Spectrum Analytic Inc.
P.O. Box 639 - 1087 Jamison Road
Washington C.H., OH 43160
www.spectrumanalytic.com

Report To
THE DAVEY TREE EXPERT
CO-SOIL LAB
PO BOX 5193
KENT, OH 44240

Prepared For
CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	699-08-1
Lab Number	PL70378
Soil Lab Number	C04636
Sampled	11-26-2008
Tested	12-10-2008

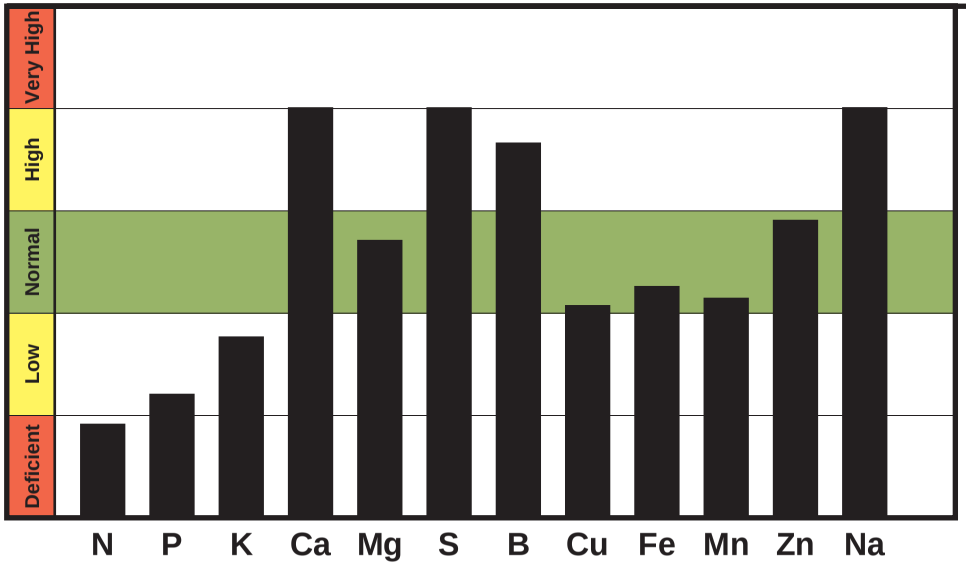
Plant Tissue Analysis Report

Type: Cottonwood *(Populus)* **Part:** Youngest/ Recently Mature Leaves **Stage:** Mid Summer

Plant Test	Result	Normal Range
Nitrogen	1.27 %	1.8 - 2.6
Phosphorus	0.11 %	0.1 - 0.3
Potassium	0.88 %	1.0 - 2.0
Calcium	4.27 %	1.3 - 2.3
Magnesium	0.56 %	0.2 - 0.7
Sulfur	1 %	0.2 - 0.3
Boron	160 ppm	30 - 84
Copper	6 ppm	5 - 20
Iron	132 ppm	75 - 300
Manganese	76 ppm	40 - 300
Zinc	93 ppm	30 - 100
Sodium	796 ppm	1 - 25

Soil Test	Result		Normal Range
CEC	19.5		
Soil pH	7.6		6.0 - 6.8
Buffer pH	0		
Organic Matter	2.7	%	
Phosphorus	16	m3-ppm	40 - 70
Potassium	337	m3-ppm	200 - 310
Calcium	66452	m3-ppm	2600 - 3600
Magnesium	515	m3-ppm	270 - 450
Copper	6.4	m3-ppm	3.0 - 19.0
Iron	30	m3-ppm	9 - 40
Manganese	20	m3-ppm	66 - 221
Zinc	18.3	m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

(The following comments apply to lab numbers 70378, 70410, 70411 and 70421)

See attached letter.

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Prepared For
CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	700-08-2
Lab Number	PL70379
Soil Lab Number	C04637
Sampled	12-01-2008
Tested	12-10-2008

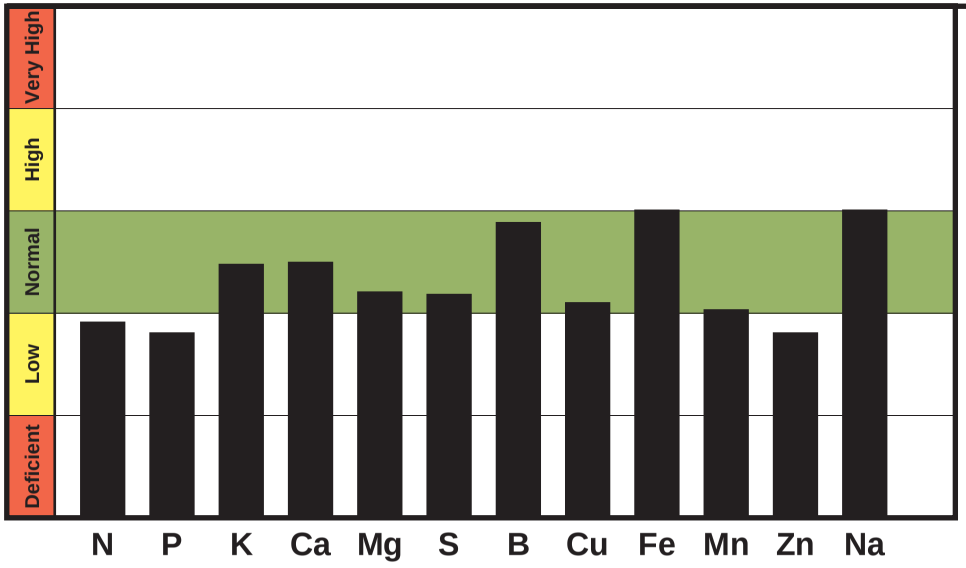
Plant Tissue Analysis Report

Type: Elm, Undefined *(Ulmus)* **Part:** Mature Leaf **Stage:** Mid Summer To Fall

Plant Test	Result	Normal Range
Nitrogen	1.81 %	2.0 - 3.0
Phosphorus	0.16 %	0.2 - 0.4
Potassium	1.47 %	1.0 - 2.0
Calcium	1.99 %	1.5 - 2.5
Magnesium	0.36 %	0.3 - 0.6
Sulfur	0.16 %	0.1 - 0.3
Boron	90.9 ppm	25 - 100
Copper	6.9 ppm	5 - 25
Iron	400 ppm	50 - 400
Manganese	59 ppm	50 - 400
Zinc	16 ppm	20 - 50
Sodium	1310 ppm	0 - 1000

Soil Test	Result	Normal Range
CEC	20.9	
Soil pH	7.5	6.5 - 7.0
Buffer pH	0	
Organic Matter	2.9 %	
Phosphorus	38 m3-ppm	40 - 70
Potassium	629 m3-ppm	210 - 320
Calcium	66509 m3-ppm	2800 - 3900
Magnesium	620 m3-ppm	280 - 460
Copper	7.8 m3-ppm	3.1 - 19.1
Iron	37.6 m3-ppm	9 - 40
Manganese	25 m3-ppm	60 - 215
Zinc	29.5 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

(The following comments apply to lab numbers 70379, 70380, 70381 and 70417)

See attached letter.

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Report To
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PO BOX 5193
KENT, OH 44240

Prepared For
CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	701-08-4
Lab Number	PL70380
Soil Lab Number	C04638
Sampled	12-01-2008
Tested	12-10-2008

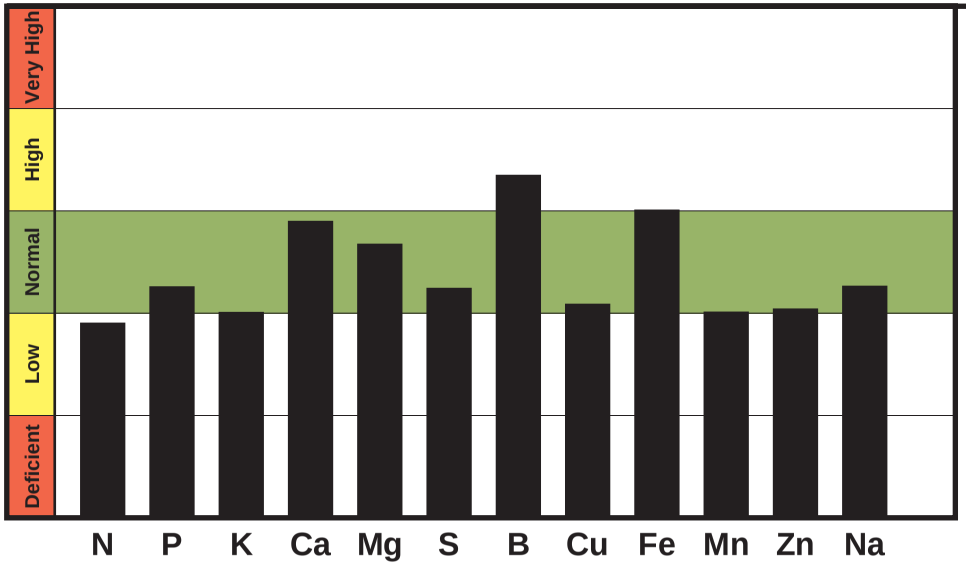
Plant Tissue Analysis Report

Type: Elm, Undefined *(Ulmus)* **Part:** Mature Leaf **Stage:** Mid Summer To Fall

Plant Test	Result	Normal Range
Nitrogen	1.79 %	2.0 - 3.0
Phosphorus	0.25 %	0.2 - 0.4
Potassium	1 %	1.0 - 2.0
Calcium	2.39 %	1.5 - 2.5
Magnesium	0.5 %	0.3 - 0.6
Sulfur	0.17 %	0.1 - 0.3
Boron	117 ppm	25 - 100
Copper	6.6 ppm	5 - 25
Iron	425 ppm	50 - 400
Manganese	51 ppm	50 - 400
Zinc	21 ppm	20 - 50
Sodium	256 ppm	0 - 1000

Soil Test	Result	Normal Range
CEC	18.6	
Soil pH	7.9	6.5 - 7.0
Buffer pH	0	
Organic Matter	0.3 %	
Phosphorus	9 m3-ppm	40 - 70
Potassium	650 m3-ppm	200 - 300
Calcium	66505 m3-ppm	2500 - 3500
Magnesium	303 m3-ppm	260 - 440
Copper	1.1 m3-ppm	4.7 - 20.7
Iron	38.6 m3-ppm	9 - 40
Manganese	22 m3-ppm	75 - 230
Zinc	1.7 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

(The following comments apply to lab numbers 70379, 70380, 70381 and 70417)

See attached letter.

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Prepared For
CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	702-08-5
Lab Number	PL70381
Soil Lab Number	C04639
Sampled	12-01-2008
Tested	12-10-2008

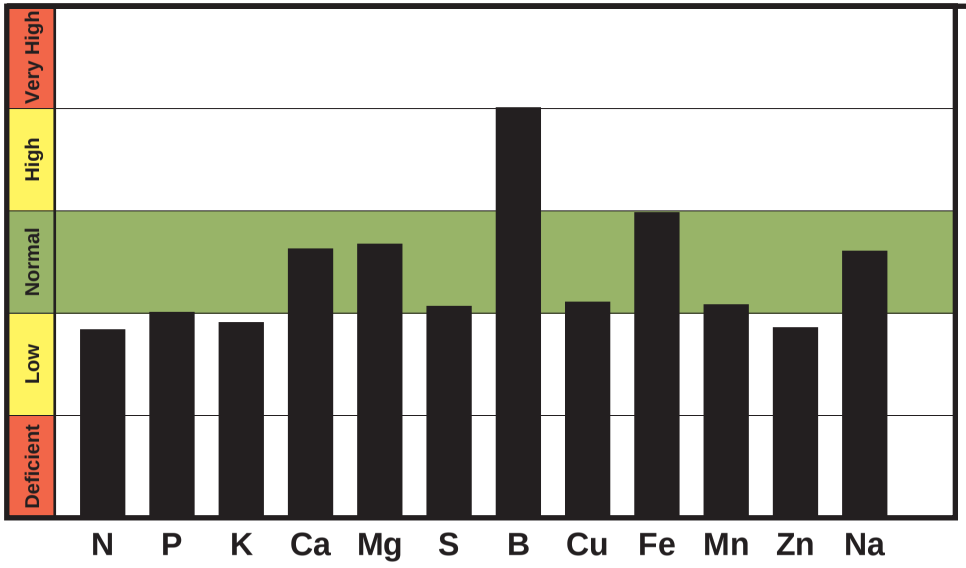
Plant Tissue Analysis Report

Type: Elm, Undefined *(Ulmus)* **Part:** Mature Leaf **Stage:** Mid Summer To Fall

Plant Test	Result	Normal Range
Nitrogen	1.66 %	2.0 - 3.0
Phosphorus	0.2 %	0.2 - 0.4
Potassium	0.9 %	1.0 - 2.0
Calcium	2.12 %	1.5 - 2.5
Magnesium	0.5 %	0.3 - 0.6
Sulfur	0.14 %	0.1 - 0.3
Boron	158 ppm	25 - 100
Copper	7 ppm	5 - 25
Iron	391 ppm	50 - 400
Manganese	76 ppm	50 - 400
Zinc	17 ppm	20 - 50
Sodium	598 ppm	0 - 1000

Soil Test	Result	Normal Range
CEC	18.4	
Soil pH	7.8	6.5 - 7.0
Buffer pH	0	
Organic Matter	0.9 %	
Phosphorus	4 m3-ppm	40 - 70
Potassium	555 m3-ppm	190 - 300
Calcium	66509 m3-ppm	2500 - 3400
Magnesium	305 m3-ppm	260 - 430
Copper	1.3 m3-ppm	3.9 - 19.9
Iron	54.5 m3-ppm	9 - 40
Manganese	30 m3-ppm	71 - 226
Zinc	0.7 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

(The following comments apply to lab numbers 70379, 70380, 70381 and 70417)

See attached letter.

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Report To
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KENT, OH 44240

Prepared For
CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	703-08-6
Lab Number	PL70382
Soil Lab Number	C04640
Sampled	12-01-2008
Tested	12-10-2008

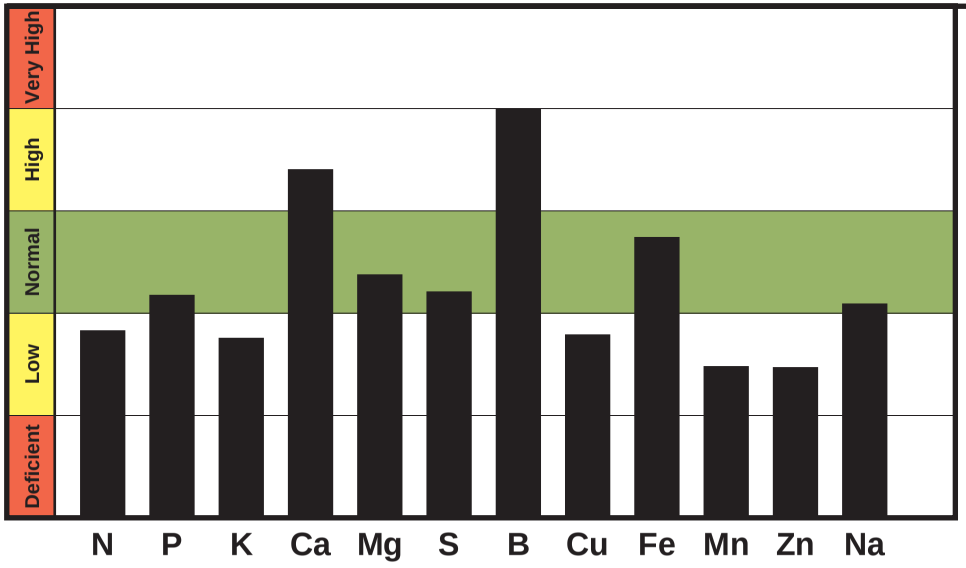
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	2.05 %	2.5 - 3.9
Phosphorus	0.15 %	0.1 - 0.3
Potassium	0.56 %	0.8 - 1.2
Calcium	3.67 %	0.7 - 1.5
Magnesium	0.41 %	0.3 - 0.6
Sulfur	0.2 %	0.1 - 0.4
Boron	222 ppm	20 - 45
Copper	7.8 ppm	10 - 30
Iron	233 ppm	50 - 300
Manganese	47 ppm	100 - 800
Zinc	23 ppm	50 - 100
Sodium	328 ppm	0 - 4000

Soil Test	Result		Normal Range
CEC	17.6		
Soil pH	7.5		6.0 - 7.0
Buffer pH	0		
Organic Matter	1.4	%	
Phosphorus	31	m3-ppm	40 - 70
Potassium	211	m3-ppm	190 - 300
Calcium	66180	m3-ppm	2400 - 3300
Magnesium	298	m3-ppm	260 - 420
Copper	2.7	m3-ppm	2.9 - 18.9
Iron	47.9	m3-ppm	9 - 40
Manganese	21	m3-ppm	52 - 207
Zinc	25	m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

There are many similarities with all these plant samples in the pecans. The soil pH is high due to the naturally high occurring soil pH in the Austin area. Sulfur can be applied to lower the soil pH but this would be a task that would need to be done on a yearly basis. Also I suspect that the irrigation water will have a high soil pH unless it is being treated. The boron is high in all the samples; this is likely coming from the irrigation water that is in the area. In many areas of the west the boron levels are high due to the irrigation water. The calcium is also high in all the plant analysis samples as well as the soil analysis, this goes along with the high soil pH that is due to the naturally occurring calcium carbonate that is in the soil.

The nitrogen is a little low in this tree; I would suggest making applications of nitrogen as recommended on the soil test report to supply the tree with nitrogen. The potassium is reporting a little low in the tree even with the good potassium soil test level. The high calcium (which is a cation just like the magnesium and potassium) is affecting the plants ability to uptake potassium. The only thing that can be done is to continue to raise the potassium soil test levels to try to overcome the suppression or make frequent foliar applications. Since potassium is a salt, this would likely not be a practical solution since high applications of potassium foliarly would result in burning the leaf material. There are some sources of foliar potassium available that are not salts that

Continued

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Report To

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CO-SOIL LAB
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KENT, OH 44240

Prepared For

CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	703-08-6
Lab Number	PL70382
Soil Lab Number	C04640
Sampled	12-01-2008
Tested	12-10-2008

Comments (continued)

may be an alternative. The copper is reporting low in the tree due to the low copper levels in the soil and the high soil pH, as soil pH increases the availability of copper in soil decreases. The same thing happens with the manganese. I would suggest an application of foliar copper and manganese or a direct trunk injection. Foliar applications may require multiple applications during the year. The zinc is also reporting low in the leaves even with a high zinc soil test level. As soil pH increases the zinc availability from the soil also decreases. You can also make zinc applications foliarly or as a direct trunk injection.

