

STUDY ON RESISTANCE LEVELS OF TWO COMERCIAL GRAFTED GRAPEVINE CULTIVARS (*Vitis vinifera* L.) ON RESISTANT ROOTSTOCKS TO CROWN GALL*

H. MAHMOUDZADEH¹ and M. HENAREH^{2**}

(Received : 08.08.2011 ; Accepted : 07.11.2012)

Abstract

Grafted and rooted cuttings of grapevines were inoculated with six pathogenic strains of *Rhizobium vitis*. Evaluation of infection severity was done based on the number, size and weight of galls on vines, four months after inoculation and in experiment duration of six years. Results showed that vinifera varieties were very sensitive to crown gall. Weight, number and size of galls induced on grafted vines on H4 and H6 was less than those on other vines. Scions grafted on rootstocks H4 and H6 had a 21.5% and 6.8% incidence compared to 55% for self-rooted vines. During six years 90% of self-rooted vines died, while 18% and 5% of the grafted vines on H4 and H6 hybrids were dead, respectively. The highest yield was found in the Red Sahebi grafted vines on H6 rootstock (2.98 kg/ vine) and the lowest was in self-rooted vines (1.25 kg/vine) and on others (2.25 kg/ vine), respectively.

Keywords: Grapevine, Rootstock, Resistance, Pathogenicity, *Rhizobium*, *Agrobacterium*.

See Persian text for figures and tables (Pages ۱۱۹-۱۲۲).

*: A part of research project intitled " Study on Effects of Crown Gall Rootstock Resistance Hybrids on Two Commercial Grape Cultivars in Qazvin area" number (130-12-81289)

** : Corresponding Author, Email: mahmoudzadeh_h@yahoo.com

1. Res. Assis. Prof. of West Azarbayjian Agric.and Natur. Resour. Res. Center.

2. Res. Instructor of West Azarbayjian Agric.and Natur. Resour. Rese. Center

References

- BURR, T.J., BAZZI, C., SULE, S. and OTTEN, L. 1998. Crown gall of grape: Biology of *Agrobacterium vitis* and the development of disease control strategies. **Plant Dis.** 82: 1288-1297.
- BURR, T. J. and KATZ, B.H. 1983. Isolation of *Agrobacterium tumefaciens* biovar 3 from grapevine galls and sap and vineyard soil. **Phytopathology** 73:163-165.
- BURR T. J., KATZ, B. H. and BISHOP, A. L. 1987. Populations of *Agrobacterium* in vineyard and non-vineyard soils and grape roots in vineyards and nurseries. **Plant Dis.** 71: 617-620.
- GOODMAN, R. N., GRIMM, R. and FRANK, M. 1993. The influence of grape rootstocks on the crown gall infection process and tumor development. **Amer. J. Enol. Viticult.** 44: 22-26.
- MAHMOODZADEH, H., NAZIMEH, A., MAJIDI, I., PAYGAMI, I. and KHALIGHI, A. 2004. Evaluation of crown-gall resistance in *Vitis vinifera* and hybrids of *Vitis* spp. **Vitis** 42: 75-79.
- STOVER, E. W. 1993. Resistance to crown gall in *Vitis*: studies directed toward the identification of crown-gall resistant rootstocks. Ph.D Dissertation, University of Maryland, USA.
- STOVER, E.W., SWART, H. J. and BURR, T. J. 1997. Crown-gall formation in a diverse collection of *Vitis* genotypes inoculated with *Agrobacterium vitis*. **Amer. J. Enol. Viticult.** 48: 26-32.
- SÜLE, S., and BURR, T.J. 1998. The effect of resistance of rootstocks to crown gall (*Agrobacterium* spp.) on the susceptibility of scions in grape vine cultivars. **Plant Pathol.** 47: 84-88.
- SÜLE, S., MOZSAR, J. and BURR, T. J. 1994. Crown gall resistance of *Vitis* spp. and grapevine rootstocks. **Phytopathology** 84: 607-611.
- SZEGEDI, E. KORBULY, J. and OTTEN, L. 1989. Types of resistance of grapevine varieties to isolates of *Agrobacterium tumefaciens* biotype 3. **Physiol. and Mol. Plant Pathol.** 35: 35- 43.
- Young, J.M., KUYKENDALL, L.D., KERR, A. and SAWADA, H. 2003. Classification and nomenclature of *Agrobacterium* and *Rhizobium* – a reply to Farrand *et al.* (2003). **Intl. J. Sys. Evol. Microbiol.** 53: 1689-1695.