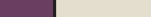


VITICULTURE MANAGEMENT

Authors:	1	2	3	4	5	6	7	8	9	10	11	12	13
Cain Hickey, University of Georgia Phillip Drannen, University of Georgia Brett Blaisau, University of Georgia Mark Hoffmann, North Carolina State University Mizuho Nita, Virginia Tech Doug Pfeiffer, Virginia Tech	DORMANT	BUD SWELL	BUD BREAK	PREBLOOM	BLOOM	FRUIT SET	BB-SIZED FRUIT	PEA-SIZED FRUIT	BERRY TOUCH	BUNCH CLOSURE	VERAISON	PREHARVEST	HARVEST
Design and illustrations: Megan McCoy, University of Georgia													

Diseases referenced from: Compendium of Grape Diseases, Disorders, and Pests (second edition). 2015. Editors W.F. Wick, W.D. Gubler, and J.K. Uyemoto. APS Press.

Blister rot photo: Andy Allen, University of Missouri

Anthrax photo: Bruce Borden, professor, Horticulture and Landscape Architecture, Purdue University

Grape flea beetle photo: Natasha Wright, Cool's Pest Control, Bigwood.org



CULTURAL PRACTICES													
CANE AND CRIP PRUNING	should be completed	SHOOT THINNING	should occur when shoots are about 3.7" long	SAMPLING	involves	LEAF REMOVAL	should be implemented		LEAF REMOVAL	SAMPLING	involves removing	SCOUTING	for nutrient
HARVEST decisions are													

Viticultural practices optimize vineyard health, profitability, and sustainability and improve crop quantity and quality. Like pest management, viticultural practices should be implemented in a timely fashion throughout the growing season to maximize practice efficiency and benefit gain.

Practitioner	Practice	Description
Grower	Pruning	Pruning is typically completed from December through March in Southeastern U.S. vineyards. Pruning sets the crop potential by retaining buds that are anticipated to bear fruitful shoots. Pruning is also used to remove dead or diseased grapevine wood. Any final pruning should be completed during bud swell. Bud swell alarms growers of impending bud break, a critical stage for frost protection and the first stage when green tissues are observed.
	Frost Damage	is of concern once buds have broken. Air mixing (via wind machine) and delayed pruning are commonly implemented in an attempt to avoid frost injury to vine tissues.
Grower	Shoot Positioning	is more efficient when implemented before tendrils strongly grab to wires and neighboring shoots. Shoots should be positioned to accommodate the intended training system—doing so will maximize leaf exposure and limit leaf shading.
	Canopy Hedging	is typically first necessary when berries reach pea size. Hedging should be implemented repeatedly as needed through veraison, after which it is often not required. To ensure optimal canopy sunlight and spray penetration, lateral shoots should be hedged from the side of primary shoots, and primary shoots should be hedged at their apex before they bend over and shade the canopy.
Grower	Leaf Removal	immediately after fruit set, optimally before the growth of BB-sized berries. Leaf removal at this early stage acclimates grapes to ambient radiation and temperatures, reducing the threat of severe fruit sunburn relative to leaf removal after berries reach pea size. Fruit zone leaf removal hastens cluster drying, improves spray penetration, and therefore offers better bunch rot control relative to unmanaged fruit zones.
	Bird Netting	should be placed immediately upon berry softening and color change to prevent bird depredation. Do not underestimate the amount of crop that can be damaged or removed by wildlife.
Harvester	Leaf Tissue Analysis	amounting to a "harvest posture" to assess the need for nutritional analyses. Growers can choose to sample specific vines or regions if deficiency symptoms are evident at veraison.
	Post-Harvest	cultural, regional, and site-specific. Use grape chemistry analyses, sensory perception (taste, color, fruit integrity), intended wine style, and predicted weather patterns to make judicious harvest decisions.

[illegible][illegible]

<i>*Column headings for the disease and insect management sections are based on the stages observed in the Southeast Regional Bunch Grape Integrated Management Guide.</i>		 Bitter Rot	Remove mummified fruit and any diseased tissues during dormant pruning. Apply active fungicides from prebloom until harvest.	
	 Pierce's Disease	Spray insecticides as soon as sharpshooter vectors are detected in the spring; early infections are more likely to result in mortality. Cold winters reduce the impact of the disease, and winter pruning is important to remove infected canes. Destroy infected vines as soon as symptoms confirm the disease.		

INSECTS	Integrated pest management in the vineyard combines a variety of techniques and tools to control pests. It starts with correctly identifying the insect and understanding	Mealybug Examine under bark and twigs using a hand lens to identify mealy bugs. Scout for mealybugs by looking under the bark and near base of vine. Peel back loose bark on canes and look for the presence of grape mealybug crawlers.			Mealybug Signs of mealybugs are sticky honeydew and black sooty mold, and mealybugs are often associated with the presence of ants on the vines. For further evidence of mealybugs, check clusters for waxy, white residue between berries and on rachises.			
			Sharpshooter/Leafhopper Place several double-sided yellow sticky traps per block and check traps weekly for sharpshooters/leafhoppers.			Sharpshooter/Leafhopper Place several double-sided yellow sticky traps per block and check traps weekly for sharpshooters/leafhoppers.		
	Mite Examine twigs using a hand lens for European red mite eggs, which are round and reddish orange.				Mite Check leaves for chlorotic spots and bronzing. Using a hand lens, check the underside of the leaf along the leaf veins. Manage if more than 10 mites per leaf.			
	Climbing Cutworm Monitor bud feeding in early spring. If damage is present, look for cutworms under bark, on cordons, trunk, and at soil level.			Thrips On cool days after budbreak, open shoots or gently tap buds over white paper to check for thrips.				Spotted Wing Drosophila (SWD) Berries become attractive to SWD at 15 brix. SWD presence in vineyards can be monitored with homemade traps, commercial lures, and larvae in fruit. Control decisions should be influenced by the farm's history of SWD infestations.
	Grape Flea Beetle Check for feeding on unfolding leaves and buds from small, metallic blue-green beetles.		Grape Flea Beetle Check for feeding on leaves and buds from small, metallic blue-green beetles and larvae				Grape Root Borer Monitor flight activity of grape root borer using commercially available	Yellow Jacket The key to yellow jacket management is keeping the fruit intact, for example, by minimizing disease, fruit splitting, and bird damage. Scout for wasp nests in the vineyard, in nearby buildings, or in nearby trees. Manage through nest removal or traps.

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