

(Received : 28.05.2012; Accepted : 14.2.2013)

Abstract

Cucurbit yellow stunting disorder virus (CYSDV), a member of the genus *Crinivirus* (family *Closteroviridae*), causes considerable losses in cucurbits. Using of the resistant cultivars is a potential option for control of the disease induced by CYSDV. In this research twenty five accessions of *Cucumis melo*, including local melons, collected from different regions in Iran, were evaluated under controlled conditions for their reaction to Iranian CYSDV isolate, (Bushehr). Inoculations were made at first true leaf-stage with *Bemisia tabaci*. Assays included mean of disease severity index 6 weeks after inoculation, time of symptoms development (infection percentages 20 days after inoculation) and virus concentration in plant (mean ELISA value 8 weeks after inoculation). Only two accessions Choroork zard and Til zard showed delay in symptom development, low disease severity index and low concentration of the virus. They were considered resistant to the virus and tolerant to the disease. The accessions Zard khareji, Zard moshabbak dorosht, Zard talae and Sefid because of low concentration of the virus in ELISA and Sirjan and Kashefi because of delay in symptoms development were resistant to virus. Yazdi, Zard talae, Sirjan, Zard moattar and Sefid had low disease severity index and rated tolerant. Other accessions were highly sensitive to the virus.

Keywords: Resistance, Disease severity, ELISA.

See Persian text for figures and tables (Pages ۲۲۹–۲۳۹).

*: A Part of PhD. Thesis of The First Author, Submitted to College of Agric., Tarbiat Modares Univ., Tehran, Iran.

** : Corresponding Author, Email: shamsbakhsh@modares.ac.ir

1. Former PhD. Student and Assoc. Prof. of Plant Pathol., College of Agric., Tarbiat Modares Univ., Tehran, Iran

2. Prof. of Plant Pathol., College of Agric., Shiraz Univ., Shiraz, Iran.

References

- ABOU-JAWDAH, Y., SOBH, H., FAYARD, A., LECOQ, H., DELECOLLE, B. and TRAD-FERRE, J. 2000. Cucurbit yellow stunting disorder virus- a new threat to cucurbits in Lebanon. **J. Plant Pathol.** 82:55-60.
- AGUILAR, J. M., ABAD, J., and ARANDA, M. A. 2006. Resistance to *Cucurbit yellow stunting disorder virus* in cucumber. **Plant Dis.** 90:583-586.
- BERDIALES, B., BERNAL, J. J., SAEZ, E., WOUDET, B., BEITIA, F. and RODRIGUEZ-CEREZO, E. 1999. Occurrence of cucurbit yellow stunting disorder virus (CYSDV) and Beet pseudo yellows virus. **Eur. J. Plant Pathol.** 105: 211-215.
- CELIX, A., LOPEZ-SESE, A., ALMARZA, N., GOMEZ-, M. L. and RODRIGUEZ-CEREZO, E. 1996. Characterization of cucurbit yellow stunting disorder virus, a *Bemisia tabaci* -transmitted closterovirus. **Phytopathology** 86:1370-1376.
- CONVERSE, R.H., and MARTIN, R. R. 1990. ELISA methods for plant viruses. Pp.179-196. *In*: R., Hampton, E., Ball and S. De Boer (Eds.), **Serological Methods for Detection and Identification of Viral and Bacterial Plant Pathogens**. A laboratory manual.. APS Press.
- COOPER, J. I. and JONES, A. T. 1982. Responses of plants to viruses: Proposals for the use of terms. **Phytopathology** 73: 127-128.
- DESBIEZ, C., LECOQ, H., ABOULAMA, S. and PETERSCHMITT, M. (2000). First report of cucurbit yellow stunting disorder virus in Morocco. **Plant Dis.** 84:596.
- EID, S., ABOU-JAWDAH, Y., EL- MOHTAR, C. and SOBH, H. (2006). Tolerance in cucumber to cucurbit yellow stunting disorder virus, **Plant Dis.** 90: 645-649.
- FABRIKI OURANG, S., SHAMS-BAKHSH, M., JALALI JAVARAN, M and AHMADI, J. 2009. Analysis of genetic diversity of Iranian melons (*Cucumis melo L.*) using ISSR markers. **Iran. J. Biol.** 22(No.2): 271-281.
- HASSAN, A. and DUFFUS, J. E. 1991. A review of a yellowing and stunting disorder in the United Arab Emirates. **Emir. J. Agric. Sci.** 2:1-16.
- KAO, J., JIA, L., TIAN, T., RUBIO, L. and FALK, B. W. 2000. First report of cucurbit yellow stunting disorder virus (genus *Crinivirus*) in North America. **Plant Dis.** 84:101.
- KESHAVARZ, T. and IZADPANA, K. 2005. Etiology of cucurbit yellows in Boushehr province. **Iran. J. Plant Pathol.** 41:107-112
- KESHAVARZ, T. 2003. **Etiology of cucurbit yellows in Bushehr province**. MSc Thesis, Submitted to Tarbiat Modares Univ., Tehran.
- LECOQ, H., WISLER, G., and PITRAT, M. 1998. Cucurbit viruses: The classic and the emerging. Pp: 126-142 *In*: J. D. McCreight (Ed.), **Cucurbitaceae 98: Evaluation and Enhancement of Cucurbit Germplasm**. American Society for Horticultural Sciences, Alexandria, VA.
- LIVIERATOS, I. C., KATIS, N. and COUTTS, R. H. A. 1998. Differentiation between cucurbit yellow stunting disorder virus and beet pseudo yellows virus by a reverse transcription-polymerase chain reaction assay. **Plant Pathol.** 47: 362-369.
- LOPEZ-SESE, A. J. and GOMEZ-GUILLAMON, M. L. 2000. Resistance to cucurbit yellow stunting disorder virus (CYSDV) in *Cucumis melo L.* **Hort. Sci.** 35: 110-113.
- LOURO, D., VICENTE, M., VAIRA, A. M., ACCOTTO, G. P. and NOLASCO, G. 2000. Cucurbit yellow stunting disorder virus (Genus *Crinivirus*) associated with yellowing disease of cucurbit crops in Portugal. **Plant Dis.** 84: 1156
- MARCO, C. F., AGUILAR, J. M., ABAD, J., GOMEZ-GUILLAMON -, M. L. and ARANDA, M. A. 2003. Melon resistance to Cucurbit yellow stunting disorder virus is characterized by reduced virus accumulation. **Phytopathology** 93: 844-852.
- MARTELLI, G. P., AGRNOVSKY, A. A., BAR-JOSEPH, M., BOSCIA, D., CANDRESSE, T., COUTTS, R. H. A., DOLJA, V. V., DUFFUS, J. E., FALK, B. W., GONSALVES, D., JELKMAN, W.,

- KARASEV, A. V., MINAFRA, A., MURANT, A., NAMBA, S., NIBLETT, C.L., VETTEN, H. J. and YOSHIKAWA,. 2002. The family Closteroviridae revised. **Arch. Virol.** 147: 2039–2044
- RUBIO, L., SOONG, J., KAO, J. and FALK, B. W. 1999. Geographic distribution and molecular variation of isolates of three whitefly -born closteroviruses of cucurbits: lettuce infectious yellows virus, Cucurbit yellow stunting disorder virus and beet pseudo yellows virus. **Phytopathology** 89: 707-711.
- WISLER, G. C., DUFFUS. J. E., LIU, H. Y. and LI, R. H. 1998. Ecology and epidemiology of whitefly-transmitted closteroviruses. **Plant Dis.** 82: 270-80.