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Report To
THE DAVEY TREE EXPERT
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PO BOX 5193
KENT, OH 44240

Prepared For
CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	704-08-7
Lab Number	PL70383
Soil Lab Number	C04642
Sampled	12-01-2008
Tested	12-10-2008

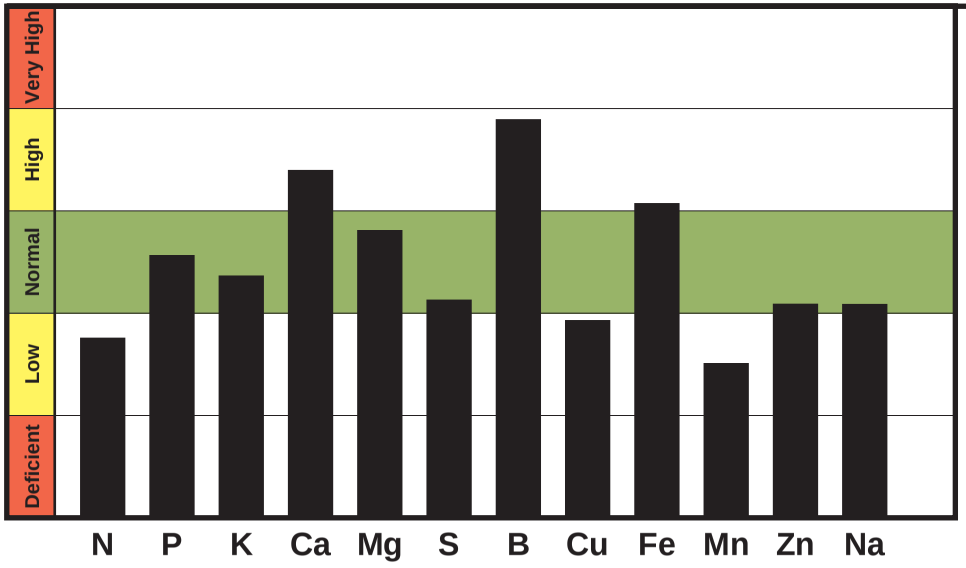
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	1.87 %	2.5 - 3.9
Phosphorus	0.22 %	0.1 - 0.3
Potassium	0.91 %	0.8 - 1.2
Calcium	3.63 %	0.7 - 1.5
Magnesium	0.54 %	0.3 - 0.6
Sulfur	0.18 %	0.1 - 0.4
Boron	204 ppm	20 - 45
Copper	9.2 ppm	10 - 30
Iron	376 ppm	50 - 300
Manganese	50 ppm	100 - 800
Zinc	54 ppm	50 - 100
Sodium	311 ppm	0 - 4000

Soil Test	Result		Normal Range
CEC	18.1		
Soil pH	7.8		6.0 - 7.0
Buffer pH	0		
Organic Matter	1	%	
Phosphorus	12	m3-ppm	40 - 70
Potassium	255	m3-ppm	190 - 300
Calcium	66175	m3-ppm	2400 - 3400
Magnesium	347	m3-ppm	260 - 430
Copper	2.1	m3-ppm	4.1 - 20.1
Iron	29.7	m3-ppm	9 - 40
Manganese	25	m3-ppm	71 - 226
Zinc	7.2	m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

There are many similarities with all these plant samples in the pecans. The soil pH is high due to the naturally high occurring soil pH in the Austin area. Sulfur can be applied to lower the soil pH but this would be a task that would need to be done on a yearly basis. Also I suspect that the irrigation water will have a high soil pH unless it is being treated. The boron is high in all the samples; this is likely coming from the irrigation water that is in the area. In many areas of the west the boron levels are high due to the irrigation water. The calcium is also high in all the plant analysis samples as well as the soil analysis, this goes along with the high soil pH that is due to the naturally occurring calcium carbonate that is in the soil.

The nitrogen is a little low in this tree; I would suggest making applications of nitrogen as recommended on the soil test report to supply the tree with nitrogen. The copper is reporting low in the tree due to the low copper levels in the soil and the high soil pH, as soil pH increases the availability of copper in soil decreases. The iron is reporting a little high in the leaves at this time; this may be due to a contamination of soil/dust on the plant tissue. At a high soil pH the iron in the soil is not readily available to the plants, so I do not think this high iron is coming from the soil. High iron is a plant will also suppress manganese to an extent. The low manganese in the leaves is likely due to the high soil pH. I would suggest an application of foliar copper and manganese or a

Continued

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Report To

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CO-SOIL LAB
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KENT, OH 44240

Prepared For

CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	704-08-7
Lab Number	PL70383
Soil Lab Number	C04642
Sampled	12-01-2008
Tested	12-10-2008

Comments (continued)

direct trunk injection. Foliar applications may require multiple applications during the year. The zinc is also reporting in the lower end of the normal range in the leaves. Fixing the other low nutrients may cause the zinc to slip into the low range. As soil pH increases the zinc availability from the soil also decreases. You can also make zinc applications foliarly or as a direct trunk injection.

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KENT, OH 44240

Prepared For
CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	705-08-8
Lab Number	PL70384
Soil Lab Number	C04643
Sampled	12-01-2008
Tested	12-10-2008

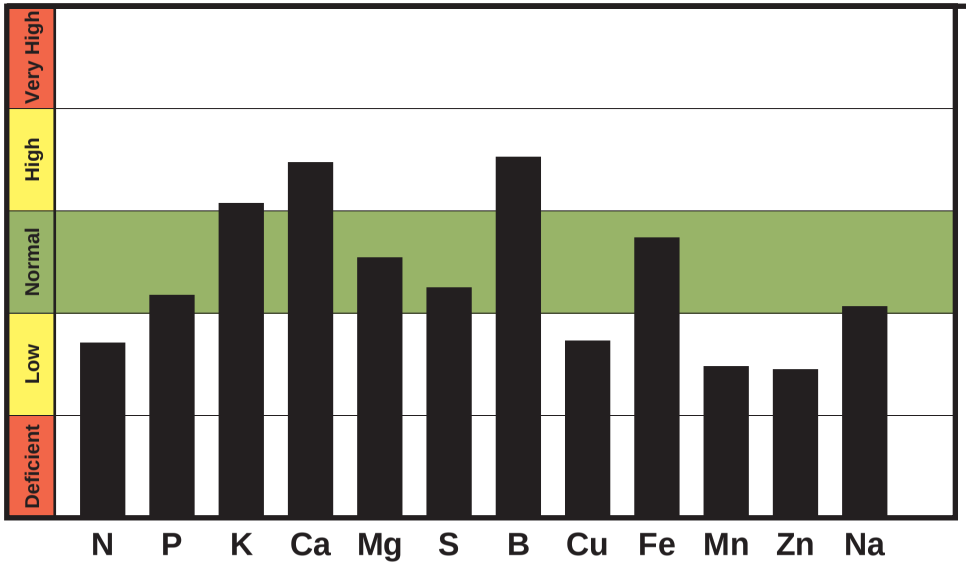
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	1.75 %	2.5 - 3.9
Phosphorus	0.15 %	0.1 - 0.3
Potassium	1.51 %	0.8 - 1.2
Calcium	4.05 %	0.7 - 1.5
Magnesium	0.46 %	0.3 - 0.6
Sulfur	0.21 %	0.1 - 0.4
Boron	138 ppm	20 - 45
Copper	7.2 ppm	10 - 30
Iron	232 ppm	50 - 300
Manganese	47 ppm	100 - 800
Zinc	22 ppm	50 - 100
Sodium	223 ppm	0 - 4000

Soil Test	Result	Normal Range
CEC	18.5	
Soil pH	7.4	6.0 - 7.0
Buffer pH	0	
Organic Matter	1.8 %	
Phosphorus	15 m3-ppm	40 - 70
Potassium	403 m3-ppm	200 - 300
Calcium	17393 m3-ppm	2500 - 3500
Magnesium	358 m3-ppm	260 - 430
Copper	1.2 m3-ppm	1.8 - 17.8
Iron	35.4 m3-ppm	9 - 40
Manganese	28 m3-ppm	47 - 202
Zinc	5.3 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

There are many similarities with all these plant samples in the pecans. The soil pH is high due to the naturally high occurring soil pH in the Austin area. Sulfur can be applied to lower the soil pH but this would be a task that would need to be done on a yearly basis. Also I suspect that the irrigation water will have a high soil pH unless it is being treated. The boron is high in all the samples; this is likely coming from the irrigation water that is in the area. In many areas of the west the boron levels are high due to the irrigation water. The calcium is also high in all the plant analysis samples as well as the soil analysis, this goes along with the high soil pH that is due to the naturally occurring calcium carbonate that is in the soil.

The nitrogen is a little low in this tree; I would suggest making applications of nitrogen as recommended on the soil test report to supply the tree with nitrogen. The potassium is reporting a little high in the tree this is due to the high potassium soil test level. I would suggest not making any more applications of potassium to this tree at this time. The copper is reporting low in the tree due to the low copper levels in the soil and the high soil pH, as soil pH increases the availability of copper in soil decreases. The same thing happens with the manganese. I would suggest an application of foliar copper and manganese or a direct trunk injection. Foliar applications may require multiple applications during the year. The zinc is also reporting low in the leaves with a normal

Continued

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Report To

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CO-SOIL LAB
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KENT, OH 44240

Prepared For

CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	705-08-8
Lab Number	PL70384
Soil Lab Number	C04643
Sampled	12-01-2008
Tested	12-10-2008

Comments (continued)

zinc soil test level. As soil pH increases the zinc availability from the soil also decreases. You can also make zinc applications foliarly or as a direct trunk injection.

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Prepared For
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Sample Information

Sample ID	706-08-9
Lab Number	PL70385
Soil Lab Number	C04644
Sampled	12-01-2008
Tested	12-10-2008

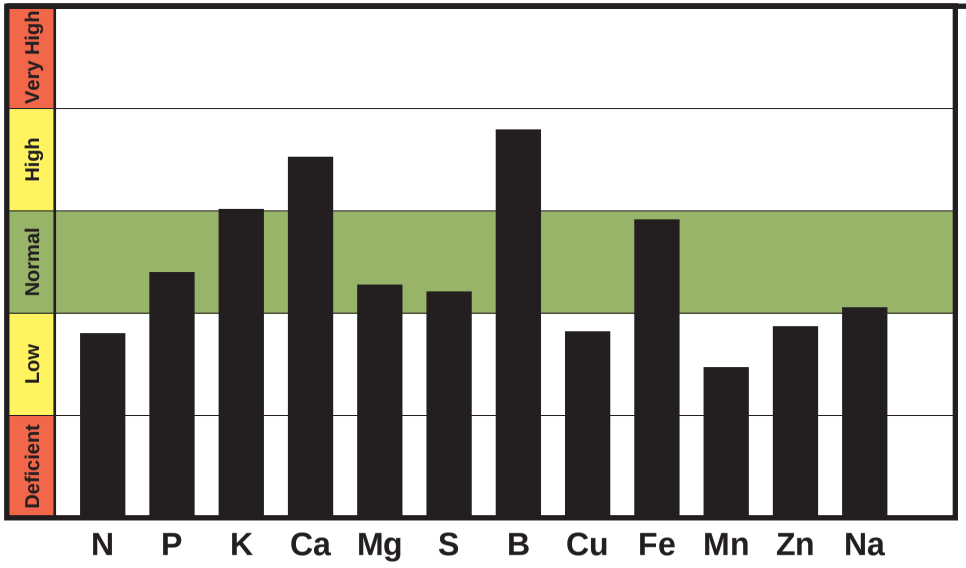
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	1.98 %	2.5 - 3.9
Phosphorus	0.19 %	0.1 - 0.3
Potassium	1.23 %	0.8 - 1.2
Calcium	4.34 %	0.7 - 1.5
Magnesium	0.38 %	0.3 - 0.6
Sulfur	0.2 %	0.1 - 0.4
Boron	186 ppm	20 - 45
Copper	8.1 ppm	10 - 30
Iron	276 ppm	50 - 300
Manganese	46 ppm	100 - 800
Zinc	43 ppm	50 - 100
Sodium	180 ppm	0 - 4000

Soil Test	Result	Normal Range
CEC	18.5	
Soil pH	8.1	6.0 - 7.0
Buffer pH	0	
Organic Matter	0.9 %	
Phosphorus	23 m3-ppm	40 - 70
Potassium	412 m3-ppm	200 - 300
Calcium	14911 m3-ppm	2500 - 3500
Magnesium	360 m3-ppm	260 - 430
Copper	2.2 m3-ppm	6.2 - 22.2
Iron	42.7 m3-ppm	9 - 40
Manganese	31 m3-ppm	92 - 247
Zinc	84.1 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

There are many similarities with all these plant samples in the pecans. The soil pH is high due to the naturally high occurring soil pH in the Austin area. Sulfur can be applied to lower the soil pH but this would be a task that would need to be done on a yearly basis. Also I suspect that the irrigation water will have a high soil pH unless it is being treated. The boron is high in all the samples; this is likely coming from the irrigation water that is in the area. In many areas of the west the boron levels are high due to the irrigation water. The calcium is also high in all the plant analysis samples as well as the soil analysis, this goes along with the high soil pH that is due to the naturally occurring calcium carbonate that is in the soil.

The nitrogen is a little low in this tree; I would suggest making applications of nitrogen as recommended on the soil test report to supply the tree with nitrogen. The potassium is reporting a little high in the tree this is due to the high potassium soil test level. I would suggest not making any more applications of potassium to this tree at this time. The magnesium is reporting in the normal range in the tissue at this time, with the high potassium and calcium soil test levels there may be a suppression of uptake of magnesium in the future. Keep an eye on this with future plant samples as you may want to make a foliar application of magnesium in the future. The copper is reporting low in the tree due to the low copper levels in the soil and the high soil pH, as soil pH

Continued

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PO BOX 5193
KENT, OH 44240

Prepared For

CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	706-08-9
Lab Number	PL70385
Soil Lab Number	C04644
Sampled	12-01-2008
Tested	12-10-2008

Comments (continued)

increases the availability of copper in soil decreases. The same thing happens with the manganese. I would suggest an application of foliar copper and manganese or a direct trunk injection. Foliar applications may require multiple applications during the year. The zinc is also reporting low in the leaves with a high zinc soil test level. As soil pH increases the zinc availability from the soil also decreases. You can also make zinc applications foliarly or as a direct trunk injection.

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Prepared For
CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	707-08-10
Lab Number	PL70386
Soil Lab Number	C04645
Sampled	12-01-2008
Tested	12-10-2008

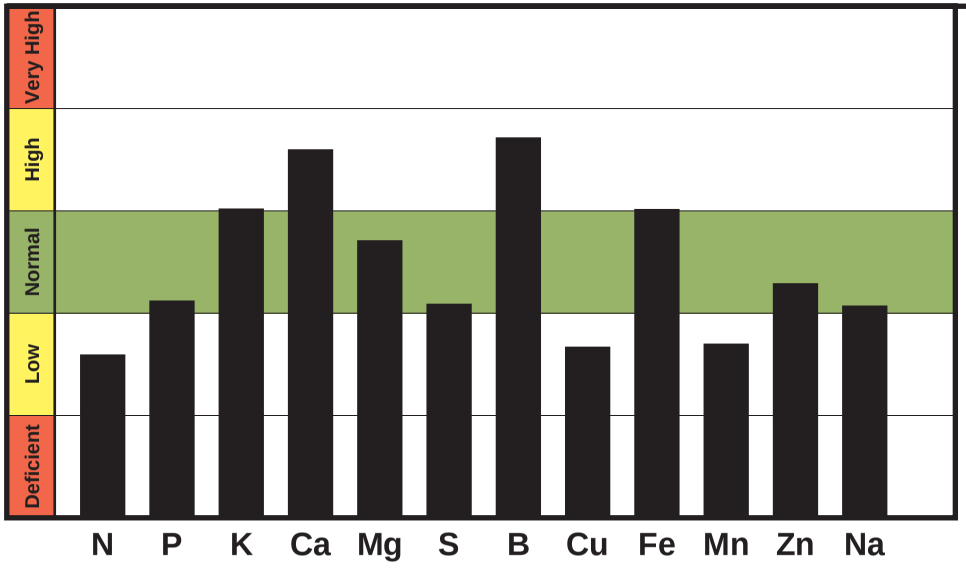
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	1.46 %	2.5 - 3.9
Phosphorus	0.14 %	0.1 - 0.3
Potassium	1.25 %	0.8 - 1.2
Calcium	4.74 %	0.7 - 1.5
Magnesium	0.51 %	0.3 - 0.6
Sulfur	0.17 %	0.1 - 0.4
Boron	172 ppm	20 - 45
Copper	6.6 ppm	10 - 30
Iron	307 ppm	50 - 300
Manganese	69 ppm	100 - 800
Zinc	64 ppm	50 - 100
Sodium	248 ppm	0 - 4000

Soil Test	Result		Normal Range
CEC	19.3		
Soil pH	7.6		6.0 - 7.0
Buffer pH	0		
Organic Matter	2.8	%	
Phosphorus	29	m3-ppm	40 - 70
Potassium	283	m3-ppm	200 - 310
Calcium	66153	m3-ppm	2600 - 3600
Magnesium	497	m3-ppm	270 - 440
Copper	2.3	m3-ppm	3.4 - 19.4
Iron	39.2	m3-ppm	9 - 40
Manganese	27	m3-ppm	66 - 221
Zinc	13.7	m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

There are many similarities with all these plant samples in the pecans. The soil pH is high due to the naturally high occurring soil pH in the Austin area. Sulfur can be applied to lower the soil pH but this would be a task that would need to be done on a yearly basis. Also I suspect that the irrigation water will have a high soil pH unless it is being treated. The boron is high in all the samples; this is likely coming from the irrigation water that is in the area. In many areas of the west the boron levels are high due to the irrigation water. The calcium is also high in all the plant analysis samples as well as the soil analysis, this goes along with the high soil pH that is due to the naturally occurring calcium carbonate that is in the soil.

