

WEED CONTROL IN MOTHER VINE PLANTATIONS

by

Dr. BASIL T. DARIS

Vine Institute of the Ministry of Agriculture

141 23 Lycovrissi-Athens GREECE

In a total of 180.000 ha covered by vineyards in Greece, approximately the 54 % is phylloxera-free.

Although phylloxera has first infested greek vineyards in 1898, its progress was slow due to the natural barriers (mountains, islands) as well as to the strict measures taken by the Ministry of Agriculture.

In ourdays the expansion of phylloxera is much more rapid as the communications and transports of goods between regions have increased considerably.

In order to cover the demands on rooted cuttings of rootstocks, numerous private nurseries exist in Greece.

All these nurseries obtain their plant material (unrooted cuttings) from the governmental mother vine plantations.

These plantations are established in different regions and belong to the Ministry of Agriculture (Direction of Plant Material).

The mother vines in the plantations are formed very low and a very short head pruning (tête de saule) is applied. The annual vegetation is spread on the soil surface and a certain care is taken to be guided towards one direction.

The main weeds existing in the mother plantations are:

- bermudagrass (*Cynodon dactylon*)
- johnsongrass (*Sorghum halepense*)
- field bindweed (*Convolvulus arvensis*)
- nutsedge (*Cyperus* sp.)
- wild oat (*Avena sterilis*)
- St. John's wort (*Hypericum crispum*)
- wild carrot (*Daucus carota*)
- wall barley (*Hordeum murinum*)
- ground sel (*Senecio vulgaris*)
- London rocket (*Sisymbrium irio*)
- shepherd's purse (*Capsella bursa pastoris*)
- fat hen (*Chenopodium album*)
- henbit (*Lamium amplexicaule*)
- common mallow (*Malva silvestris*)

In order to control them, small viticultural tractors and rotavators are used. This cultivation can be done only before bud-burst, as afterwards most of the soil surface is covered by the vegetation of the vines. In the past, they used hand labour to keep the plantations weed free, but this method was abandoned as it was very costly. So at present, most of the mother vine plantations are left without any cultivation practice after the bud burst. This situation has many disadvantages as it provokes an increase of

the weed population and high losses of water and nutrients for the vines, which influence the quality and the quantity of the produced cuttings. Therefore it was obvious the necessity to introduce the chemical weed control in the mother plantations.

Trials that were done in different sites have shown that most annual weeds were well controlled by winter applications, before bud burst, with residual herbicides, such as atrazine (5 kg a.i./ha), chlorthiamide (7,5 kg/ha), dichlobenil (7,5 kg/ha), oxyfluorfen (1,250 kg/ha) and the different mixtures of aminotriazole with triazines (atrazine and simazine) or with urea substitutes (diuron, linuron and monolinuron).

The above mentioned herbicides gave a good control of the annual weeds specially of those who emerge in winter, but against the resistant weeds, that emerge in spring, such as bermudagrass, johnsongrass, field bindweed and nut-sedge the results were not satisfactory. After the first year of application an increase of the population of resistant weeds was observed, due to the absence of the antagonism from the annual weeds. In some years the mother plantation was completely infested by resistant weeds.

In order to face this problem, herbicide trials were done with glyphosate (3,6-4,8 kg a.i./ha) applied at post emergence stage (weeds' height 15-20 cm.).

The results have shown that the low dose of 3,6 kg/ha was enough to control johnsongrass, but for the control of bermudagrass and field bindweed the higher dose was needed.

Although that the application of glyphosate was done by directed sprays and the vine vegetation was elevated, during application by workers a lot of phytotoxic symptoms appeared on the vine leaves.

In the last four years, trials with a new selective for grasses herbicide (graminicide) were held.

Fluazifop butyl in doses 1,5-2,5 kg a.i./ha has controlled well bermudagrass and johnsongrass. It was observed that application of 2,5 kg/ha on bermudagrass, when the plants had a length of 15-20 cm, has given the best control, for johnsongrass even when the height of the plants was 40 cm, the dose of 1,5 kg/ha was enough.

As a pure graminicide, fluazifop butyl was completely safe for the vines and all broadleaved plants, so the application in the mother vine plantations was easy, without taking any precautions to avoid contact of the spray solution with the vine leaves.

The visual effects of this herbicide on the grass weeds appear after 30 days.

Other graminicides are going to be tested in the near future, but we have to point out that in the mother vine plantations are existing also several resistant broadleaved weeds, such as field bindweed, bramble etc, which can create future problems by their expansion.

Due to the fact that the mother plantations of rootstocks in Greece are of creeping form on the soil, the perfect weed control by herbicides is not still possible.

The creeping formation of rootstocks has been kept in Greece, although it presents a lot of disadvantages, because it is much more economical than the supported on wires form.