

CONNIE'S NOTES: PREVENTING CHEMICAL INJURY TO GRAPES AND GRAPEVINES

(The following is from a presentation given at the March 14, 2007 NCMGA Winter Meeting by Connie Fisk, Extension Associate for Muscadine Grapes at NCSU)

Grapes are sensitive to several herbicides used in agronomic crops and non-crop areas (such as lawns and golf courses). When applied to nearby crops, herbicides can drift to vineyards and cause significant injury to grapevines. The two most common suspects in herbicide damage to grapevines are 2,4-D and dicamba, which can affect grapes if sprayed a half a mile or more away.

Application Precautions Which May Minimize Grapevine Injury

Both grape growers and nearby growers of other crops can take steps to reduce the risk of herbicide injury to grapevines:

- Follow directions on product labels. Only use chemicals labeled for the intended use and only apply at recommended rates.
- Avoid making herbicide applications during sensitive periods of grape growth and development or when plants are under drought or temperature stress.
- Consider using products with a reduced potential for injury to off-target plants.
- Maintain good relations with neighbors.
- Use a low pressure sprayer.
- Use low-pressure nozzle tips (large orifices).
- Keep the nozzles as close to the soil, weeds, or crop as possible.
- A commercial drift retardant may help reduce microscopic spray droplets.
- Avoid spraying in windy conditions or during totally calm, temperature inversion conditions or spray when wind is blowing away from nearby vines.
- Use low volatile amine formulations of growth-regulator herbicides to reduce potential for volatilization.
- Don't use surfactants. They are not usually needed for increasing efficacy and they may increase injury to grapes.
- Don't spray if air temperature is predicted to be >80°F during the day of application.
- Shielded sprayers may help reduce physical spray drift, though they won't affect volatility.
- You may also want to establish buffer zones or plant a wind break to reduce drift contact with vines.
- After vines leaf out, tank mix Chateau with paraquat or Rely instead of glyphosate to prevent movement into the vine and fruit.
- For home growers, do not use a combination fertilizer and weed killer on lawn areas near grapevines; the weed killer may be absorbed by the grape roots and injure the vine.

Apply fertilizer at recommended rates, either in a circle about 20 to 24 inches from the trunk, or in bands along each side of the row at a similar distance from the plant. (Fertilizer may be broadcast applied in established vineyards.) Care should be taken to avoid direct contact with young vines because nitrogen fertilizer has a great potential to "burn" the living tissue contacted. Avoid applying fertilizer when plants are under drought stress.

Avoid applying foliar fungicides or insecticides when weather is too hot (avoid intense, direct sunlight) or wet and cool.

Herbicides that have potential to injure grapes (modified from Ball et al., 2004).

2,4-D	Growth Regulators		ALS Inhibitors			
	Dicamba	Others	Glyphosate	Sulfonylurea	Imidazolinone	Others
Amine 4	Banvel	Bronate*	Roundup	Ally	Arsenal	Gramoxone
Barrage	Clarity	Crossbow*	Rodeo	Ally Extra	Assert	Aim
Esteron 99	Rave*	Curtail*	Roundup Ultra	Amber	Beyond	Boa
Formula 40		Landmaster*	Roundup	Canvas	Pursuit	Rely
Hi Dep		MCPA	UltraMax	Cimarron	Raptor	Rage
LV-4		RT Master	Roundup	Express	Plateau	
LV-6		Starane	WeatherMax	Finesse	Cadre	
Saber		Tordon	Landmaster*	Glean		
Salvo		Turflon	Glyphos	Harmony Extra		
Savage		Trimec	Glypro	Harmony GT		
Tricep		Remedy	RT Master	Oust		
Weedar 64			Touchdown	Peak		
Weed-B-Gon			Buccaneer	Rave*		
Weedmaster						
Weedone						

This list is not all-inclusive; other herbicides may also injure grapes.

**A prepackage mixture containing a growth-regulator herbicide as at least one active ingredient.*

References

- Ball, DA, R Parker, J Colquhoun, and I Dami. 2004. *Preventing Herbicide Drift and Injury to Grapes*. Oregon State University Extension publication EM 8860.
- Kadir, S, K Al-Khatib, and D Peterson. 2003. *Preventing Hormonal-type Herbicide Damage to Kansas Grapes*. Kansas State University Extension Publication S 142.
- Naylor, REL (ed). 2002. *Weed Management Handbook*. Blackwell Science, Oxford.
- Ozkan, HE. 1995. Herbicide formulations, Adjuvants, and Spray Drift. Chapter 7 in *Handbook of Weed Management Systems*, Smith, AE (ed). Blackwell Science, Oxford.

For more information:

- NC Agricultural Chemicals Manual - <http://ipm.ncsu.edu/agchem/agchem.html>
 - **Chapter VII – Insect and Disease Control of Fruits**, Tables 7-7 A, B, and C – Muscadine Grape Disease and Insect Management
 - **Chapter VIII – Chemical Weed Control**, Table 8-12A – Chemical Weed Control in Fruit Crops – Small Fruit
- Southern Region Small Fruit Consortium – <http://www.smallfruits.org>
 - Southern Regional Muscadine Grape Integrated Management Guide
 - Muscadine Grape Production Guide for NC (AG-94)

Recommendations for the use of chemicals are included in this publication as a convenience to the reader. The use of brand names and any mention or listing of commercial products or services in this publication does not imply endorsement by the North Carolina Cooperative Extension Service nor discrimination against similar products or services not mentioned. Individuals who use chemicals are responsible for ensuring that the intended use complies with current regulations and conforms to the product label. Be sure to obtain current information about usage and examine a current product label before applying any chemical. For assistance, contact an agent of the North Carolina Cooperative Extension Service in your county.