The nitrogen is a little low in this tree; I would suggest making applications of nitrogen as recommended on the soil test report to supply the tree with nitrogen. The potassium is reporting a little high in the tree even with the potassium reporting in the good range in the soil test. You will notice this is only a little above the normal range so it really is not causing any big problems to the tree. I would suggest not making any more applications of potassium to this tree at this time. The magnesium is reporting in the normal range in the tissue at this time, with the high potassium and calcium soil test levels there may be a suppression of uptake of magnesium in the future. Keep an eye on this with future plant samples as you may want to make a foliar application of

Continued

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Report To

THE DAVEY TREE EXPERT
CO-SOIL LAB
PO BOX 5193
KENT, OH 44240

Prepared For

CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	707-08-10
Lab Number	PL70386
Soil Lab Number	C04645
Sampled	12-01-2008
Tested	12-10-2008

Comments (continued)

magnesium in the future. The copper is reporting low in the tree due to the low copper levels in the soil and the high soil pH, as soil pH increases the availability of copper in soil decreases. The iron is reporting a little high in the tissue; this is likely due to a foliar iron product or a slight contamination of soil/dust on the leaf material. With a soil pH this high the iron in the soil is very insoluble and not available to the trees. The same thing happens with the manganese and copper with the high soil pH. I would suggest an application of foliar copper and manganese or a direct trunk injection. Foliar applications may require multiple applications during the year.

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Report To
THE DAVEY TREE EXPERT
CO-SOIL LAB
PO BOX 5193
KENT, OH 44240

Prepared For
CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	708-08-11
Lab Number	PL70387
Soil Lab Number	C04646
Sampled	12-01-2008
Tested	12-10-2008

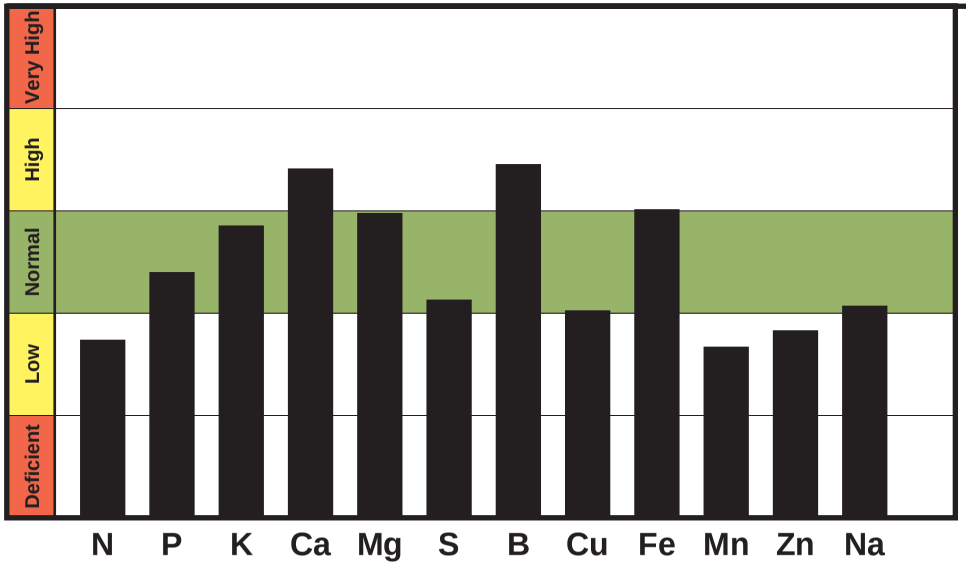
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	1.82 %	2.5 - 3.9
Phosphorus	0.19 %	0.1 - 0.3
Potassium	1.13 %	0.8 - 1.2
Calcium	3.71 %	0.7 - 1.5
Magnesium	0.59 %	0.3 - 0.6
Sulfur	0.18 %	0.1 - 0.4
Boron	125 ppm	20 - 45
Copper	10.3 ppm	10 - 30
Iron	304 ppm	50 - 300
Manganese	66 ppm	100 - 800
Zinc	41 ppm	50 - 100
Sodium	243 ppm	0 - 4000

Soil Test	Result		Normal Range
CEC	18.3		
Soil pH	8.2		6.0 - 7.0
Buffer pH	0		
Organic Matter	0.8	%	
Phosphorus	3	m3-ppm	40 - 70
Potassium	91	m3-ppm	190 - 300
Calcium	65975	m3-ppm	2400 - 3400
Magnesium	430	m3-ppm	260 - 430
Copper	0.4	m3-ppm	6.3 - 22.3
Iron	20	m3-ppm	9 - 40
Manganese	24	m3-ppm	98 - 253
Zinc	3.4	m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

There are many similarities with all these plant samples in the pecans. The soil pH is high due to the naturally high occurring soil pH in the Austin area. Sulfur can be applied to lower the soil pH but this would be a task that would need to be done on a yearly basis. Also I suspect that the irrigation water will have a high soil pH unless it is being treated. The boron is high in all the samples; this is likely coming from the irrigation water that is in the area. In many areas of the west the boron levels are high due to the irrigation water. The calcium is also high in all the plant analysis samples as well as the soil analysis, this goes along with the high soil pH that is due to the naturally occurring calcium carbonate that is in the soil.

The nitrogen is a little low in this tree; I would suggest making applications of nitrogen as recommended on the soil test report to supply the tree with nitrogen. The potassium is reporting in the lower end of the normal range at this time, this is due to the low potassium levels in the soil. I would suggest making soil applications of potassium to this tree and build the soil test levels. Suggested rates of potassium applications are on the soil test report. The copper is reporting in the lower end of the normal range in the tree at this time. Copper can be applied as a foliar application or as a direct trunk injection. The iron is reporting a little high in the tissue; this is likely due to a foliar iron product or a slight contamination of soil/dust on the leaf material. With a soil pH this

Continued

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Report To

THE DAVEY TREE EXPERT
CO-SOIL LAB
PO BOX 5193
KENT, OH 44240

Prepared For

CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	708-08-11
Lab Number	PL70387
Soil Lab Number	C04646
Sampled	12-01-2008
Tested	12-10-2008

Comments (continued)

high the iron in the soil is very insoluble and not available to the trees. High iron in a plant can suppress the manganese uptake to an extent. The same thing happens with the manganese and copper with the high soil pH. I would suggest an application of foliar copper and manganese or a direct trunk injection. Foliar applications may require multiple applications during the year. The zinc is also reporting in the lower end of the normal range in the leaves. Fixing the other low nutrients may cause the zinc to slip into the low range. As soil pH increases the zinc availability from the soil also decreases. You can also make zinc applications foliarly or as a direct trunk injection.

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Report To
THE DAVEY TREE EXPERT
CO-SOIL LAB
PO BOX 5193
KENT, OH 44240

Prepared For
CITY OF AUSTIN
AUISTIN, TX

Sample Information

Sample ID	709-08-12
Lab Number	PL70388
Soil Lab Number	C04647
Sampled	12-01-2008
Tested	12-10-2008

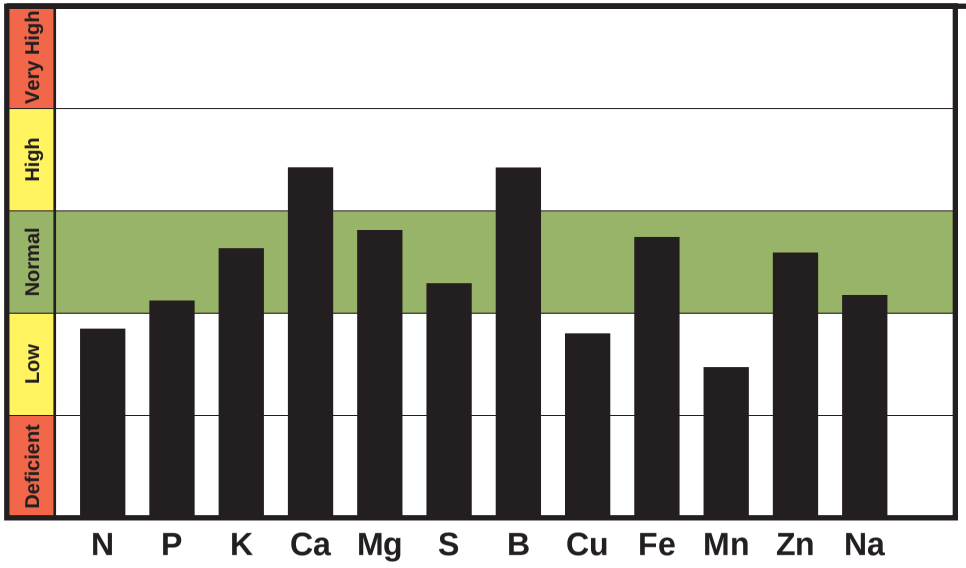
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	2.09 %	2.5 - 3.9
Phosphorus	0.14 %	0.1 - 0.3
Potassium	1.03 %	0.8 - 1.2
Calcium	3.77 %	0.7 - 1.5
Magnesium	0.54 %	0.3 - 0.6
Sulfur	0.22 %	0.1 - 0.4
Boron	119 ppm	20 - 45
Copper	7.9 ppm	10 - 30
Iron	233 ppm	50 - 300
Manganese	46 ppm	100 - 800
Zinc	79 ppm	50 - 100
Sodium	660 ppm	0 - 4000

Soil Test	Result	Normal Range
CEC	18.2	
Soil pH	7.9	6.0 - 7.0
Buffer pH	0	
Organic Matter	0.7 %	
Phosphorus	2 m3-ppm	40 - 70
Potassium	212 m3-ppm	190 - 300
Calcium	65984 m3-ppm	2400 - 3400
Magnesium	369 m3-ppm	260 - 430
Copper	0.7 m3-ppm	4.5 - 20.5
Iron	13.4 m3-ppm	9 - 40
Manganese	18 m3-ppm	77 - 232
Zinc	4.1 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

There are many similarities with all these plant samples in the pecans. The soil pH is high due to the naturally high occurring soil pH in the Austin area. Sulfur can be applied to lower the soil pH but this would be a task that would need to be done on a yearly basis. Also I suspect that the irrigation water will have a high soil pH unless it is being treated. The boron is high in all the samples; this is likely coming from the irrigation water that is in the area. In many areas of the west the boron levels are high due to the irrigation water. The calcium is also high in all the plant analysis samples as well as the soil analysis, this goes along with the high soil pH that is due to the naturally occurring calcium carbonate that is in the soil.

The nitrogen is a little low in this tree; I would suggest making applications of nitrogen as recommended on the soil test report to supply the tree with nitrogen. The phosphorous is reporting in the lower end of the normal range in the tissue and the phosphorous soil test level is reporting deficient. With the high soil pH the phosphorous in the soil is less available to the tree. I would suggest making a soil application of phosphorous to the tree; the recommended rates are on the soil test report. The copper is reporting low in the tree at this time, this is due to the high soil pH. As soil pH increase copper becomes less available in the soil. Copper can be applied as a foliar application or as a direct trunk injection. The manganese is reporting

Continued

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Report To

THE DAVEY TREE EXPERT
CO-SOIL LAB
PO BOX 5193
KENT, OH 44240

Prepared For

CITY OF AUSTIN
AUISTIN, TX

Sample Information

Sample ID	709-08-12
Lab Number	PL70388
Soil Lab Number	C04647
Sampled	12-01-2008
Tested	12-10-2008

Comments (continued)

low in the tissue at this time. The same thing happens with the manganese and copper with the high soil pH. I would suggest an application of foliar copper and manganese or a direct trunk injection. Foliar applications may require multiple applications during the year.

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Report To
THE DAVEY TREE EXPERT
CO-SOIL LAB
PO BOX 5193
KENT, OH 44240

Prepared For
CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	710-08-13
Lab Number	PL70389
Soil Lab Number	C04648
Sampled	12-01-2008
Tested	12-10-2008

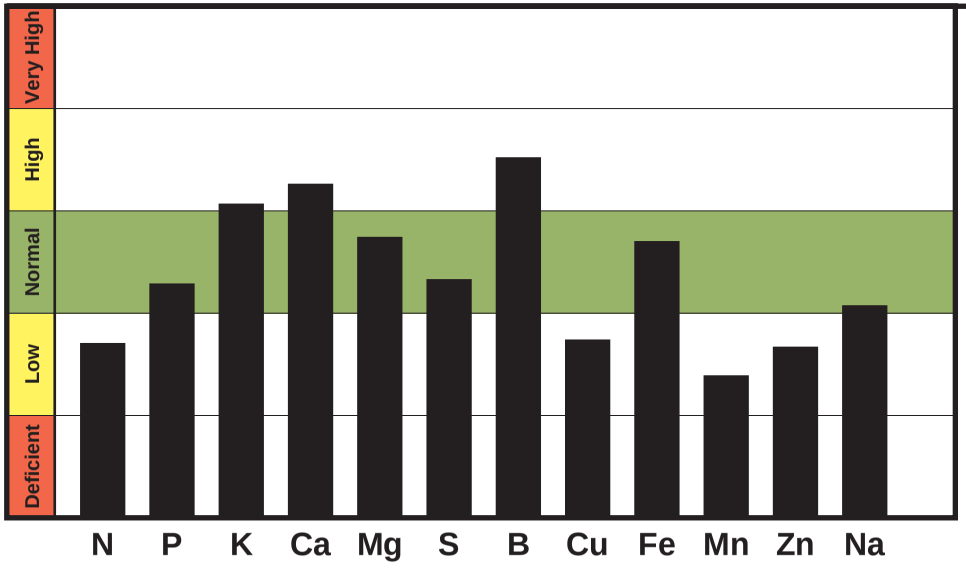
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	1.74 %	2.5 - 3.9
Phosphorus	0.17 %	0.1 - 0.3
Potassium	1.48 %	0.8 - 1.2
Calcium	2.89 %	0.7 - 1.5
Magnesium	0.52 %	0.3 - 0.6
Sulfur	0.23 %	0.1 - 0.4
Boron	137 ppm	20 - 45
Copper	7.3 ppm	10 - 30
Iron	223 ppm	50 - 300
Manganese	38 ppm	100 - 800
Zinc	33 ppm	50 - 100
Sodium	259 ppm	0 - 4000

Soil Test	Result	Normal Range
CEC	21.4	
Soil pH	7.6	6.0 - 6.9
Buffer pH	0	
Organic Matter	9.4 %	
Phosphorus	183 m3-ppm	40 - 70
Potassium	364 m3-ppm	210 - 320
Calcium	10524 m3-ppm	2900 - 4000
Magnesium	763 m3-ppm	280 - 460
Copper	2.8 m3-ppm	7.7 - 23.7
Iron	84.1 m3-ppm	9 - 40
Manganese	17 m3-ppm	99 - 254
Zinc	53.2 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

There are many similarities with all these plant samples in the pecans. The soil pH is high due to the naturally high occurring soil pH in the Austin area. Sulfur can be applied to lower the soil pH but this would be a task that would need to be done on a yearly basis. Also I suspect that the irrigation water will have a high soil pH unless it is being treated. The boron is high in all the samples; this is likely coming from the irrigation water that is in the area. In many areas of the west the boron levels are high due to the irrigation water. The calcium is also high in all the plant analysis samples as well as the soil analysis, this goes along with the high soil pH that is due to the naturally occurring calcium carbonate that is in the soil.

The nitrogen is a little low in this tree; I would suggest making applications of nitrogen as recommended on the soil test report to supply the tree with nitrogen. The potassium is reporting a little high in the tissue at this time; this is due to the high potassium soil test level. I would suggest not making any more applications of potassium to this tree at this time. The high potassium and calcium is not suppressing the magnesium in this tree, most likely due to the high magnesium soil test levels. The copper is reporting low in the tree at this time, this is due to the high soil pH. As soil pH increase copper becomes less available in the soil. Copper can be applied as a foliar application or as a direct trunk injection. The manganese is reporting low in the tissue at this time. The

Continued

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Report To	Prepared For	Sample Information	
THE DAVEY TREE EXPERT	CITY OF AUSTIN	Sample ID	710-08-13
CO-SOIL LAB	AUSTIN, TX	Lab Number	PL70389
PO BOX 5193		Soil Lab Number	C04648
KENT, OH 44240		Sampled	12-01-2008
		Tested	12-10-2008

Comments (continued)

same thing happens with the manganese and copper with the high soil pH. I would suggest an application of foliar copper and manganese or a direct trunk injection. Foliar applications may require multiple applications during the year. The zinc is also reporting in the low range in the leaves even with the high zinc soil test level. As soil pH increases the zinc availability from the soil also decreases. You can also make zinc applications foliarly or as a direct trunk injection.

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Report To
THE DAVEY TREE EXPERT
CO-SOIL LAB
PO BOX 5193
KENT, OH 44240

Prepared For
CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	711-08-14
Lab Number	PL70390
Soil Lab Number	C04649
Sampled	12-01-2008
Tested	12-10-2008

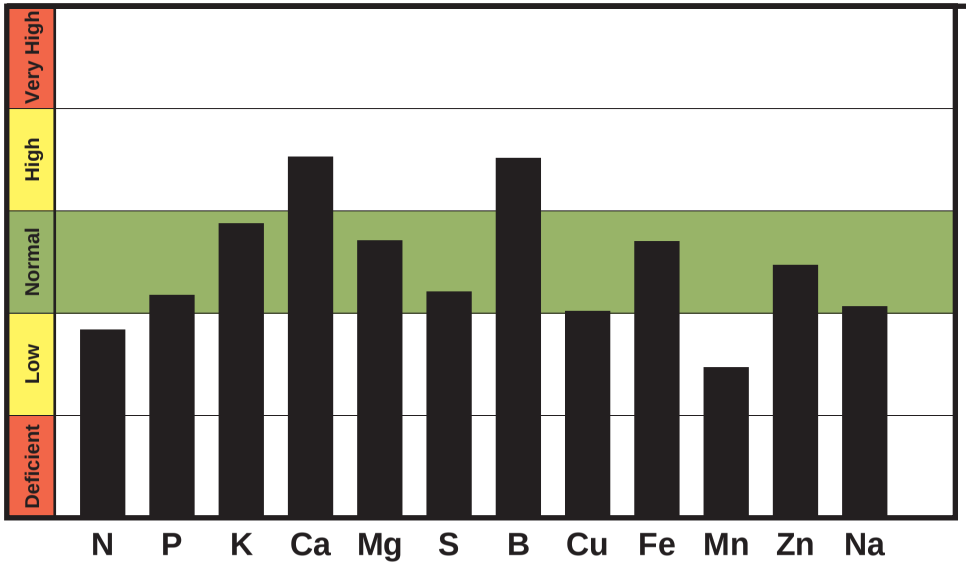
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	2.07 %	2.5 - 3.9
Phosphorus	0.15 %	0.1 - 0.3
Potassium	1.14 %	0.8 - 1.2
Calcium	4.35 %	0.7 - 1.5
Magnesium	0.51 %	0.3 - 0.6
Sulfur	0.2 %	0.1 - 0.4
Boron	136 ppm	20 - 45
Copper	10.2 ppm	10 - 30
Iron	223 ppm	50 - 300
Manganese	46 ppm	100 - 800
Zinc	73 ppm	50 - 100
Sodium	223 ppm	0 - 4000

Soil Test	Result	Normal Range
CEC	19.5	
Soil pH	7.5	6.0 - 7.0
Buffer pH	0	
Organic Matter	3.7 %	
Phosphorus	68 m3-ppm	40 - 70
Potassium	305 m3-ppm	200 - 310
Calcium	66179 m3-ppm	2600 - 3600
Magnesium	525 m3-ppm	270 - 450
Copper	4.7 m3-ppm	3.9 - 19.9
Iron	53.5 m3-ppm	9 - 40
Manganese	20 m3-ppm	64 - 219
Zinc	39.1 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

There are many similarities with all these plant samples in the pecans. The soil pH is high due to the naturally high occurring soil pH in the Austin area. Sulfur can be applied to lower the soil pH but this would be a task that would need to be done on a yearly basis. Also I suspect that the irrigation water will have a high soil pH unless it is being treated. The boron is high in all the samples; this is likely coming from the irrigation water that is in the area. In many areas of the west the boron levels are high due to the irrigation water. The calcium is also high in all the plant analysis samples as well as the soil analysis, this goes along with the high soil pH that is due to the naturally occurring calcium carbonate that is in the soil.

