

Post-emergent Weed Control in Vineyards:

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More and more vineyards are taking a hard look at their weed control programs with the aim of reducing herbicide use. More growers are using mechanical weed control and/or only post-emergent materials, thereby reducing or eliminating the use of pre-emergent materials. As with weed control programs that focus on cultivation, post-emergent programs tend to be more labor intensive and thus more expensive than pre-emergent programs. A rainy season and the use of irrigation will increase the frequency of post-emergent applications. Mechanical control of weeds is effective if done on a timely basis. Disadvantages are the cutting of roots, reducing soil organic matter, and increasing the chance for erosion. It should be noted that mechanical and post-emergent only programs are much easier for smaller vineyards to employ. When dealing with a large acreage, these strategies may make it difficult to maintain decent weed control.

Post-emergent herbicides are used for control of established weeds. There are two types: those that burn back the above-ground portion but typically do not kill the root and those that are absorbed and are translocated through the plant, killing the root as well. It is feasible to eliminate use of pre-emergent herbicides and control weeds with several well-timed post-emergent applications. The trick is to make sure weeds are no taller than 6". A well-established stand of weeds may require more than one application to effect decent control. Speaking from experience, dense stands of grasses such as crabgrass and quackgrass are particularly hard to control post-emergent.

It is important to address weed control early in the season, as it is difficult to clean up a well-established stand of weeds, particularly grasses. Later in the season, especially with drier summer weather, weed pressure is often reduced. An important point: it is not viticulturally necessary to maintain a totally clean strip under the trellis all summer long. Just how much weed pressure vines can tolerate at various times of the season would be an interesting research project. Suffice to say young vines, those with shallow, developing root systems, would be fairly sensitive to anything more than light weed cover. Older vines with deeper root systems (and assuming the vines are not otherwise stressed) can likely tolerate more weed competition.

Glyphosate (RoundupUltra and several other trade names) is a nonselective systemic herbicide, which means that the spray must not contact green grapevine tissue. If that were to occur, the active ingredient may be translocated throughout the plant. This is particularly devastating to young grapevines. Note that uptake is enhanced after bloom, thus particular care must be taken in the bloom to late season sprays. Shielded sprayers are fairly effective (not 100% though) at preventing contact. Typically about 30 gallons of water/acre is used in application of these products, except for CDAs (controlled droplet applicators like the Enviromist) which typically apply 5-8 GPA. Glyphosate is attractive from an environmental standpoint as it has low human and mammalian toxicity. Also, once applied, it undergoes rapid degradation by soil microorganisms, resulting ultimately in CO₂ and water. For those trying to avoid use of pre-emergents, well-timed applications of glyphosate offer an attractive alternative. The downside is that weeds can develop resistance to this material. Thus relying exclusively on glyphosate long term is ill advised.

Paraquat is a nonselective contact herbicide (Gramoxone Max and other trade names). Paraquat materials must also not contact green grapevine tissue. Short distance translocation through grapevine shoots is possible, though less likely. The contacted tissue however will be killed. Paraquat products are restricted use chemicals, meaning only licensed applicators may use them.

Sethoxydim (Poast, PoastPlus, Rezult G) is a selective post-emergence herbicide that will control annual grasses very well up to 12 inches tall. Sethoxydim is labeled for use in nonbearing AND bearing vineyards (50 days PHI). Best success is usually obtained with early intervention on annual grasses not more than 6" tall. Weeds that are drought-stressed are much more difficult to control. Usually a Crop Oil Concentrate (1% v/v) is added for optimal control. Broadleaf weeds and nutsedge are not controlled by Sethoxydim.

Scythe is a post-emergent herbicidal soap (pelargonic acid) that ruptures the cells within green tissue. The initial effect on weeds is seen rapidly (within minutes), but the ultimate level of control may not be known for several days. .

As with the other products, green grapevine tissue should not be contacted. For effective control with Scythe, grasses should be very small (<3) and broadleaves should also be small. Do not expect to apply Scythe to a dense, well-established carpet of weeds and get adequate weed control. We have verified this repeatedly in trials at the research vineyard. You are wasting money applying Scythe to a dense stand of weeds. For best results, use ≥ 60 gallons water per acre. No additional surfactants are necessary for Scythe. Scythe is too viscous and requires a high volume of water and thus will not perform well when used with the CDA sprayers. Note that while Scythe is an herbicidal soap, it is not OMRI approved. It also has a rather pungent aroma.

Weed Specialist Andy Senesac as well as a few regional growers are experimenting with under the trellis groundcovers. The goal is to reduce herbicide use by establishing a minimally competitive cover that suppresses weed growth. Weeds that do break through can ideally be controlled by hand weeding or through reduced rates of pre- or post-emergent materials. This is a tall order competitive enough to suppress other weeds and withstand some herbicide use but not too competitive with vines. As with mowing natural weed cover, these groundcovers do have the potential to compete with vines and thus must be monitored closely.