

Apples and Pears

Leaf Analysis Interpretation – Apples and Pears			
Nutrient	Deficient	Normal	Excessive
<u>Macronutrients (%)</u>			
Nitrogen (N)	Below 1.9 ¹ Below 1.7 ²	1.9 to 2.7 1.7 to 2.4	Above 2.7 Above 2.4
Phosphorus (P)	Below 0.13	0.15 to 0.30	
Potassium (K)	Below 1.2	1.3 to 1.9	Above 2.0
Calcium (Ca)	Below 0.6	1.2 to 2.0	
Magnesium (Mg)	Below 0.25	0.3 to 0.6	
<u>Micronutrients (ppm)</u>			
Boron (B)	Below 20	25 to 50	Above 60
Copper (Cu)		10 to 20	
Iron (Fe)		60 to 250	
Manganese (Mn)	Below 25	30 to 100	
Zinc (Zn)	Below 15	20 to 50	

¹values for most varieties and all non-bearing orchards.

²values for “Golden Delicious and MacIntosh-types.”

Fertilizer Recommendations Apples and Pears:

Nitrogen: Increase N rates by 10% for each tenth of a percent the concentration is below the deficiency level (e.g. if McIntosh sample contains 1.5% N or 0.2% below deficient level, increase rate by 20%), or decrease rate by 10% for each 0.1% the levels is above the excessive level. As a guide, non-bearing young trees should produce 12 to 24 inches of shoot growth. Growth on bearing trees should be 8 to 12 inches.

Phosphorus: Tree fruit seldom respond to P, but ground covers may benefit when levels are low.

Potassium: Apply 100 to 150 lb K₂O if deficient.

Calcium: If deficient, check soil pH and apply lime as needed.

Magnesium: If deficient, check soil pH and apply dolomitic lime as needed. Also apply epsom salts (magnesium sulfate) at 15 to 20 lbs/acre in first two cover sprays.

Boron: If deficient, 0.5 B/acre (2.5 lbs Solubor) in each of two foliar sprays in June/July or apply 1 to 1.5 lb B per acre to the soil. Completely dissolve water-soluble packages prior to adding B to avoid plugging filters and nozzles. Soil treatments can be applied with a weed sprayer or blended into fertilizer.

Manganese: If deficient, apply 4 lb manganese sulfate per acre in first two cover sprays.

Zinc: If deficient, apply Zn chelate in first two cover sprays at label rates.

Consult MSU Extension Bulletin E-852, Fertilizing Fruit Crops, and E-2482, Plant Tissue Analysis for Determining Fertilizer Needs of Michigan Fruit Crops, for additional information.

Sweet and Sour Cherries

Leaf Analysis Interpretation – Sweet and Sour Cherries			
Nutrient	Deficient	Normal	Excessive
<u>Macronutrients (%)</u>			
Nitrogen (N)	Below 2.5	2.5 to 3.5	Above 3.5
Phosphorus (P)	Below 0.13	0.15 to 0.30	
Potassium (K)	Below 1.2	1.3 to 1.8	Above 2.0
Calcium (Ca)	Below 0.8	1.2 to 2.0	
Magnesium (Mg)	Below 0.25	0.3 to 0.6	
<u>Micronutrients (ppm)</u>			
Boron (B)	Below 25	25 to 50	Above 60
Copper (Cu)		6 to 20	
Iron (Fe)		40 to 200	
Manganese (Mn)	Below 25	30 to 100	
Zinc (Zn)	Below 10	15 to 40	

Fertilizer Recommendations Sweet and Sour Cherries:

Nitrogen: Increase N rates by 5% for each tenth of a percent the concentration is below the deficiency level (e.g. if sample contains 2.0% N or 0.5% below deficient level, increase rate by 25%), or decrease rate by 5% for each 0.1% the level is above the excessive level. As a guide, non-bearing young trees should produce 12 to 24 inches of shoot growth. Growth on bearing trees should be 8 to 16 inches.

Phosphorus: Tree fruit seldom respond to P, but ground covers may benefit when levels are low.

Potassium: Apply 150 to 200 lb K₂O if deficient. Orchards on sandy soils with a history of deficiency may need annual maintenance applications of 60 to 90 lb K₂O/acre (100 to 150 lbs/a of 0-0-60).

Calcium: If deficient, check soil pH and apply lime as needed.

Magnesium: If deficient, check soil pH and apply dolomitic lime as needed. Also apply epsom salts (Magnesium sulfate) at 15 to 20 lbs/a in first two cover sprays.

Boron: If deficient, apply 0.75 to 1.0 lbs B/acre (4-5 lbs Solubor) in post harvest spray or apply 1 lb B per acre to the soil. Soil treatments can be blended with fertilizer or applied with a weed sprayer. Excessive B is associated with soft tart cherries; don't apply B unless leaf levels are low. Completely dissolve water-soluble packages prior to adding B to avoid plugging filters and nozzles.

Manganese: If deficient, apply 4 lb manganese sulfate per acre in first two cover sprays.

Zinc: If deficient, apply Zn chelate in first two cover sprays at label rate.

Consult MSU Extension Bulletin E-852, Fertilizing Fruit Crops, and E-2482, Plant Tissue Analysis for Determining Fertilizer Needs of Michigan Fruit Crops, for additional information.