The nitrogen is a little low in this tree; I would suggest making applications of nitrogen as recommended on the soil test report to supply the tree with nitrogen. The copper is reporting in the lower end of the normal range in the tree at this time, this is due to the high soil pH. As soil pH increase copper becomes less available in the soil. Copper can be applied as a foliar application or as a direct trunk injection. The manganese is reporting low in the tissue at this time. The same thing happens with the manganese and copper with the high soil pH. I would suggest an application of foliar copper and manganese or a direct trunk injection. Foliar applications may require multiple applications during the year.

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Report To
THE DAVEY TREE EXPERT
CO-SOIL LAB
PO BOX 5193
KENT, OH 44240

Prepared For
CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	712-08-15
Lab Number	PL70391
Soil Lab Number	C04650
Sampled	12-01-2008
Tested	12-10-2008

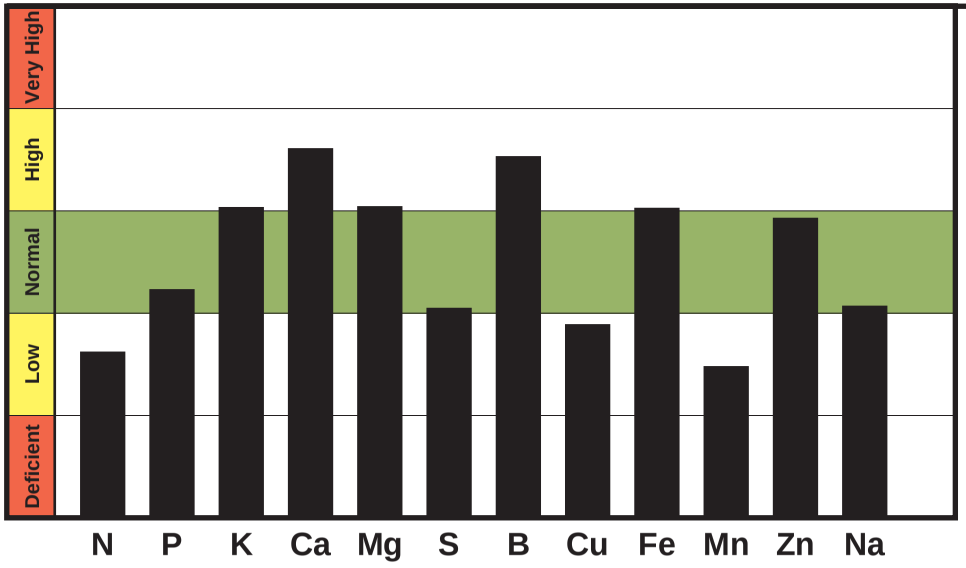
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	1.53 %	2.5 - 3.9
Phosphorus	0.16 %	0.1 - 0.3
Potassium	1.32 %	0.8 - 1.2
Calcium	4.8 %	0.7 - 1.5
Magnesium	0.68 %	0.3 - 0.6
Sulfur	0.16 %	0.1 - 0.4
Boron	139 ppm	20 - 45
Copper	8.8 ppm	10 - 30
Iron	321 ppm	50 - 300
Manganese	47 ppm	100 - 800
Zinc	96 ppm	50 - 100
Sodium	243 ppm	0 - 4000

Soil Test	Result	Normal Range
CEC	18.7	
Soil pH	7.7	6.0 - 7.0
Buffer pH	0	
Organic Matter	1.4 %	
Phosphorus	44 m3-ppm	40 - 70
Potassium	441 m3-ppm	200 - 300
Calcium	66132 m3-ppm	2500 - 3500
Magnesium	373 m3-ppm	260 - 440
Copper	2.5 m3-ppm	4.4 - 20.4
Iron	26.8 m3-ppm	9 - 40
Manganese	17 m3-ppm	66 - 221
Zinc	28.2 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

There are many similarities with all these plant samples in the pecans. The soil pH is high due to the naturally high occurring soil pH in the Austin area. Sulfur can be applied to lower the soil pH but this would be a task that would need to be done on a yearly basis. Also I suspect that the irrigation water will have a high soil pH unless it is being treated. The boron is high in all the samples; this is likely coming from the irrigation water that is in the area. In many areas of the west the boron levels are high due to the irrigation water. The calcium is also high in all the plant analysis samples as well as the soil analysis, this goes along with the high soil pH that is due to the naturally occurring calcium carbonate that is in the soil.

The nitrogen is a little low in this tree; I would suggest making applications of nitrogen as recommended on the soil test report to supply the tree with nitrogen. The potassium is reporting a little high in the tree; this is due to the high potassium levels in the soil. I would suggest not making any more applications of potassium to this tree at this time. The magnesium is reporting in the high range in the tissue at this time, with the high potassium and calcium soil test levels there is sometimes a suppression of uptake of magnesium but this is not occurring with this tree. The copper is reporting low in the tree due to the low copper levels in the soil and the high soil pH, as soil pH increases the availability of copper in soil decreases. The iron is reporting a little high in the

Continued

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Report To

THE DAVEY TREE EXPERT
CO-SOIL LAB
PO BOX 5193
KENT, OH 44240

Prepared For

CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	712-08-15
Lab Number	PL70391
Soil Lab Number	C04650
Sampled	12-01-2008
Tested	12-10-2008

Comments (continued)

tissue; this is likely due to a foliar iron product or a slight contamination of soil/dust on the leaf material. With a soil pH this high the iron in the soil is very insoluble and not available to the trees. High iron in a tree can suppress the uptake of manganese to an extent. The same thing happens with the manganese and copper with the high soil pH. I would suggest an application of foliar copper and manganese or a direct trunk injection. Foliar applications may require multiple applications during the year.

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CO-SOIL LAB
PO BOX 5193
KENT, OH 44240

Prepared For
CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	713-08-17
Lab Number	PL70392
Soil Lab Number	C04652
Sampled	12-01-2008
Tested	12-10-2008

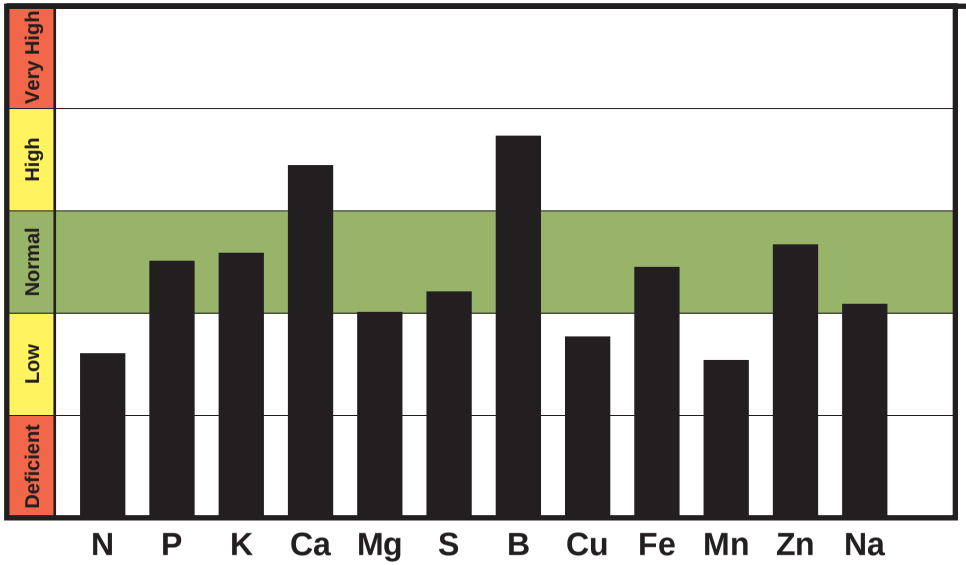
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	1.49 %	2.5 - 3.9
Phosphorus	0.21 %	0.1 - 0.3
Potassium	1.01 %	0.8 - 1.2
Calcium	3.89 %	0.7 - 1.5
Magnesium	0.3 %	0.3 - 0.6
Sulfur	0.2 %	0.1 - 0.4
Boron	175 ppm	20 - 45
Copper	7.6 ppm	10 - 30
Iron	160 ppm	50 - 300
Manganese	53 ppm	100 - 800
Zinc	83 ppm	50 - 100
Sodium	316 ppm	0 - 4000

Soil Test	Result	Normal Range
CEC	18.3	
Soil pH	7.7	6.0 - 7.0
Buffer pH	0	
Organic Matter	1.7 %	
Phosphorus	21 m3-ppm	40 - 70
Potassium	244 m3-ppm	190 - 300
Calcium	66071 m3-ppm	2400 - 3400
Magnesium	382 m3-ppm	260 - 430
Copper	2.3 m3-ppm	3.8 - 19.8
Iron	19.8 m3-ppm	9 - 40
Manganese	27 m3-ppm	68 - 223
Zinc	11.2 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

There are many similarities with all these plant samples in the pecans. The soil pH is high due to the naturally high occurring soil pH in the Austin area. Sulfur can be applied to lower the soil pH but this would be a task that would need to be done on a yearly basis. Also I suspect that the irrigation water will have a high soil pH unless it is being treated. The boron is high in all the samples; this is likely coming from the irrigation water that is in the area. In many areas of the west the boron levels are high due to the irrigation water. The calcium is also high in all the plant analysis samples as well as the soil analysis, this goes along with the high soil pH that is due to the naturally occurring calcium carbonate that is in the soil.

The nitrogen is a little low in this tree; I would suggest making applications of nitrogen as recommended on the soil test report to supply the tree with nitrogen. The copper is reporting low in the tree due to the low copper levels in the soil and the high soil pH, as soil pH increases the availability of copper in soil decreases. The low manganese in the leaves is likely due to the high soil pH. I would suggest an application of foliar copper and manganese or a direct trunk injection. Foliar applications may require multiple applications during the year.

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Report To
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CO-SOIL LAB
PO BOX 5193
KENT, OH 44240

Prepared For
CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	714-08-18
Lab Number	PL70393
Soil Lab Number	C04653
Sampled	12-01-2008
Tested	12-10-2008

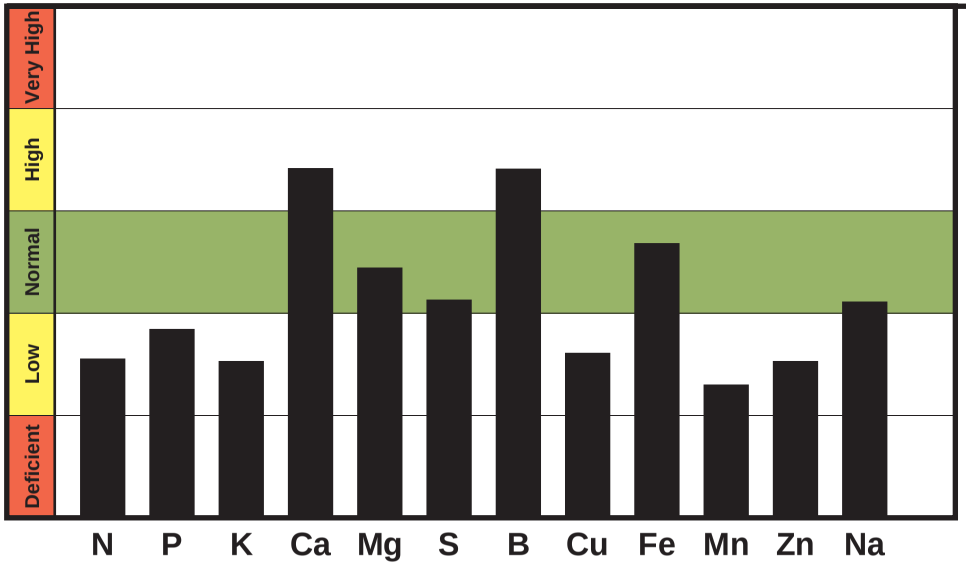
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	1.36 %	2.5 - 3.9
Phosphorus	0.1 %	0.1 - 0.3
Potassium	0.39 %	0.8 - 1.2
Calcium	3.73 %	0.7 - 1.5
Magnesium	0.43 %	0.3 - 0.6
Sulfur	0.18 %	0.1 - 0.4
Boron	117 ppm	20 - 45
Copper	6 ppm	10 - 30
Iron	218 ppm	50 - 300
Manganese	29 ppm	100 - 800
Zinc	26 ppm	50 - 100
Sodium	404 ppm	0 - 4000

Soil Test	Result	Normal Range
CEC	18.2	
Soil pH	7.8	6.0 - 7.0
Buffer pH	0	
Organic Matter	1.2 %	
Phosphorus	17 m3-ppm	40 - 70
Potassium	218 m3-ppm	190 - 300
Calcium	66059 m3-ppm	2400 - 3400
Magnesium	377 m3-ppm	260 - 430
Copper	2.1 m3-ppm	4.3 - 20.3
Iron	13.5 m3-ppm	9 - 40
Manganese	18 m3-ppm	72 - 227
Zinc	12.9 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

There are many similarities with all these plant samples in the pecans. The soil pH is high due to the naturally high occurring soil pH in the Austin area. Sulfur can be applied to lower the soil pH but this would be a task that would need to be done on a yearly basis. Also I suspect that the irrigation water will have a high soil pH unless it is being treated. The boron is high in all the samples; this is likely coming from the irrigation water that is in the area. In many areas of the west the boron levels are high due to the irrigation water. The calcium is also high in all the plant analysis samples as well as the soil analysis, this goes along with the high soil pH that is due to the naturally occurring calcium carbonate that is in the soil.

The nitrogen is a little low in this tree; I would suggest making applications of nitrogen as recommended on the soil test report to supply the tree with nitrogen. The phosphorous is also reporting low in the leaves at this time, this is due to the low phosphorous level in the soil as well as the high soil pH makes the phosphorous in the soil less available to the plants. The potassium is reporting a little low in the tree even with the good potassium soil test level. The high calcium (which is a cation just like the magnesium and potassium) is affecting the plants ability to uptake potassium. The only thing that can be done is to continue to raise the potassium soil test levels to try to overcome the suppression or make frequent foliar applications. Since potassium is a

Continued

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Report To

THE DAVEY TREE EXPERT
CO-SOIL LAB
PO BOX 5193
KENT, OH 44240

Prepared For

CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	714-08-18
Lab Number	PL70393
Soil Lab Number	C04653
Sampled	12-01-2008
Tested	12-10-2008

Comments (continued)

salt, this would likely not be a practical solution since high applications of potassium foliarly would result in burning the leaf material. There are some sources of foliar potassium available that are not salts that may be an alternative. The copper is reporting low in the tree due to the low copper levels in the soil and the high soil pH, as soil pH increases the availability of copper in soil decreases. The same thing happens with the manganese. I would suggest an application of foliar copper and manganese or a direct trunk injection. Foliar applications may require multiple applications during the year. The zinc is also reporting low in the leaves even with a high zinc soil test level. As soil pH increases the zinc availability from the soil also decreases. You can also make zinc applications foliarly or as a direct trunk injection.

