

VINEYARD SITE PREPARATION

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Vineyard site preparation is an important preplanting procedure that should start the year before.

A soil test should be conducted the season before planting to provide information on soil chemical and physical properties. For vineyards soil samples should be taken at two depths at: 0”-8” and 8”-16” in an ‘X’ pattern. The samples collected at these two depths should be analyzed separately. The desired soil physical and chemical properties for vineyards are presented in Table 1.

Table 1. Desired soil properties for vineyard establishment	
Physical properties	Chemical properties
Minimum rooting depth: 30 inches	Soil pH: 5.5 to 6.8
Internal water drainage: Moderately well to well	Organic matter: 2%-3%
	Phosphorus: 40-50 lbs/A
	Potassium: 250-300 lbs/A
	Magnesium: 200-250 lbs/A
	Zinc: 8-10 lbs/A
	Boron: 1.5-2.0 lbs/A

Your County Extension Agent can provide information on soil fertility and fertilizer needs for the first year vineyard. If soil pH is below pH 5.5, an application of agricultural ground limestone to raise the soil pH to desired levels is recommended. The University of Kentucky, Department of Agronomy Publication (AGR-1) ‘Lime and Fertilizer Recommendations (<http://www.ca.uky.edu/agc/pubs/agr/agr1/agr1.pdf>) provides detailed information on how to ameliorate the soil pH.

Site preparation in the year prior to planting should include plowing (Figure 1), sub-soiling (Figure 2), land leveling (Figure 3), drainage tile installation (if needed), and fertility adjustments based on the soil tests as mentioned above.



Figure 1. Preparing a site for vineyard planting starts with plowing to turn over the soil.



Figure 2. Sub-soiling in prospective vineyard sites helps break up the plow pan layer.



Figure 3. Site preparation in the summer and fall prior to planting in the following year. The site has been plowed, sub-soiled and leveled.

Another important task in vineyard site preparation is controlling perennial weed pests. These include but are not limited to thistle, Johnsongrass, quackgrass, dock, or woody species such as brambles (Dami et al., 2005). Perennials may live for several years. Most of the perennial weed species survive the winter as vegetative propagules, including below ground rhizomes (e.g., Quackgrass), tubers (e.g., Jerusalem artichoke), budding rootstocks (e.g., Canada thistle), budding tap-roots (e.g., dandelion), or above ground stolons (e.g., ground ivy). Although most produce seed, new growth in the spring usually is from the under – or above-ground vegetative propagules. The perennial weed species are more difficult to control than annual species as their propagules are protected by soil, foliage, and debris. The prospective vineyardists have several safe and effective herbicides that are available to control such weed species during the site preparation period (Dami et al., 2005). However, some of these herbicides can only be used during site preparation (such as 2,4-D) since grapevines are extremely sensitive to their growth regulator like effects.

Establishing a temporary cover crop is the next step in site preparation for a vineyard. If site preparation is started the year before the proposed planting date, best results are achieved by applying lime and fertilizer, plowing, and growing a cultivated cover crop such as hybrid Sudan grass on the site before planting to a permanent cover crop. The hybrid Sudan grass is planted after leveling of the proposed site is complete and is grown until mid-August. The hybrid Sudan grass at this time is plowed under and the field is prepared for establishment of a permanent cover crop.

Permanent cover crops for vineyards have a better chance of establishment if sown between mid-August and mid-September in Kentucky due to less weed competition (Figure 4.) An application of 35 pounds of actual nitrogen per acre at the time the permanent cover crop is sown stimulates its growth (Dami et al., 2005). Planting rates of 80 to 120 pounds of perennial rye grass, or Kentucky-31 Parkway Fescue at a rate of 30 pounds to the acre, or mixture perennial rye and fescue will provide adequate ground cover for vineyard floors (Figure 5.)

Final site preparation must be made in early spring in late March or early April when the soil is dry enough to cultivate properly. Two weeks before planting a systemic herbicide to kill the permanent cover crop is applied to the area of the row where vines are going to be set. The row middles will remain in sod and the killed row areas are tilled so the sod mat or ground cover is destroyed and a friable planting soil is established (Figure 6).



Figure 4. Drop seeding permanent cover crop in late summer



Figure 5. Permanent cover crop established by early spring of the following year,



Figure 6. New vines planted into herbicide killed rows.