

Factors that Influence Nitrogen Levels in Grapes

	N-deficient Vineyard	High N Vineyard
Soil Organic Matter	Low OM (2%)	High OM (5%)
Ground Cover?	Yes	None (kept black)
Type of Ground Cover	Grass (or weeds)	White Clover (Red Clover may cause excessive growth)
Width of Ground Cover	Close to plants	Maintained at least 1 foot away from trunks
Type of Tillage	Weeds controlled with Herbicides rather than Tillage	Soil tilled regularly (breaks down OM)
Mulch	Small Grain Straw, Corn Stalks, Wood Chips	Compost, Bean Straw, Rotted Manure
Weeds	Many	Few or None
Fertilizer	Little or none	30 to 50 lbs of N per Acre per year, if called for
Vigor of vines	Demand exceeds availability	Supply satisfies demand
Size/age of vines	Big plants, no recent tillage	New plantings, no grass planted between rows yet
Weather	Good growing conditions (demand is high)	Possibly hot, dry (demand could be high)
Rainfall	Vines don't grow when it's cold and rainy. Rain can leach N on light soils and denitrify N on heavy soils	Moisture is necessary for microbial activity, providing there is "food" available for microbes
Appearance	Leaves are light green and small, older leaves are yellow	Large, dark green leaves, much new growth
Tissue Test	Below 500 ppm Nitrogen (or 0.9% Nitrate)	Above 1200 ppm Nitrogen (or 1.3% Nitrate) is excessive
Irrigation	(plants are growing better and using more N if water isn't a limiting factor)	"The rich get richer" More microbial activity, more plant growth
Long term consequences	Insufficient growth, little or no yield. Plants can't recover from a setback	If N is excessive, shoots don't harden off in fall (-->tip dieback), fruit gets shaded by excessive foliage (poor quality)