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Report To
THE DAVEY TREE EXPERT
CO-SOIL LAB
PO BOX 5193
KENT, OH 44240

Prepared For
CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	715-08-19
Lab Number	PL70394
Soil Lab Number	C04654
Sampled	12-01-2008
Tested	12-10-2008

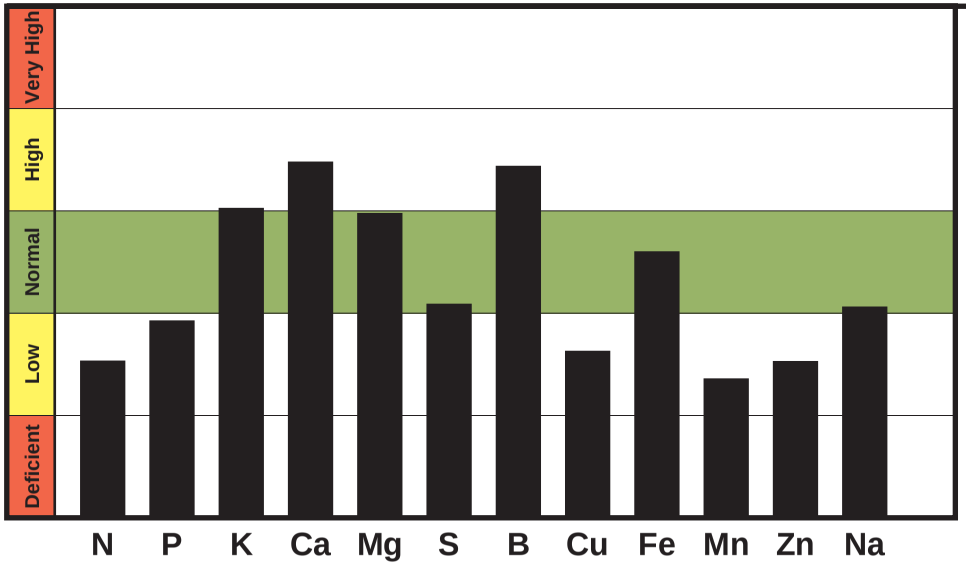
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	1.31 %	2.5 - 3.9
Phosphorus	0.11 %	0.1 - 0.3
Potassium	1.28 %	0.8 - 1.2
Calcium	4.08 %	0.7 - 1.5
Magnesium	0.59 %	0.3 - 0.6
Sulfur	0.17 %	0.1 - 0.4
Boron	122 ppm	20 - 45
Copper	6.2 ppm	10 - 30
Iron	198 ppm	50 - 300
Manganese	35 ppm	100 - 800
Zinc	26 ppm	50 - 100
Sodium	209 ppm	0 - 4000

Soil Test	Result		Normal Range
CEC	18.1		
Soil pH	7.8		6.0 - 7.0
Buffer pH	0		
Organic Matter	1	%	
Phosphorus	9	m3-ppm	40 - 70
Potassium	243	m3-ppm	190 - 300
Calcium	66076	m3-ppm	2400 - 3400
Magnesium	348	m3-ppm	260 - 430
Copper	2.5	m3-ppm	4.1 - 20.1
Iron	15.9	m3-ppm	9 - 40
Manganese	22	m3-ppm	71 - 226
Zinc	10.6	m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

There are many similarities with all these plant samples in the pecans. The soil pH is high due to the naturally high occurring soil pH in the Austin area. Sulfur can be applied to lower the soil pH but this would be a task that would need to be done on a yearly basis. Also I suspect that the irrigation water will have a high soil pH unless it is being treated. The boron is high in all the samples; this is likely coming from the irrigation water that is in the area. In many areas of the west the boron levels are high due to the irrigation water. The calcium is also high in all the plant analysis samples as well as the soil analysis, this goes along with the high soil pH that is due to the naturally occurring calcium carbonate that is in the soil.

The nitrogen is a little low in this tree; I would suggest making applications of nitrogen as recommended on the soil test report to supply the tree with nitrogen. The phosphorous is also reporting low in the leaves at this time, this is due to the low phosphorous level in the soil as well as the high soil pH makes the phosphorous in the soil less available to the plants. The potassium is reporting a little high in the tree even with the good potassium soil test level. This potassium level in the leaves is not so high that it is causing any problems to the tree. The copper is reporting low in the tree due to the low copper levels in the soil and the high soil pH, as soil pH increases the availability of copper in soil decreases. The same thing happens with the manganese. I

Continued

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Report To	Prepared For	Sample Information	
THE DAVEY TREE EXPERT	CITY OF AUSTIN	Sample ID	715-08-19
CO-SOIL LAB	AUSTIN, TX	Lab Number	PL70394
PO BOX 5193		Soil Lab Number	C04654
KENT, OH 44240		Sampled	12-01-2008
		Tested	12-10-2008

Comments (continued)

would suggest an application of foliar copper and manganese or a direct trunk injection. Foliar applications may require multiple applications during the year. The zinc is also reporting low in the leaves even with a normal zinc soil test level. As soil pH increases the zinc availability from the soil also decreases. You can also make zinc applications foliarly or as a direct trunk injection.

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Report To
THE DAVEY TREE EXPERT
CO-SOIL LAB
PO BOX 5193
KENT, OH 44240

Prepared For
CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	716-08-20
Lab Number	PL70395
Soil Lab Number	C04655
Sampled	12-01-2008
Tested	12-10-2008

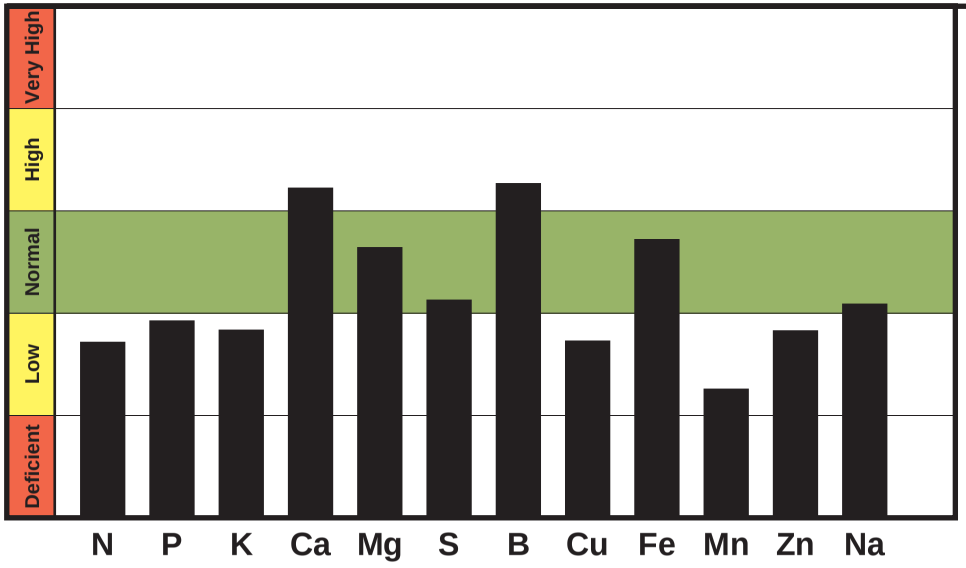
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	1.77 %	2.5 - 3.9
Phosphorus	0.11 %	0.1 - 0.3
Potassium	0.62 %	0.8 - 1.2
Calcium	2.68 %	0.7 - 1.5
Magnesium	0.49 %	0.3 - 0.6
Sulfur	0.18 %	0.1 - 0.4
Boron	91.6 ppm	20 - 45
Copper	7.2 ppm	10 - 30
Iron	228 ppm	50 - 300
Manganese	25 ppm	100 - 800
Zinc	41 ppm	50 - 100
Sodium	324 ppm	0 - 4000

Soil Test	Result	Normal Range
CEC	18.2	
Soil pH	7.7	6.0 - 7.0
Buffer pH	0	
Organic Matter	1.8 %	
Phosphorus	31 m3-ppm	40 - 70
Potassium	286 m3-ppm	190 - 300
Calcium	66102 m3-ppm	2400 - 3400
Magnesium	354 m3-ppm	260 - 430
Copper	6.1 m3-ppm	4.1 - 20.1
Iron	20.6 m3-ppm	9 - 40
Manganese	16 m3-ppm	68 - 223
Zinc	18.5 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

There are many similarities with all these plant samples in the pecans. The soil pH is high due to the naturally high occurring soil pH in the Austin area. Sulfur can be applied to lower the soil pH but this would be a task that would need to be done on a yearly basis. Also I suspect that the irrigation water will have a high soil pH unless it is being treated. The boron is high in all the samples; this is likely coming from the irrigation water that is in the area. In many areas of the west the boron levels are high due to the irrigation water. The calcium is also high in all the plant analysis samples as well as the soil analysis, this goes along with the high soil pH that is due to the naturally occurring calcium carbonate that is in the soil.

The nitrogen is a little low in this tree; I would suggest making applications of nitrogen as recommended on the soil test report to supply the tree with nitrogen. The phosphorous is also reporting low in the leaves at this time, this is due to the low phosphorous level in the soil as well as the high soil pH makes the phosphorous in the soil less available to the plants. The potassium is reporting a little low in the tree even with the good potassium soil test level. The high calcium (which is a cation just like the magnesium and potassium) is affecting the plants ability to uptake potassium. The only thing that can be done is to continue to raise the potassium soil test levels to try to overcome the suppression or make frequent foliar applications. Since potassium is a

Continued

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Report To

THE DAVEY TREE EXPERT
CO-SOIL LAB
PO BOX 5193
KENT, OH 44240

Prepared For

CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	716-08-20
Lab Number	PL70395
Soil Lab Number	C04655
Sampled	12-01-2008
Tested	12-10-2008

Comments (continued)

salt, this would likely not be a practical solution since high applications of potassium foliarly would result in burning the leaf material. There are some sources of foliar potassium available that are not salts that may be an alternative. The copper is reporting low in the tree due to the low copper levels in the soil and the high soil pH, as soil pH increases the availability of copper in soil decreases. The same thing happens with the manganese. I would suggest an application of foliar copper and manganese or a direct trunk injection. Foliar applications may require multiple applications during the year. The zinc is also reporting low in the leaves even with a high zinc soil test level. As soil pH increases the zinc availability from the soil also decreases. You can also make zinc applications foliarly or as a direct trunk injection.

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Report To
THE DAVEY TREE EXPERT
CO-SOIL LAB
PO BOX 5193
KENT, OH 44240

Prepared For
CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	717-08-21
Lab Number	PL70396
Soil Lab Number	C04656
Sampled	12-01-2008
Tested	12-10-2008

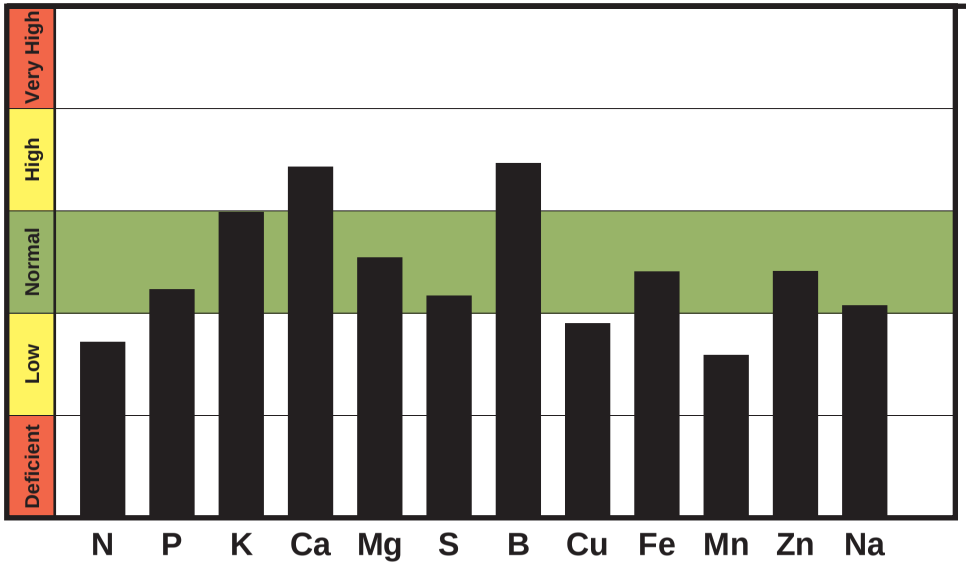
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	1.77 %	2.5 - 3.9
Phosphorus	0.16 %	0.1 - 0.3
Potassium	1.19 %	0.8 - 1.2
Calcium	3.81 %	0.7 - 1.5
Magnesium	0.46 %	0.3 - 0.6
Sulfur	0.19 %	0.1 - 0.4
Boron	127 ppm	20 - 45
Copper	8.9 ppm	10 - 30
Iron	149 ppm	50 - 300
Manganese	58 ppm	100 - 800
Zinc	70 ppm	50 - 100
Sodium	260 ppm	0 - 4000

Soil Test	Result	Normal Range
CEC	20.1	
Soil pH	7.7	6.0 - 7.0
Buffer pH	0	
Organic Matter	6.8 %	
Phosphorus	69 m3-ppm	40 - 70
Potassium	409 m3-ppm	200 - 320
Calcium	16056 m3-ppm	2700 - 3700
Magnesium	569 m3-ppm	270 - 450
Copper	6.8 m3-ppm	5.1 - 21.1
Iron	35.8 m3-ppm	9 - 40
Manganese	45 m3-ppm	93 - 248
Zinc	30.6 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

There are many similarities with all these plant samples in the pecans. The soil pH is high due to the naturally high occurring soil pH in the Austin area. Sulfur can be applied to lower the soil pH but this would be a task that would need to be done on a yearly basis. Also I suspect that the irrigation water will have a high soil pH unless it is being treated. The boron is high in all the samples; this is likely coming from the irrigation water that is in the area. In many areas of the west the boron levels are high due to the irrigation water. The calcium is also high in all the plant analysis samples as well as the soil analysis, this goes along with the high soil pH that is due to the naturally occurring calcium carbonate that is in the soil.

The nitrogen is a little low in this tree; I would suggest making applications of nitrogen as recommended on the soil test report to supply the tree with nitrogen. The phosphorous is reporting in the lower end of the normal range in the tissue and the phosphorous soil test level is reporting deficient. With the high soil pH the phosphorous in the soil is less available to the tree. I would suggest making a soil application of phosphorous to the tree; the recommended rates are on the soil test report. The copper is reporting low in the tree at this time, this is due to the high soil pH. As soil pH increase copper becomes less available in the soil. Copper can be applied as a foliar application or as a direct trunk injection. The manganese is reporting

Continued

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Report To

THE DAVEY TREE EXPERT
CO-SOIL LAB
PO BOX 5193
KENT, OH 44240

Prepared For

CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	717-08-21
Lab Number	PL70396
Soil Lab Number	C04656
Sampled	12-01-2008
Tested	12-10-2008

Comments (continued)

low in the tissue at this time. The same thing happens with the manganese and copper with the high soil pH. I would suggest an application of foliar copper and manganese or a direct trunk injection. Foliar applications may require multiple applications during the year.

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Report To
THE DAVEY TREE EXPERT
CO-SOIL LAB
PO BOX 5193
KENT, OH 44240

Prepared For
CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	718-08-28
Lab Number	PL70397
Soil Lab Number	C04657
Sampled	12-01-2008
Tested	12-10-2008

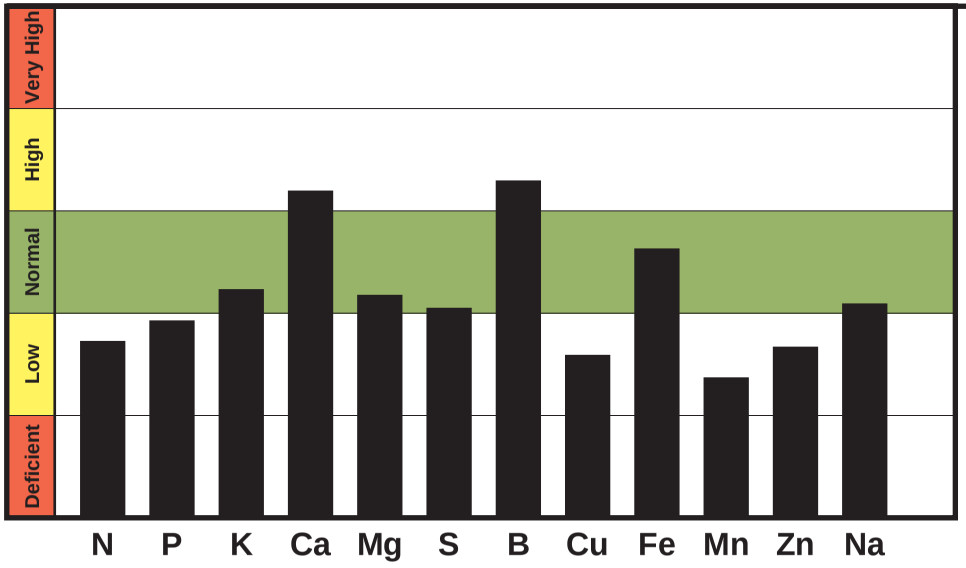
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	1.79 %	2.5 - 3.9
Phosphorus	0.11 %	0.1 - 0.3
Potassium	0.85 %	0.8 - 1.2
Calcium	2.52 %	0.7 - 1.5
Magnesium	0.35 %	0.3 - 0.6
Sulfur	0.16 %	0.1 - 0.4
Boron	96.2 ppm	20 - 45
Copper	5.8 ppm	10 - 30
Iron	205 ppm	50 - 300
Manganese	36 ppm	100 - 800
Zinc	33 ppm	50 - 100
Sodium	330 ppm	0 - 4000

Soil Test	Result	Normal Range
CEC	18.4	
Soil pH	7.6	6.0 - 7.0
Buffer pH	0	
Organic Matter	2.2 %	
Phosphorus	60 m3-ppm	40 - 70
Potassium	328 m3-ppm	190 - 300
Calcium	15816 m3-ppm	2400 - 3400
Magnesium	362 m3-ppm	260 - 430
Copper	3.1 m3-ppm	4.3 - 20.3
Iron	32.2 m3-ppm	9 - 40
Manganese	21 m3-ppm	63 - 218
Zinc	35.6 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

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The nitrogen is a little low in this tree; I would suggest making applications of nitrogen as recommended on the soil test report to supply the tree with nitrogen. The phosphorous is also reporting low in the leaves at this time, even with the good phosphorous level in the soil. High soil pH causes the phosphorous in the soil less available to the plants. You may also want to take a look at the roots on this tree, sometimes low phosphorous in a plant on a good soil test is an indication of a something may be wrong with the root system of the tree. The magnesium is reporting in the lower end of the normal range in the leaves. Keep an eye on the magnesium level in the future, you may need to make a magnesium soil or foliar application. The copper

Continued

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Report To

THE DAVEY TREE EXPERT
CO-SOIL LAB
PO BOX 5193
KENT, OH 44240

Prepared For

CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	718-08-28
Lab Number	PL70397
Soil Lab Number	C04657
Sampled	12-01-2008
Tested	12-10-2008

Comments (continued)

is reporting low in the tree due to the low copper levels in the soil and the high soil pH, as soil pH increases the availability of copper in soil decreases. The same thing happens with the manganese. I would suggest an application of foliar copper and manganese or a direct trunk injection. Foliar applications may require multiple applications during the year. The zinc is also reporting low in the leaves even with a high zinc soil test level. As soil pH increases the zinc availability from the soil also decreases. You can also make zinc applications foliarly or as a direct trunk injection.

