

Notes on esca disease on some grapevine varieties grown in Turkish Thrace

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Summary. Grapevine production reaches 65,000 tons annually in the 7,000 ha viticultural area in Tekirdag, the main production province of the Thrace region. More than 50 varieties are grown in the district, although very few are dominant. During the surveys that have been done to determine the main phytopathological problems in vineyards, sudden death of the plants and diffuse necrosis on the leaves were observed. The most common symptoms of esca were chlorotic, light-green, irregularly diffused foliar spots which later became yellow-brown or reddish and finally turned necrotic. These areas were surrounded by a narrow dark red border. Internal symptoms of the disease were observed as rotted tissues extending downward and upward along the trunk. Many grapevine varieties were affected drastically, a few had very mild symptoms of esca and no decline. The Cardinal, Semillon, Yapincak and Kozak Siyahi varieties were severely affected.

Key words: esca, Turkey.

Introduction

Fungal diseases of grapevine are of particular importance in the Thrace region of Turkey, one of the most important grapevine production countries in the world with 567,000 ha under grapevine production. Esca has been reported not only in old but also in very young vineyards throughout the Mediterranean region with increased severity year by year (Mugnai *et al.*, 1996a; Gullino and Conti, 1997; Jamaux-Despereaux *et al.*, 1997). Esca presents two different types of symptoms, one characterized by leaf alterations, the other by sudden death of the plant (Dubos and Larignon, 1988; Mugnai *et al.*, 1996a, 1997, 1999).

Colonization and decay of woody tissue are as-

sociated with a group of fungi, that include *Phaeoacremonium chlamydosporum*, *P. aleophilum* (Mugnai *et al.*, 1996b, 1997; Larignon and Dubos, 1997), *Eutypa lata* (Dubos, 1996), *Stereum hirsutum*, *Phellinus igniarius* and *Sphaeropsis malorum* (Minervini and Bisiach, 1988; Mugnai *et al.*, 1996b, Larignon and Dubos, 1997).

Eliminating infected plants and avoiding spread of the disease by pruning material have been suggested to control the disease (Bisiach *et al.*, 1995). Chemical control can be applied where the use of DNOC or sodium arsenite is permitted (Gullino and Conti, 1997; Mugnai *et al.*, 1999).

Materials and methods

Surveys on the occurrence of esca in the Thrace region were carried out in 1998 and 1999. Fourteen cultivars in 26 vineyards were evaluated. External symptoms were determined as foliage

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Fig. 1. Symptoms of esca on grapevine varieties grown in Thrace: leaf symptoms on an undetermined red-berried cultivar (left); apoplexy of grapevine cv. Yapincak (middle); leaf symptoms on a white-berried grapevine cv. Semillon (right).

symptoms and apoplexy in the selected vineyards. A total of 9,291 plants were evaluated in 26 vineyards throughout the district.

Results and discussion

Reduced growth and sudden dieback of grapevines (apoplexy) after rainfall were observed in June 1998. The irregular distribution of plants with and without foliage symptoms suggested that the disease spread was mainly by infected buds or cuttings. Internal symptoms shown by vines affected by apoplexy included white rot as a soft, friable, spongy mass of rotted yellowish or whitish tissues. In cross section this mass was often surrounded by a thick black or dark brown line separating the rotted from non-rotted wood. In many diseased plants, black or brown spots were also observed in the trunk. The rot was restricted to the older parts of the wood extending downward and upward along the trunk. The rootstock showed less severe wood rot. After dieback of the infected plants, new suck-

ers were trained and re-grafted in 2-3 years. External leaf and berry symptoms of esca were found on many plants also showing internal symptoms. Light-green or chlorotic, rounded or irregularly shaped spots developed between the veins or along the leaf margins. Small coalescing spots, surrounded by a strip along the main veins which later became necrotic, were observed on all affected plants. The leaves showed stripe patterns which were yellow-brown (white-berried varieties) or red-brown (red-berried varieties) (Fig.1).

A total of 9,291 plants in 26 different vineyards were randomly selected and evaluated for esca and grapevine decline symptoms. All the vineyards examined were found infected. On the whole, 148 vines (1.59%) were found with symptoms of the disease, 133 (1.43%) with foliar and 17 (0.18%) with apoplectic symptoms. As regards individual cultivars, 15- to 20-year-old vines cv. Kozak Siyahi, a local cultivar, were severely infected (9.47%), followed by 30- to 35-year-old vines 'Cardinal' (including a few 4- to 5-year-old replanted vines) at 4.52%,

Table 1. Incidence of esca in grapevine cultivars grown in Thrace region, Turkey, in 1999.

Cultivar	No. of vines examined	No. of vines with foliar symptoms	No. of apoplectic vines	No. of asymptomatic vines
Adakarasi	858	4	1	853
Alphonse Lavalée	570	10	1	559
Amasya Beyazi	398	5	0	393
Cardinal	486	21	1	464
Cavus	438	6	0	432
Cinsaut	385	1	0	384
Gamay	604	5	1	598
Hafizali	339	0	1	338
Kozak Beyazi	363	1	4	358
Kozak Siyahi	306	28	1	277
Muscat of Hamburg	443	3	1	439
Papazkarasi	403	3	0	400
Riesling	373	0	1	372
Semillon	1,978	20	4	1,954
Yapincak	1,347	26	1	1,320
Total	9,291	133	17	9,141

and by 15- to 20-year-old Yapincak cv. Vines (2%). Other cultivars, which were 15- to 20-year-old, had lower rates. Because of the importance of this district for propagation and distribution of the grapevine, the disease can spread easily by infected budwoods and vines from here to the country as a whole.

The elimination of infected plants has to be considered the main way to control esca because the use of chemicals has not proved satisfactory. Further investigation on disease control of esca in grapevines are needed throughout the region.

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