REPORT CARD NITRATE TEST FOR ASSESSING FERTILIZER EFFICIENCY

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Soil samples for basic soil nutrient analysis (organic matter, phosphorus, potassium, magnesium, calcium, sulfate-sulfur, cation exchange capacity, pH) and micronutrients (boron, copper, iron, manganese, zinc) may be taken in the spring or fall. There is substantial added benefit, however, to sampling between about September 15th and October 15th. While this time period is a busy one, the information garnered about nitrate-nitrogen from these fall soil samples is useful. A fall nitrate test is called a "report card nitrate test", because it indicates how closely crop nitrogen uptake was matched with nitrogen supply. A high (›20ppm) or excessive soil nitrate content in the fall indicates that too much N fertilizer or N-rich amendment was applied in the prior season.

Nitrate is highly soluble and does not attach to soil particles or organic matter in large amounts. In regions with heavy winter rains, nitrate will leach into groundwater, representing a loss of money as well as a water quality hazard. Throughout the spring and summer the nitrate number is very dynamic and difficult to get reliable data for, making the early fall the best time of year to get reliable and consistent nitrogen information from soil.

The other nutrients are not so fickle, so a spring sample or late fall sample is sufficient to get data on them. However, because of the environmental and economic importance of nitrogen, the early fall report card N test is the preferred sample timing for western Washington. Since the data is taken in the fall it will not help for the current year's fertilizer applications, but over the years this information can be used to fine tune N applications and match them to crop requirements. Guidelines for interpreting nitrate levels from a fall nitrate test are given in Table 1.

Table 1: Post-Harvest nitrate-nitrogen vales and "report card" assessments.

Nitrate-N in surface foot (ppm)	Approximate nitrate-N in surface foot (pounds / acre)*	Assessment
<10	<35	Low
10 -20	35 - 70	Medium
20 - 30	70 - 105	High
>30	>105	Excessive

*Assumes that one acre of soil to a depth of 1 foot weighs 3,500,000 pounds. Soil should be sampled to 1 foot.