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KENT, OH 44240

Prepared For
CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	719-08-29
Lab Number	PL70398
Soil Lab Number	C04658
Sampled	12-01-2008
Tested	12-10-2008

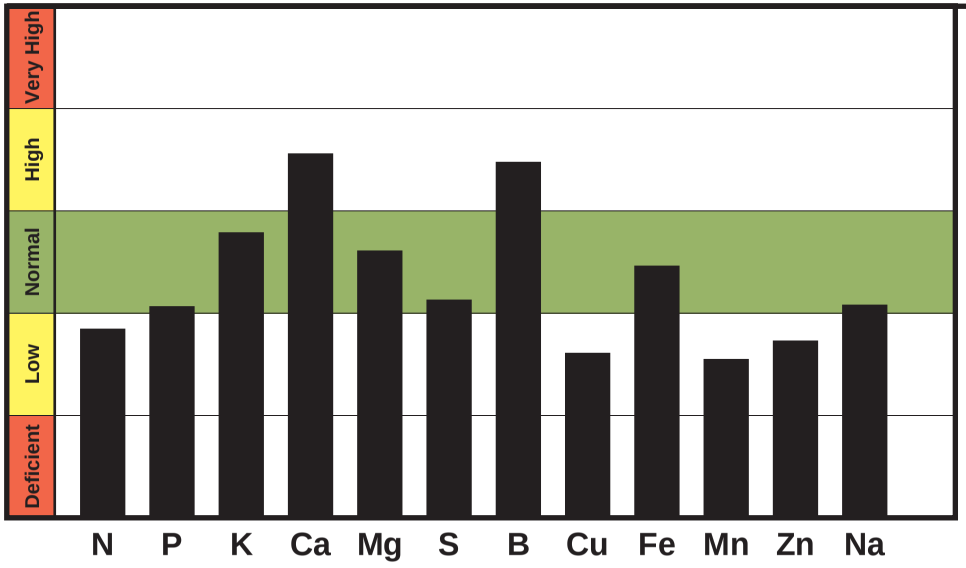
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	2.09 %	2.5 - 3.9
Phosphorus	0.13 %	0.1 - 0.3
Potassium	1.1 %	0.8 - 1.2
Calcium	4.52 %	0.7 - 1.5
Magnesium	0.48 %	0.3 - 0.6
Sulfur	0.18 %	0.1 - 0.4
Boron	129 ppm	20 - 45
Copper	6 ppm	10 - 30
Iron	163 ppm	50 - 300
Manganese	54 ppm	100 - 800
Zinc	36 ppm	50 - 100
Sodium	283 ppm	0 - 4000

Soil Test	Result		Normal Range
CEC	18		
Soil pH	7.7		6.0 - 7.0
Buffer pH	0		
Organic Matter	1	%	
Phosphorus	54	m3-ppm	40 - 70
Potassium	338	m3-ppm	190 - 300
Calcium	15853	m3-ppm	2400 - 3400
Magnesium	307	m3-ppm	260 - 430
Copper	1.9	m3-ppm	4.7 - 20.7
Iron	23.6	m3-ppm	9 - 40
Manganese	23	m3-ppm	64 - 219
Zinc	15.5	m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

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The nitrogen is a little low in this tree; I would suggest making applications of nitrogen as recommended on the soil test report to supply the tree with nitrogen. The phosphorous is also reporting in the lower end of the normal range in the leaves at this time, even with the good phosphorous level in the soil. High soil pH causes the phosphorous in the soil less available to the plants. You may also want to take a look at the roots on this tree, sometimes low phosphorous in a plant on a good soil test is an indication of a something may be wrong with the root system of the tree. The copper is reporting low in the tree due to the low copper levels in the soil and the high soil pH, as soil pH increases the availability of copper in soil decreases. The same thing happens

Continued

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Report To

THE DAVEY TREE EXPERT
CO-SOIL LAB
PO BOX 5193
KENT, OH 44240

Prepared For

CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	719-08-29
Lab Number	PL70398
Soil Lab Number	C04658
Sampled	12-01-2008
Tested	12-10-2008

Comments (continued)

with the manganese. I would suggest an application of foliar copper and manganese or a direct trunk injection. Foliar applications may require multiple applications during the year. The zinc is also reporting low in the leaves even with a high zinc soil test level. As soil pH increases the zinc availability from the soil also decreases. You can also make zinc applications foliarly or as a direct trunk injection.

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KENT, OH 44240

Prepared For
CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	720-08-30
Lab Number	PL70399
Soil Lab Number	C04659
Sampled	12-01-2008
Tested	12-10-2008

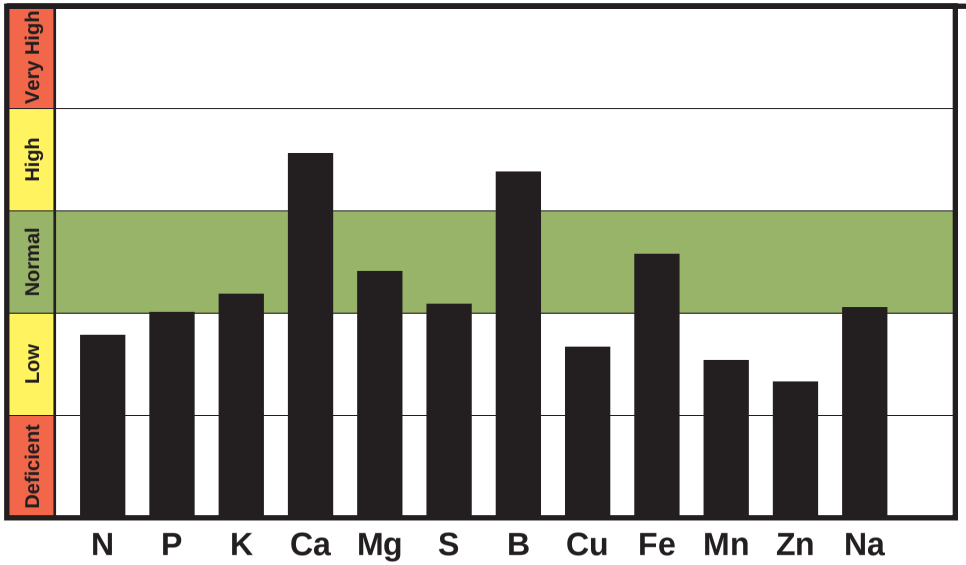
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	1.94 %	2.5 - 3.9
Phosphorus	0.12 %	0.1 - 0.3
Potassium	0.83 %	0.8 - 1.2
Calcium	4.54 %	0.7 - 1.5
Magnesium	0.42 %	0.3 - 0.6
Sulfur	0.17 %	0.1 - 0.4
Boron	112 ppm	20 - 45
Copper	6.6 ppm	10 - 30
Iron	192 ppm	50 - 300
Manganese	53 ppm	100 - 800
Zinc	16 ppm	50 - 100
Sodium	187 ppm	0 - 4000

Soil Test	Result	Normal Range
CEC	18.8	
Soil pH	7.7	6.0 - 7.0
Buffer pH	0	
Organic Matter	1.8 %	
Phosphorus	30 m3-ppm	40 - 70
Potassium	317 m3-ppm	200 - 310
Calcium	66099 m3-ppm	2500 - 3500
Magnesium	426 m3-ppm	260 - 440
Copper	1.7 m3-ppm	4.0 - 20.0
Iron	21.3 m3-ppm	9 - 40
Manganese	19 m3-ppm	68 - 223
Zinc	11.5 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

There are many similarities with all these plant samples in the pecans. The soil pH is high due to the naturally high occurring soil pH in the Austin area. Sulfur can be applied to lower the soil pH but this would be a task that would need to be done on a yearly basis. Also I suspect that the irrigation water will have a high soil pH unless it is being treated. The boron is high in all the samples; this is likely coming from the irrigation water that is in the area. In many areas of the west the boron levels are high due to the irrigation water. The calcium is also high in all the plant analysis samples as well as the soil analysis, this goes along with the high soil pH that is due to the naturally occurring calcium carbonate that is in the soil.

The nitrogen is a little low in this tree; I would suggest making applications of nitrogen as recommended on the soil test report to supply the tree with nitrogen. The phosphorous is also reporting in the lower end of the normal range in the leaves at this time, even with the good phosphorous level in the soil. High soil pH causes the phosphorous in the soil less available to the plants. You may also want to take a look at the roots on this tree, sometimes low phosphorous in a plant on a good soil test is an indication of a something may be wrong with the root system of the tree. The copper is reporting low in the tree due to the low copper levels in the soil and the high soil pH, as soil pH increases the availability of copper in soil decreases. The same thing happens

Continued

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Report To

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Prepared For

CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	720-08-30
Lab Number	PL70399
Soil Lab Number	C04659
Sampled	12-01-2008
Tested	12-10-2008

Comments (continued)

with the manganese. I would suggest an application of foliar copper and manganese or a direct trunk injection. Foliar applications may require multiple applications during the year. The zinc is also reporting low in the leaves even with a high zinc soil test level. As soil pH increases the zinc availability from the soil also decreases. You can also make zinc applications foliarly or as a direct trunk injection.

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Prepared For
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Sample Information

Sample ID	721-08-31
Lab Number	PL70400
Soil Lab Number	C04660
Sampled	12-01-2008
Tested	12-10-2008

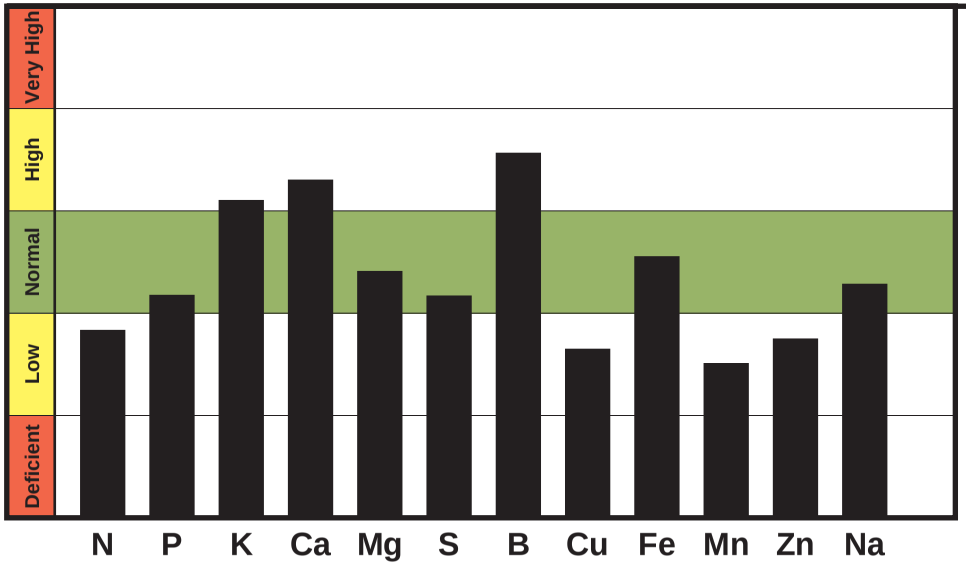
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	2.06 %	2.5 - 3.9
Phosphorus	0.15 %	0.1 - 0.3
Potassium	1.65 %	0.8 - 1.2
Calcium	3.11 %	0.7 - 1.5
Magnesium	0.42 %	0.3 - 0.6
Sulfur	0.19 %	0.1 - 0.4
Boron	145 ppm	20 - 45
Copper	6.4 ppm	10 - 30
Iron	186 ppm	50 - 300
Manganese	50 ppm	100 - 800
Zinc	37 ppm	50 - 100
Sodium	1100 ppm	0 - 4000

Soil Test	Result	Normal Range
CEC	19.4	
Soil pH	7.6	6.0 - 7.0
Buffer pH	0	
Organic Matter	2.3 %	
Phosphorus	43 m3-ppm	40 - 70
Potassium	448 m3-ppm	200 - 310
Calcium	17380 m3-ppm	2600 - 3600
Magnesium	472 m3-ppm	270 - 450
Copper	1.8 m3-ppm	3.8 - 19.8
Iron	17.1 m3-ppm	9 - 40
Manganese	25 m3-ppm	64 - 219
Zinc	17.3 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments from Agronomist Scott Anderson

(The following comments apply to lab numbers 70400, 70401, 70402, 70403, 70405, 70406, 70408, 70409, 70412, 70413, 70414, 70416, 70418, 70419, 70420 and 70422)

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Sample Information

Sample ID	722-08-32
Lab Number	PL70401
Soil Lab Number	C04661
Sampled	12-01-2008
Tested	12-10-2008

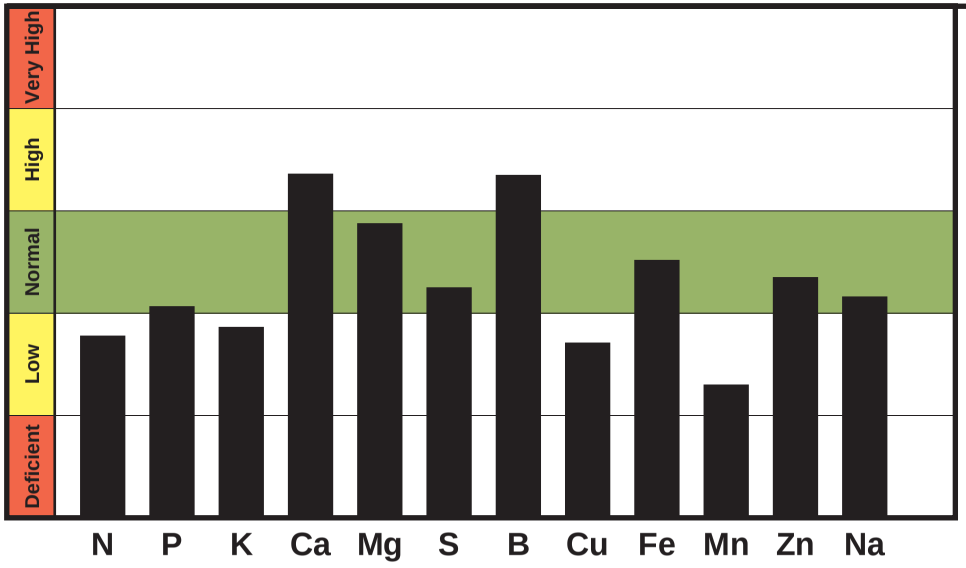
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	1.92 %	2.5 - 3.9
Phosphorus	0.13 %	0.1 - 0.3
Potassium	0.64 %	0.8 - 1.2
Calcium	3.43 %	0.7 - 1.5
Magnesium	0.56 %	0.3 - 0.6
Sulfur	0.21 %	0.1 - 0.4
Boron	106 ppm	20 - 45
Copper	7 ppm	10 - 30
Iron	177 ppm	50 - 300
Manganese	29 ppm	100 - 800
Zinc	67 ppm	50 - 100
Sodium	603 ppm	0 - 4000

Soil Test	Result	Normal Range
CEC	19.8	
Soil pH	7.6	6.0 - 7.0
Buffer pH	0	
Organic Matter	6.8 %	
Phosphorus	37 m3-ppm	40 - 70
Potassium	275 m3-ppm	200 - 310
Calcium	66159 m3-ppm	2600 - 3700
Magnesium	575 m3-ppm	270 - 450
Copper	4.2 m3-ppm	3.6 - 19.6
Iron	27.8 m3-ppm	9 - 40
Manganese	19 m3-ppm	86 - 241
Zinc	30.3 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments from Agronomist Scott Anderson

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Sample Information

Sample ID	723-08-34
Lab Number	PL70402
Soil Lab Number	C04662
Sampled	12-01-2008
Tested	12-10-2008

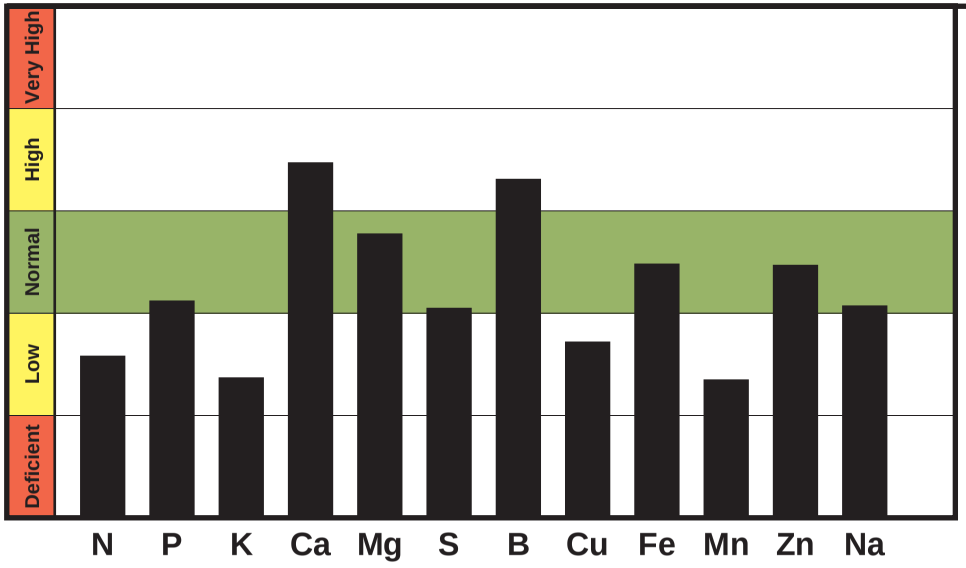
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	1.43 %	2.5 - 3.9
Phosphorus	0.14 %	0.1 - 0.3
Potassium	0.27 %	0.8 - 1.2
Calcium	4.04 %	0.7 - 1.5
Magnesium	0.53 %	0.3 - 0.6
Sulfur	0.16 %	0.1 - 0.4
Boron	99.1 ppm	20 - 45
Copper	7.1 ppm	10 - 30
Iron	168 ppm	50 - 300
Manganese	34 ppm	100 - 800
Zinc	73 ppm	50 - 100
Sodium	252 ppm	0 - 4000

Soil Test	Result	Normal Range
CEC	20.4	
Soil pH	7.8	6.0 - 7.0
Buffer pH	0	
Organic Matter	5.3 %	
Phosphorus	27 m3-ppm	40 - 70
Potassium	413 m3-ppm	200 - 320
Calcium	66095 m3-ppm	2700 - 3800
Magnesium	621 m3-ppm	270 - 460
Copper	6.8 m3-ppm	4.6 - 20.6
Iron	20.4 m3-ppm	9 - 40
Manganese	17 m3-ppm	93 - 248
Zinc	43.5 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments from Agronomist Scott Anderson

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Sample Information

Sample ID	724-08-35
Lab Number	PL70403
Soil Lab Number	C04663
Sampled	12-01-2008
Tested	12-10-2008

