

Preventing Phenoxy Herbicide Damage to Grape Vineyards

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What are phenoxy herbicides?

Phenoxy herbicides include 2,4-D, MCPA, Crossbow, Banvel, Garlon, Weed-B-Gone, and Brush Killer. They also are the active ingredient (2,4-dichlorophenoxyacetic acid, 2-methyl-4-chlorophenoxyacetic acid, triclopyr, or dicamba) in “weed and feed” and brush control products for use in the home landscape.



Figure 1.—New leaves and growing tips show the most severe damage. Affected leaves are small, narrow, and misshapen.

This family of pesticides includes many very effective broadleaf weed killers. They are used on lawns, golf courses, rights-of-way, and agricultural fields. They are very popular for controlling blackberries and poison oak.

These products come in containers ranging from 1-quart bottles of ready-to-use solution to 5-gallon drums of highly concentrated active ingredient. They do not require a pesticide license for purchase and are readily available from department stores, home improvement stores, co-ops, retail nurseries, farm chemical dealers, etc.



Figure 2.—Farther down the shoot, leaves have a fan-shape appearance. Leaves sometimes are cupped, and margins often end in sharp points.

Grapevines are highly sensitive

Grapevines and many ornamental plants are extremely sensitive to herbicides containing phenoxy-type active ingredients. These plants are sensitive to phenoxy herbicides throughout the growing season, but grapevines are most vulnerable from the early growing season through the bloom period (early April to mid-July).

During the active shoot growth period, phenoxy damage often causes growth to stop temporarily and to be retarded for several weeks. If the effects are not too severe, normal growth will resume the same or following year. Severely injured vines may not recover for 2 years or more.

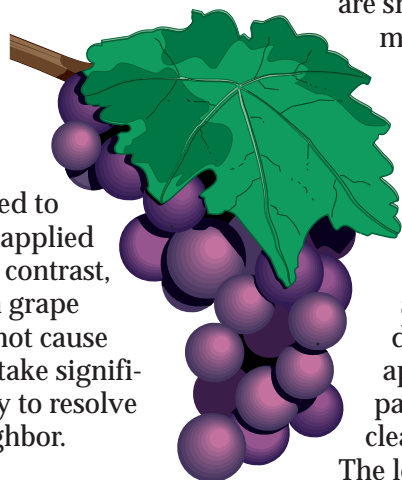
Flower clusters are particularly sensitive; exposure during bloom can greatly reduce fruit set. Injured vines also may have delayed fruit ripening. Severe injury can prevent complete maturation of the fruit. The delayed maturation effect may exist in a vine for 1 to 3 years before normal ripening resumes. Slight injury may have little or no effect upon fruit maturity.



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Oregon vineyards have experienced significant crop loss and long-term damage to vines inadvertently exposed to phenoxy herbicides applied to distant targets. In contrast, minor symptoms on grape leaves probably do not cause crop loss, but it can take significant time and energy to resolve the issue with a neighbor.



are small, narrow, and misshapen, and have closely packed, thick veins that lack chlorophyll. Farther down the shoot, damage symptoms are progressively less severe; leaves have a distinctive fan-shape appearance with parallel, strap-like, clear veins (Figure 2).

The leaves sometimes are cupped, and the leaf margins often terminate in sharp points. Small, puckered, interveinal spots retain some green chlorophyll. Damaged flower clusters set very few or no berries.

How damage occurs

Unintended drift of herbicides can be caused by wind, shifting air currents, climatic inversions, or spraying at high pressure (which causes a very fine mist). Even small amounts carried by the wind can create symptoms in grapevines.

Grapevines, caneberries, or other sensitive vegetation in close proximity to a sprayed area are at highest risk. However, even grapevines some distance from a phenoxy-treated area can be damaged under certain conditions. Even slight winds can carry small spray droplets toward a vineyard. Temperatures above 70–75°F allow ester formulations of phenoxy herbicides to volatilize (vaporize) and be carried by the wind, even several days after the spray application.

Symptoms of phenoxy injury

The symptoms of phenoxy herbicide damage are most dramatic on the youngest leaves and the tips of growing shoots (Figures 1 and 2). Affected leaves

Reducing the risk of phenoxy damage

Consider using a herbicide with a different active ingredient, such as glyphosate (Roundup), when you are trying to control difficult weeds such as blackberry or poison oak. Fall applications of glyphosate tend to be more effective than spring applications.

If you need to use a phenoxy herbicide, decrease the risk of volatilization by using an amine (dimethylamine salt) formulation instead of an ester formulation. Consider making applications in early spring before grapevines begin to grow or in the fall after their leaves have dropped.

Always use extreme caution when making applications when desirable vegetation is present and temperatures start warming up. Monitor wind speed and direction closely. Read and follow all label directions and precautions before using any pesticide. Adding a spray-thickening agent (drift retardant) may reduce spray drift, although recent evidence suggests some drift retardants may break up or lose their chemical integrity when agitated or repeatedly passed through a spray pump.

Be a good neighbor and don't trespass with your chemicals, either directly by spray drift or indirectly through vapor drift. Either way, as the applicator who decides to spray a product, you will be held responsible for damage, even if it is unintentional.

For more information

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This publication, our Publications and Videos catalog, and many other educational materials and information resources are available on the World Wide Web at:

eesc.orst.edu (Extension and Experiment Station Communications)

osu.orst.edu/dept/infonet/ (Northwest Berry & Grape Information Net)

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Published July 1999. Revised October 1999.