

ABSTRACT

THE DETERMINATION OF THE WEED SPECIES IN CONVENTIONAL AND ORGANIC VINEYARDS OF THE AEGEAN REGION WITH INVESTIGATION OF ALTERNATIVE MANAGEMENT METHODS

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This work was done during 2009-2011 in Manisa. The aim of work was determination of weeds in the conventional and organic production in vineyards and determine method of control weeds. Weeds problem in 76 conventional and 48 organic grape vineyard production fields were surveyed.

The results of survey indicated that within the rows of organically grown organic vineyard, 54 weed species were identified in interrow. There were 9 species belonging to Asteraceae family, 5 species belonging to Poaceae family while Intra rows contained 7 species of Poaceae family, 6 species of Asteraceae, 2 species from Brassicaceae family. Total 44 weed species were detected intra rows.

In the conventionally grown fields, 28 weed species were determined in the rows. The rows had 6 weed species from Poaceae family, 4 species from Asteraceae family while one weed species was found from each of the families including.

Inter-rows had 5 weed species from Poaceae family, 4 species from Asteraceae family while one weed species was detected. Total 24 species had been determined inter rows.

Additionally the effect of some weed control methods was evaluated in conventionally and organically grown vineyards. The tested methods in the conventional fields included application of trifluralin, pendimethalin + fluazifop-p-butyl, glyphosate, spring tillage + glyphosate and fall tillage + glyphosate. Organic weed control methods included application of textile mulch, straw,

sawdust, peanut shells, hairy vetch, flame burning, olive water, tractor hoeing, hand hoeing, barley-vetch mixed cultivation and cabbage residues application.

Experiments were established at Bornova Plant Protection Research Station during 2010-2012 to test the effectiveness of flame weeding for some problematic weed species of vineyard orchard. The results of these experiments indicated that for the success of flame burning of perennial, annual, narrow and broadleaved weeds; the application should be done between the first true leaves appearance and tillering for narrow-leaved weeds, and until the 3rd true leaf appearance in the broad leaved weeds. A 90-95% weed control was obtained by this method. The effectiveness of this control method on perennial weeds is reduced over the time. It was observed that for successful control of perennial weeds, the flame burning of weeds was needed to be performed more than once.

The effect of organic as well as conventional methods on weeds, yield, quality and the physical and chemical properties of soil was determined. Under the conventionally managed fields, the maximum nitrogen (N) and phosphorus (P) were determined in the treatment of fall tillage + glyphosate application. The highest levels of sodium (Na) and iron (Fe) were found with the application of glyphosate. The soil analysis of organic treatments indicated that highest phosphorus (P) was noted in olive processing waste application while highest organic matter was recorded in vetch + barley and olive processing waste applications. Highest values for potassium were noted in tractor hoeing and olive processing waste application. High levels of iron (Fe) and manganese (Mn) were recorded with application of cabbage residues application.

Additionally, the cost of treatments application was determined. The economical analysis indicated that the most economical treatment was application of barley + vetch (35.5%). This treatment was followed by the other low cost applications including hairy vetch (26.8%), barley + vetch (25.5%), cabbage residues (18.30%), textile mulch (14:38%), tractor hoeing (13.1%) and groundnut shell (9.1%) applications, respectively. The other conventional treatments such as burning, straw, sawdust and hand hoeing were found to be more costly.

The results of this work indicates that the fall tillage + glyphosate application and textile mulch application were the most effective weed control treatments for conventional and organic productions systems, respectively. These applications

were found to have higher yield than the other applications. The application of textile mulch and mixed cultivation of barley + vetch was economical than the conventional applications and can be recommended for weed control in organic production systems.

Key Words: Vineyards, Grape, Weed, Mulching, Cover crop, Herbicide, Physical control, Mechanical control.