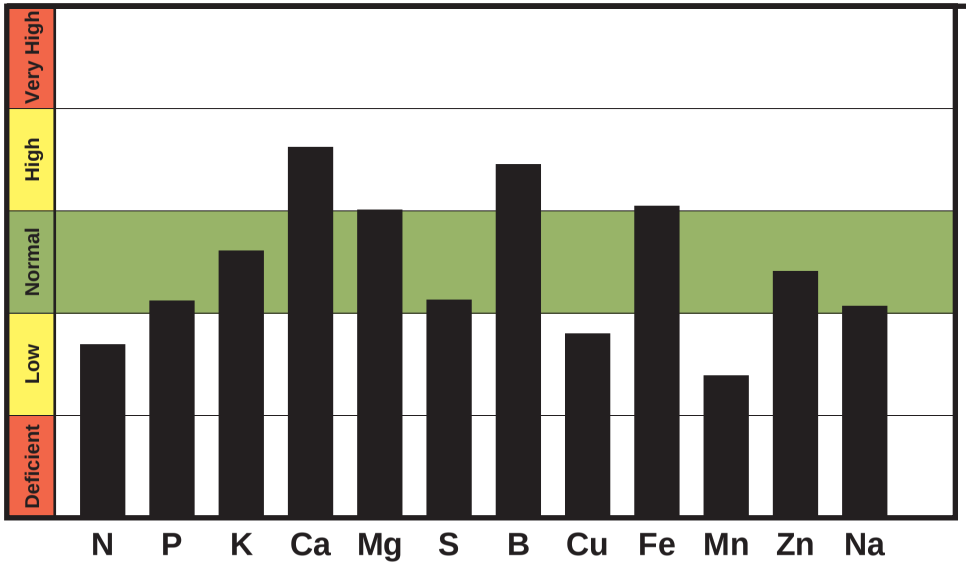
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	1.71 %	2.5 - 3.9
Phosphorus	0.14 %	0.1 - 0.3
Potassium	1.02 %	0.8 - 1.2
Calcium	4.87 %	0.7 - 1.5
Magnesium	0.6 %	0.3 - 0.6
Sulfur	0.18 %	0.1 - 0.4
Boron	125 ppm	20 - 45
Copper	7.9 ppm	10 - 30
Iron	345 ppm	50 - 300
Manganese	38 ppm	100 - 800
Zinc	70 ppm	50 - 100
Sodium	238 ppm	0 - 4000

Soil Test	Result	Normal Range
CEC	19.5	
Soil pH	7.7	6.0 - 7.0
Buffer pH	0	
Organic Matter	3.9 %	
Phosphorus	29 m3-ppm	40 - 70
Potassium	308 m3-ppm	200 - 310
Calcium	66165 m3-ppm	2600 - 3600
Magnesium	526 m3-ppm	270 - 450
Copper	4.5 m3-ppm	4.0 - 20.0
Iron	28.7 m3-ppm	9 - 40
Manganese	16 m3-ppm	79 - 234
Zinc	36.9 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments from Agronomist Scott Anderson

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Sample Information

Sample ID	725-08-36
Lab Number	PL70404
Soil Lab Number	C04664
Sampled	12-01-2008
Tested	12-10-2008

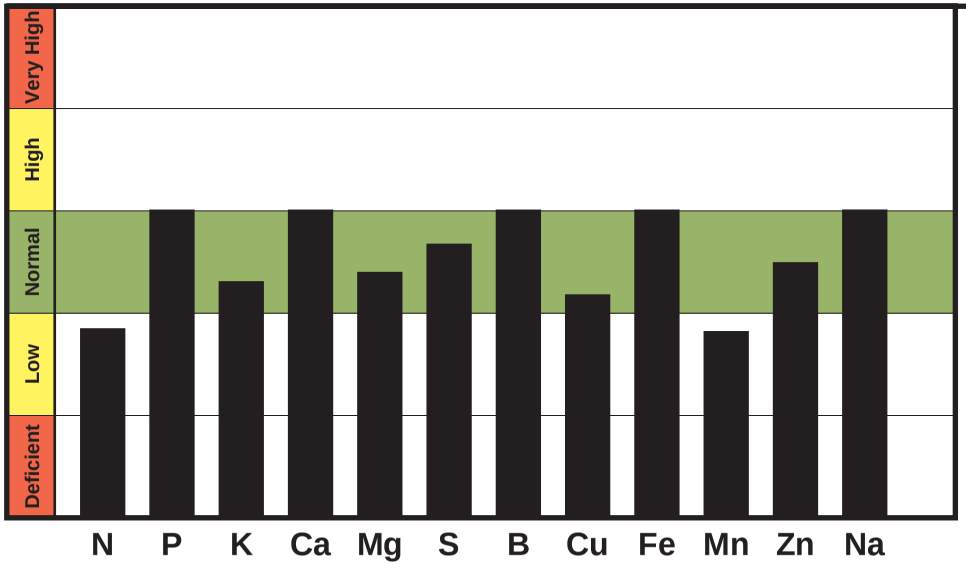
Plant Tissue Analysis Report

Type: Walnut, Black *(Juglans nigra)* **Part:** Youngest/ Recently Mature Leaves **Stage:** Mid Summer

Plant Test	Result	Normal Range
Nitrogen	1.68 %	2.0 - 2.6
Phosphorus	0.33 %	0.2 - 0.2
Potassium	1.09 %	1.0 - 1.3
Calcium	3.07 %	1.0 - 3.0
Magnesium	0.58 %	0.3 - 1.0
Sulfur	0.12 %	0.1 - 0.1
Boron	85.1 ppm	50 - 80
Copper	6.2 ppm	5 - 12
Iron	293 ppm	75 - 150
Manganese	65 ppm	80 - 200
Zinc	32 ppm	15 - 50
Sodium	821 ppm	0 - 52

Soil Test	Result	Normal Range
CEC	19.9	
Soil pH	7.7	6.0 - 7.5
Buffer pH	0	
Organic Matter	2.7 %	
Phosphorus	29 m3-ppm	40 - 70
Potassium	357 m3-ppm	200 - 310
Calcium	66164 m3-ppm	2700 - 3700
Magnesium	562 m3-ppm	270 - 450
Copper	1.9 m3-ppm	4.0 - 20.0
Iron	24 m3-ppm	9 - 40
Manganese	19 m3-ppm	73 - 228
Zinc	10.8 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

See attached letter.

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Sample Information

Sample ID	726-08-37
Lab Number	PL70405
Soil Lab Number	C04665
Sampled	12-01-2008
Tested	12-10-2008

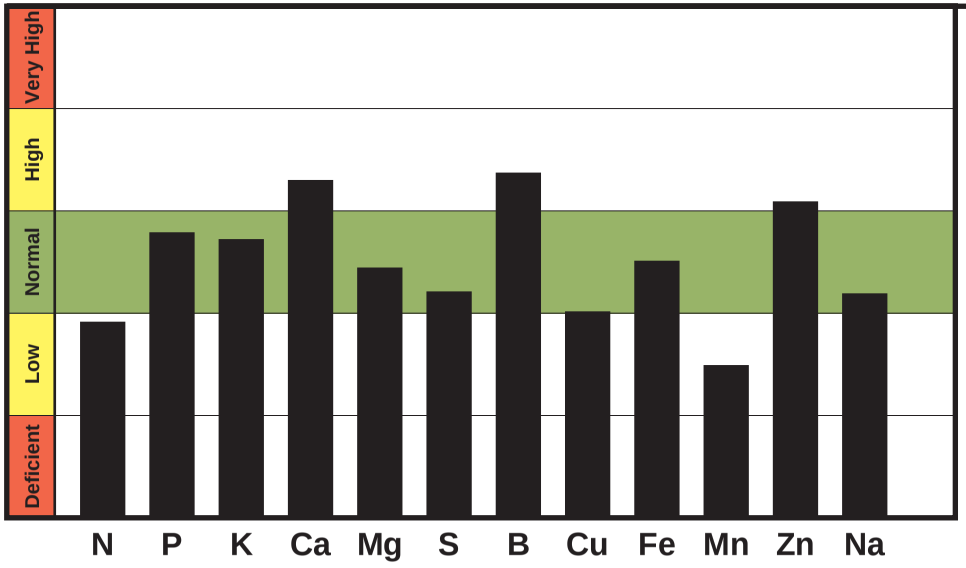
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	2.26 %	2.5 - 3.9
Phosphorus	0.26 %	0.1 - 0.3
Potassium	1.07 %	0.8 - 1.2
Calcium	3.09 %	0.7 - 1.5
Magnesium	0.43 %	0.3 - 0.6
Sulfur	0.2 %	0.1 - 0.4
Boron	110 ppm	20 - 45
Copper	10.1 ppm	10 - 30
Iron	175 ppm	50 - 300
Manganese	48 ppm	100 - 800
Zinc	132 ppm	50 - 100
Sodium	724 ppm	0 - 4000

Soil Test	Result	Normal Range
CEC	20.4	
Soil pH	7.7	6.0 - 7.0
Buffer pH	0	
Organic Matter	2.2 %	
Phosphorus	33 m3-ppm	40 - 70
Potassium	478 m3-ppm	200 - 320
Calcium	66180 m3-ppm	2700 - 3800
Magnesium	602 m3-ppm	270 - 460
Copper	3.2 m3-ppm	4.1 - 20.1
Iron	32.7 m3-ppm	9 - 40
Manganese	19 m3-ppm	70 - 225
Zinc	22.2 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments from Agronomist Scott Anderson

(The following comments apply to lab numbers 70400, 70401, 70402, 70403, 70405, 70406, 70408, 70409, 70412, 70413, 70414, 70416, 70418, 70419, 70420 and 70422)

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Sample Information

Sample ID	727-08-38
Lab Number	PL70406
Soil Lab Number	C04666
Sampled	12-01-2008
Tested	12-10-2008

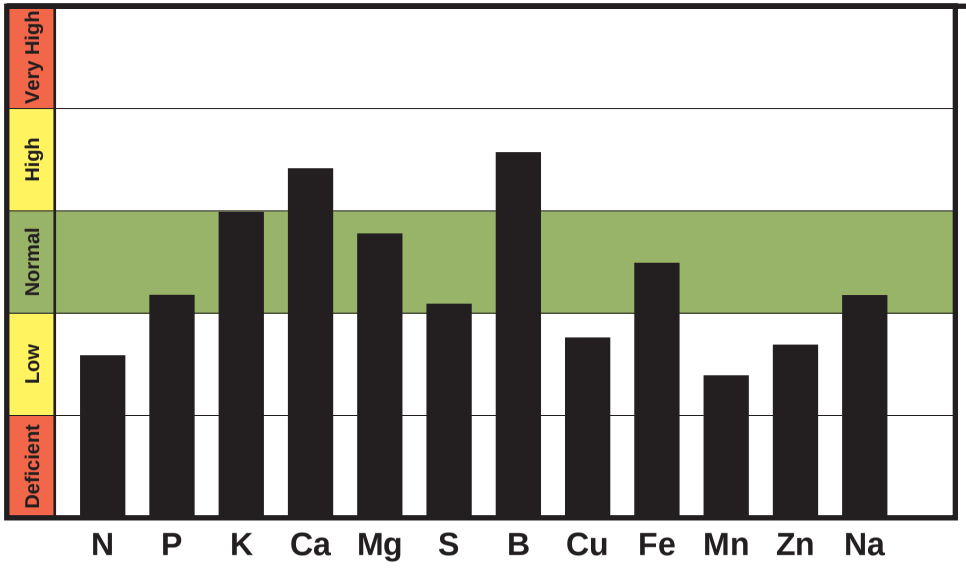
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	1.44 %	2.5 - 3.9
Phosphorus	0.15 %	0.1 - 0.3
Potassium	1.19 %	0.8 - 1.2
Calcium	3.72 %	0.7 - 1.5
Magnesium	0.53 %	0.3 - 0.6
Sulfur	0.17 %	0.1 - 0.4
Boron	146 ppm	20 - 45
Copper	7.5 ppm	10 - 30
Iron	170 ppm	50 - 300
Manganese	38 ppm	100 - 800
Zinc	34 ppm	50 - 100
Sodium	657 ppm	0 - 4000

Soil Test	Result		Normal Range
CEC	20.3		
Soil pH	7.7		6.0 - 7.0
Buffer pH	0		
Organic Matter	2	%	
Phosphorus	24	m3-ppm	40 - 70
Potassium	374	m3-ppm	200 - 320
Calcium	66108	m3-ppm	2700 - 3800
Magnesium	612	m3-ppm	270 - 450
Copper	1	m3-ppm	3.9 - 19.9
Iron	18.6	m3-ppm	9 - 40
Manganese	23	m3-ppm	69 - 224
Zinc	4.5	m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments from Agronomist Scott Anderson

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Sample Information

Sample ID	728-08-40
Lab Number	PL70407
Soil Lab Number	C04667
Sampled	12-01-2008
Tested	12-10-2008

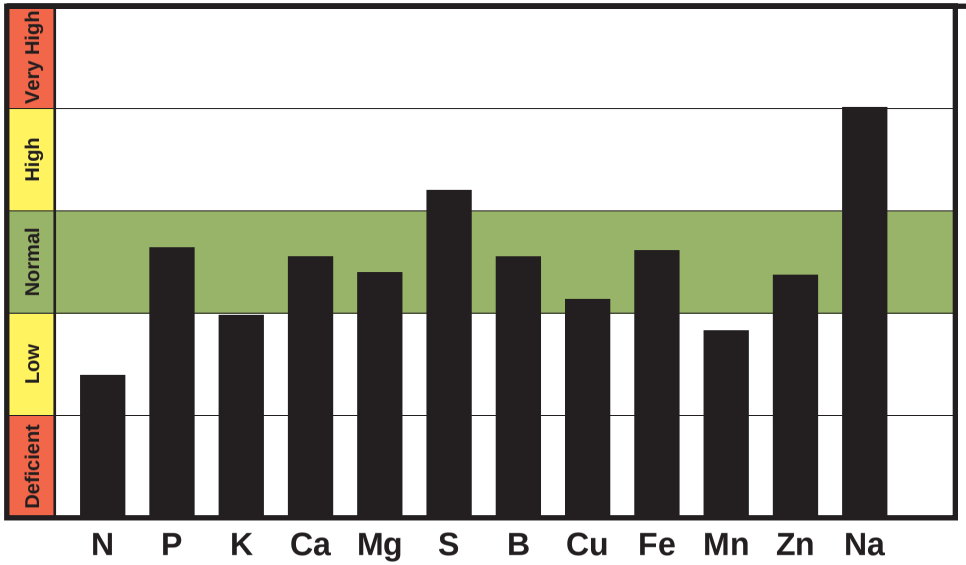
Plant Tissue Analysis Report

Type: Velvet/Modesto Ash *(Fraxinus velutina)* **Part:** Youngest/ Recently Mature Leaves **Stage:** Mid Summer

Plant Test	Result	Normal Range
Nitrogen	0.73 %	1.9 - 2.5
Phosphorus	0.28 %	0.2 - 0.3
Potassium	1 %	1.0 - 2.5
Calcium	1.47 %	0.9 - 1.9
Magnesium	0.31 %	0.2 - 0.4
Sulfur	0.29 %	0.1 - 0.2
Boron	36.3 ppm	20 - 50
Copper	6.9 ppm	5 - 20
Iron	193 ppm	30 - 300
Manganese	32 ppm	39 - 300
Zinc	24 ppm	20 - 31
Sodium	2970 ppm	1 - 40

Soil Test	Result		Normal Range
CEC	19.6		
Soil pH	7.7		6.0 - 6.8
Buffer pH	0		
Organic Matter	2	%	
Phosphorus	13	m3-ppm	40 - 70
Potassium	396	m3-ppm	200 - 310
Calcium	66156	m3-ppm	2600 - 3700
Magnesium	515	m3-ppm	270 - 450
Copper	1.3	m3-ppm	3.6 - 19.6
Iron	16.5	m3-ppm	9 - 40
Manganese	20	m3-ppm	69 - 224
Zinc	4.7	m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

Overall the plant analysis is reporting the tree a little low in nitrogen. I would suggest making nitrogen applications based on the recommendations on the soil test report. The phosphorous is reporting in the normal range in the tissue even with the high soil pH and the low phosphorous soil test level. The application of additional phosphorous would help to build the soil test level, but according to the tissue analysis the phosphorous is reporting in the normal range. The potassium is reporting a little low even with the high potassium soil test level. At this time the only way to get more potassium into the tree is to continue to raise the soil test levels and try to overcome the competition from that high calcium and magnesium soil test levels. The sulfur is reporting a little high for some reason; this is nothing to be worry about at this time. The copper is reporting in the lower end of the normal range, this level is due to the high soil pH which is causing the copper to not be available to the tree. The manganese is reporting low in the tree at this time, this too is due to the high soil pH. Applications of soil applied manganese and copper would not be of benefit to the trees until the soil pH is lower. And even then copper and manganese are better applied as foliar applications or as a trunk injection. The zinc is reporting in the lower end of the normal range at this time. You may also want to make a trunk injection of zinc sometime in the future because when the other nutrient levels are corrected it is likely the zinc will fall into the low range. Trunk injections should be done by a trained arborist.