Peaches and Plums

Leaf Analysis Interpretation – Peaches and Plums			
Nutrient	Deficient	Normal	Excessive
<u>Macronutrients (%)</u>			
Nitrogen (N)	Below 3.0	3.2 to 4.5	Above 4.5
Phosphorus (P)	Below 0.13	0.15 to 0.30	
Potassium (K)	Below 1.4	1.4 to 2.5	Above 3.0
Calcium (Ca)		1.5 to 2.5	
Magnesium (Mg)	Below 0.2	0.2 to 0.6	
<u>Micronutrients (ppm)</u>			
Boron (B)	Below 20	25 to 50	Above 60
Copper (Cu)		8 to 20	
Iron (Fe)		50 to 200	
Manganese (Mn)	Below 20	40 to 100	
Zinc (Zn)	Below 10	15 to 40	

Fertilizer Recommendations - Peaches and Plums:

Nitrogen: Increase N rates by 5% for each tenth of a percent the concentration is below the deficiency level (e.g. if sample contains 2.5% N or 0.5% below deficient level, increase rate by 25%), or decrease rate by 5% for each 0.1% the levels is above the excessive level. As a guide, non-bearing young trees should produce 12 to 24 inches of shoot growth. Growth on bearing trees should be 12 to 15 inches.

Phosphorus: Tree fruit seldom respond to P, but ground covers may benefit when levels are low.

Potassium: Apply 100 to 150 lb K₂O if deficient. Orchards on sandy soils with a history of deficiency may benefit from annual maintenance applications of 60 to 90 lb K₂O (100 to 150 lbs of 0-0-60) per acre.

Calcium: If deficient, check soil pH and apply lime as needed.

Magnesium: If deficient, check soil pH and apply dolomitic lime as needed. Also apply epsom salts (Magnesium sulfate) at 15 to 20 lbs/acre in first two cover sprays.

Boron: If deficient, apply 0.25 lb B/acre (1.25 lbs Solubor/acre) in each of two foliar sprays in June/July, or apply 0.5 to 1.0 lb B per acre to the soil. Soil treatments can be applied with a weed sprayer or blended with fertilizer. When tank mixing, completely dissolve water-soluble packages prior to adding B to avoid plugging filters and nozzles.

Manganese: If deficient, apply 4 lb manganese sulfate per acre in first two cover sprays.

Zinc: If deficient, apply Zn chelate in first two cover sprays at label rate.

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Grapes

Tissue Analysis Interpretation – Grape Petioles			
Nutrient	Deficient	Normal	Excessive
<u>Macronutrients (%)</u>			
Nitrogen (N)	Below 0.7	0.8 to 1.2	Above 1.4
Phosphorus (P)	Below 0.13	0.15 to 0.30	
Potassium (K)	Below 1.4	1.5 to 2.5	Above 3.0
Calcium (Ca)		0.5 to 1.5	
Magnesium (Mg)	Below 0.2	0.25 to 0.5	
<u>Micronutrients (ppm)</u>			
Boron (B)	Below 20	25 to 50	Above 80
Copper (Cu)		10 to 20	
Iron (Fe)		20 to 200	
Manganese (Mn)	Below 20	30 to 80	
Zinc (Zn)	Below 10	20 to 60	

Fertilizer Recommendations - Grapes:

Nitrogen: Increase N rates by 10% for each tenth of a percent the concentration is below the deficiency level (e.g. if sample contains 0.5% N or 0.2% below deficient level, increase rate by 20%), or decrease rate by 10% for each 0.1% the levels is above the excessive level.

Phosphorus: Vineyards seldom respond to P, but ground covers may benefit if levels are low.

Potassium: Apply 100 to 150 lb K₂O if deficient.

Calcium: If deficient, check soil pH and apply lime as needed.

Magnesium: If deficient, check soil pH and apply dolomitic lime as needed. Also apply epsom salts (Magnesium sulfate) at 10 lb per 100 gallons in first two cover sprays.

Consult MSU Extension Bulletin E-852, Fertilizing Fruit Crops, and E-2482, Plant Tissue Analysis for Determining Fertilizer Needs of Michigan Fruit Crops, for additional information.

Blueberries

Tissue Analysis Interpretation – Blueberries			
Nutrient	Deficient	Normal	Excessive
<u>Macronutrients (%)</u>			
Nitrogen (N)	Below 1.7	1.7 to 2.1	Above 2.3
Phosphorus (P)	Below 0.08	0.1 to 0.4	Above 0.6
Potassium (K)	Below 0.35	0.35 to 0.65	Above 0.8
Calcium (Ca)	Below 0.13	0.2 to 0.6	Above 0.8
Magnesium (Mg)	Below 0.1	0.15 to 0.3	Above 0.4
<u>Micronutrients (ppm)</u>			
Boron (B)	Below 15	20-60	Above 80
Copper (Cu)		5 to 20	
Iron (Fe)		60 to 200	
Manganese (Mn)		50 to 350	
Zinc (Zn)		8 to 30	

Fertilizer Recommendations - Blueberries:

Nitrogen: Increase N rates by 10% for each tenth of a percent the concentration is below the deficiency level (e.g. if sample contains 1.4 % N or 0.3% below deficient level, increase rate by 30%), or decrease rate by 10% for each 0.1% the levels is above the excessive level.

Phosphorus: If deficient, use mono-ammonium phosphate or di-ammonium phosphate for the nitrogen source, or apply 100 lb P₂O₅.

Potassium: Apply 100 to 150 lb K₂O if deficient.

Calcium: If deficient, check soil pH and apply 1000 lb lime if pH is below 4.0.

Magnesium: If deficient, check soil pH and apply dolomitic lime if pH is below 4.0. Also apply epsom salts (magnesium sulfate) at 10 lb per 100 gallons in foliar sprays in May and June.

Boron: If deficient, apply 0.5 lb b per acre in a foliar spray in June or 1 lb B per acre applied to the ground in the spring. Solubor is a good B source.

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