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Sample Information

Sample ID	729-08-41
Lab Number	PL70408
Soil Lab Number	C04668
Sampled	12-01-2008
Tested	12-10-2008

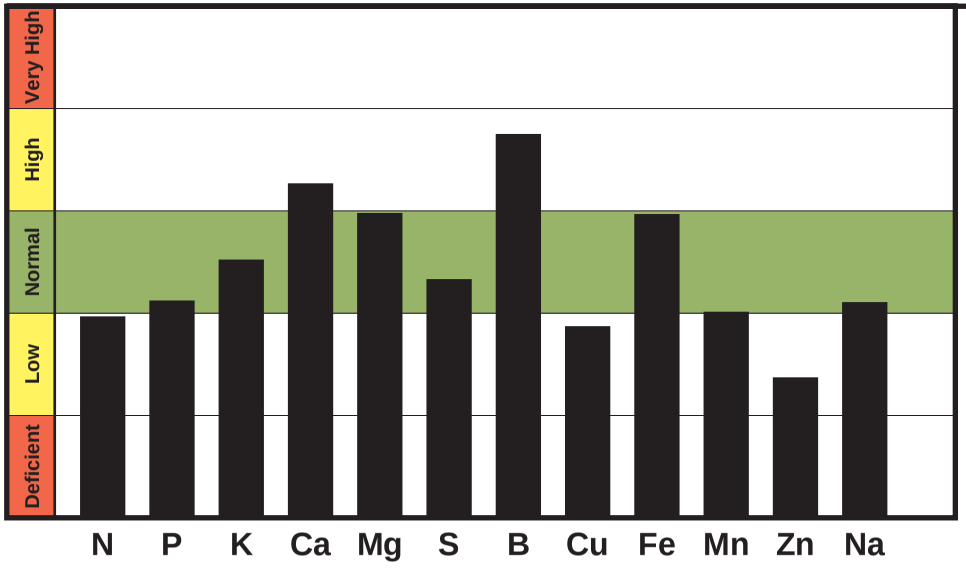
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	2.39 %	2.5 - 3.9
Phosphorus	0.14 %	0.1 - 0.3
Potassium	0.98 %	0.8 - 1.2
Calcium	2.91 %	0.7 - 1.5
Magnesium	0.59 %	0.3 - 0.6
Sulfur	0.23 %	0.1 - 0.4
Boron	178 ppm	20 - 45
Copper	8.6 ppm	10 - 30
Iron	289 ppm	50 - 300
Manganese	101 ppm	100 - 800
Zinc	18 ppm	50 - 100
Sodium	381 ppm	0 - 4000

Soil Test	Result	Normal Range
CEC	20.1	
Soil pH	7.7	6.0 - 7.0
Buffer pH	0	
Organic Matter	1.6 %	
Phosphorus	27 m3-ppm	40 - 70
Potassium	398 m3-ppm	200 - 320
Calcium	66111 m3-ppm	2700 - 3700
Magnesium	572 m3-ppm	270 - 450
Copper	1.3 m3-ppm	4.0 - 20.0
Iron	11.5 m3-ppm	9 - 40
Manganese	20 m3-ppm	67 - 222
Zinc	13.8 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments from Agronomist Scott Anderson

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Prepared For
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Sample Information

Sample ID	730-08-43
Lab Number	PL70409
Soil Lab Number	C04669
Sampled	12-01-2008
Tested	12-10-2008

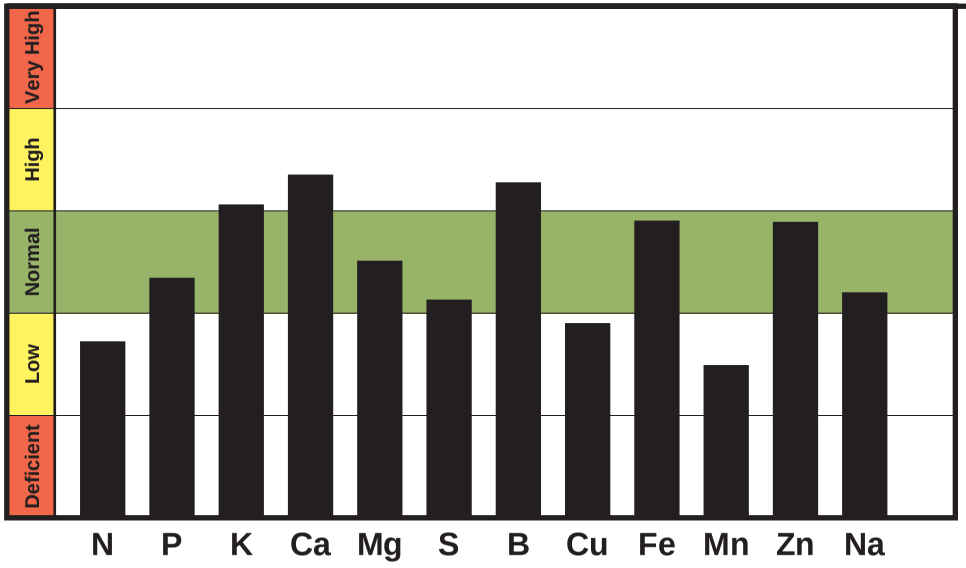
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	1.78 %	2.5 - 3.9
Phosphorus	0.18 %	0.1 - 0.3
Potassium	1.44 %	0.8 - 1.2
Calcium	3.38 %	0.7 - 1.5
Magnesium	0.45 %	0.3 - 0.6
Sulfur	0.18 %	0.1 - 0.4
Boron	92.9 ppm	20 - 45
Copper	8.9 ppm	10 - 30
Iron	273 ppm	50 - 300
Manganese	48 ppm	100 - 800
Zinc	94 ppm	50 - 100
Sodium	764 ppm	0 - 4000

Soil Test	Result		Normal Range
CEC	19.2		
Soil pH	7.9		6.0 - 7.0
Buffer pH	0		
Organic Matter	1	%	
Phosphorus	29	m3-ppm	40 - 70
Potassium	342	m3-ppm	200 - 310
Calcium	17271	m3-ppm	2600 - 3600
Magnesium	471	m3-ppm	260 - 440
Copper	1.5	m3-ppm	5.2 - 21.2
Iron	16.1	m3-ppm	9 - 40
Manganese	26	m3-ppm	78 - 233
Zinc	6.6	m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments from Agronomist Scott Anderson

(The following comments apply to lab numbers 70400, 70401, 70402, 70403, 70405, 70406, 70408, 70409, 70412, 70413, 70414, 70416, 70418, 70419, 70420 and 70422)

See Attached letter

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Report To
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Prepared For
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AUSTIN, TX

Sample Information

Sample ID	731-08-46
Lab Number	PL70410
Soil Lab Number	C04670
Sampled	12-01-2008
Tested	12-10-2008

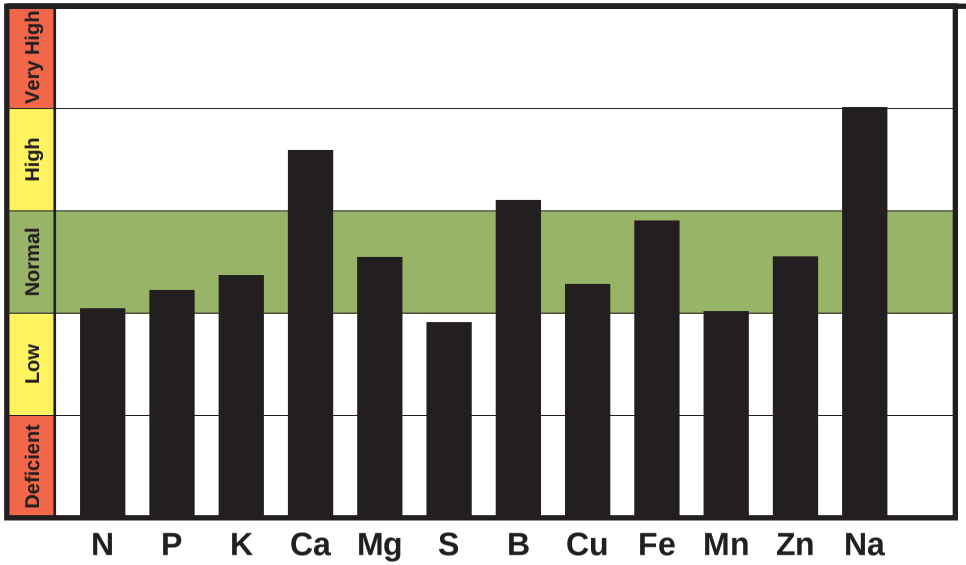
Plant Tissue Analysis Report

Type: Cottonwood *(Populus)* **Part:** Youngest/ Recently Mature Leaves **Stage:** Mid Summer

Plant Test	Result	Normal Range
Nitrogen	1.83 %	1.8 - 2.6
Phosphorus	0.18 %	0.1 - 0.3
Potassium	1.36 %	1.0 - 2.0
Calcium	3.29 %	1.3 - 2.3
Magnesium	0.47 %	0.2 - 0.7
Sulfur	0.19 %	0.2 - 0.3
Boron	94.9 ppm	30 - 84
Copper	9.1 ppm	5 - 20
Iron	276 ppm	75 - 300
Manganese	42 ppm	40 - 300
Zinc	68 ppm	30 - 100
Sodium	1950 ppm	1 - 25

Soil Test	Result		Normal Range
CEC	20.3		
Soil pH	7.6		6.0 - 6.8
Buffer pH	0		
Organic Matter	2.1	%	
Phosphorus	49	m3-ppm	40 - 70
Potassium	497	m3-ppm	200 - 320
Calcium	14845	m3-ppm	2700 - 3800
Magnesium	573	m3-ppm	270 - 450
Copper	7	m3-ppm	4.0 - 20.0
Iron	48.3	m3-ppm	9 - 40
Manganese	14	m3-ppm	63 - 218
Zinc	32.1	m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

(The following comments apply to lab numbers 70378, 70410, 70411 and 70421)

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Sample Information

Sample ID	732-08-47
Lab Number	PL70411
Soil Lab Number	C04671
Sampled	12-01-2008
Tested	12-10-2008

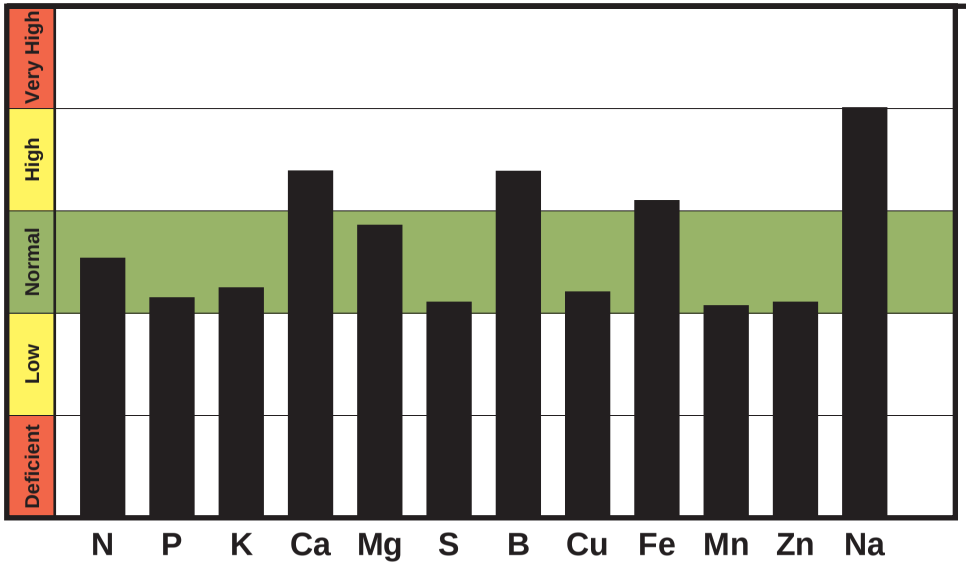
Plant Tissue Analysis Report

Type: Cottonwood *(Populus)* **Part:** Youngest/ Recently Mature Leaves **Stage:** Mid Summer

Plant Test	Result	Normal Range
Nitrogen	2.25 %	1.8 - 2.6
Phosphorus	0.17 %	0.1 - 0.3
Potassium	1.24 %	1.0 - 2.0
Calcium	2.95 %	1.3 - 2.3
Magnesium	0.64 %	0.2 - 0.7
Sulfur	0.21 %	0.2 - 0.3
Boron	128 ppm	30 - 84
Copper	8 ppm	5 - 20
Iron	365 ppm	75 - 300
Manganese	57 ppm	40 - 300
Zinc	37 ppm	30 - 100
Sodium	519 ppm	1 - 25

Soil Test	Result		Normal Range
CEC	20.3		
Soil pH	7.6		6.0 - 6.8
Buffer pH	0		
Organic Matter	3.4	%	
Phosphorus	46	m3-ppm	40 - 70
Potassium	421	m3-ppm	200 - 320
Calcium	17426	m3-ppm	2700 - 3800
Magnesium	599	m3-ppm	270 - 450
Copper	8	m3-ppm	3.9 - 19.9
Iron	47.4	m3-ppm	9 - 40
Manganese	12	m3-ppm	69 - 224
Zinc	45.3	m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

(The following comments apply to lab numbers 70378, 70410, 70411 and 70421)

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Sample Information

Sample ID	733-08-48
Lab Number	PL70412
Soil Lab Number	C04672
Sampled	12-01-2008
Tested	12-10-2008

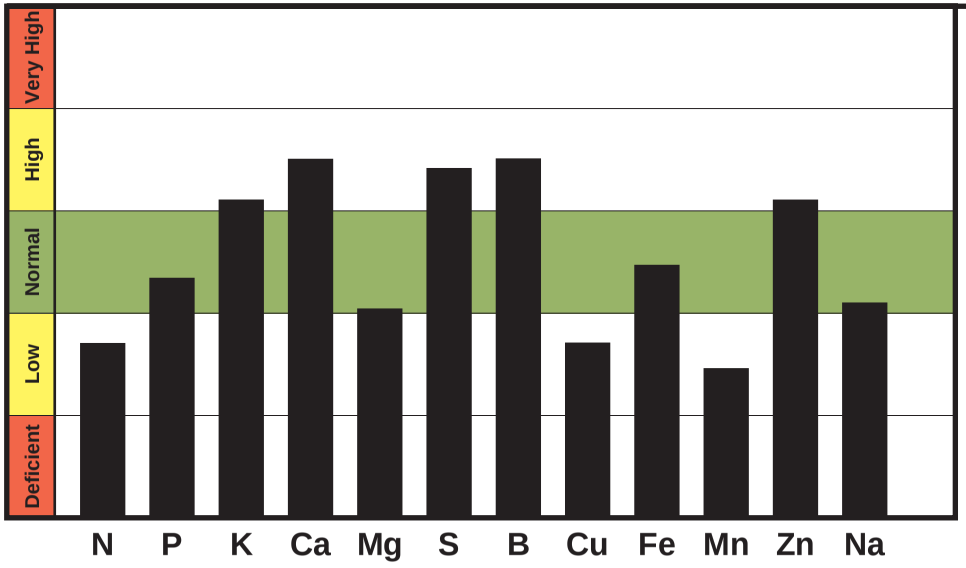
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	1.74 %	2.5 - 3.9
Phosphorus	0.18 %	0.1 - 0.3
Potassium	1.67 %	0.8 - 1.2
Calcium	4.23 %	0.7 - 1.5
Magnesium	0.31 %	0.3 - 0.6
Sulfur	1.05 %	0.1 - 0.4
Boron	135 ppm	20 - 45
Copper	7 ppm	10 - 30
Iron	165 ppm	50 - 300
Manganese	45 ppm	100 - 800
Zinc	139 ppm	50 - 100
Sodium	367 ppm	0 - 4000

Soil Test	Result		Normal Range
CEC	20.5		
Soil pH	7.7		6.0 - 7.0
Buffer pH	0		
Organic Matter	2.7	%	
Phosphorus	16	m3-ppm	40 - 70
Potassium	331	m3-ppm	200 - 320
Calcium	14771	m3-ppm	2700 - 3800
Magnesium	658	m3-ppm	270 - 460
Copper	14.9	m3-ppm	3.6 - 19.6
Iron	66.8	m3-ppm	9 - 40
Manganese	22	m3-ppm	73 - 228
Zinc	39.7	m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments from Agronomist Scott Anderson

(The following comments apply to lab numbers 70400, 70401, 70402, 70403, 70405, 70406, 70408, 70409, 70412, 70413, 70414, 70416, 70418, 70419, 70420 and 70422)

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Sample Information

Sample ID	734-08-49
Lab Number	PL70413
Soil Lab Number	C04673
Sampled	12-01-2008
Tested	12-10-2008

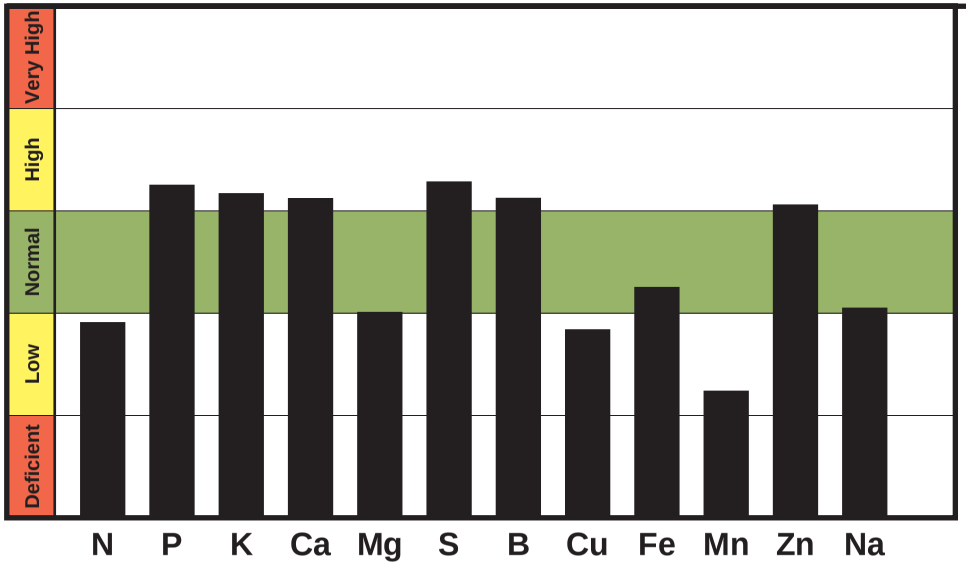
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	2.25 %	2.5 - 3.9
Phosphorus	0.47 %	0.1 - 0.3
Potassium	1.97 %	0.8 - 1.2
Calcium	2.12 %	0.7 - 1.5
Magnesium	0.3 %	0.3 - 0.6
Sulfur	0.84 %	0.1 - 0.4
Boron	65.7 ppm	20 - 45
Copper	8.3 ppm	10 - 30
Iron	111 ppm	50 - 300
Manganese	23 ppm	100 - 800
Zinc	120 ppm	50 - 100
Sodium	166 ppm	0 - 4000

Soil Test	Result	Normal Range
CEC	21.3	
Soil pH	7.7	6.0 - 7.0
Buffer pH	0	
Organic Matter	2.1 %	
Phosphorus	37 m3-ppm	40 - 70
Potassium	452 m3-ppm	210 - 320
Calcium	14881 m3-ppm	2800 - 4000
Magnesium	733 m3-ppm	280 - 460
Copper	5.4 m3-ppm	4.2 - 20.2
Iron	44.7 m3-ppm	9 - 40
Manganese	21 m3-ppm	70 - 225
Zinc	34 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments from Agronomist Scott Anderson

(The following comments apply to lab numbers 70400, 70401, 70402, 70403, 70405, 70406, 70408, 70409, 70412, 70413, 70414, 70416, 70418, 70419, 70420 and 70422)

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Sample Information

Sample ID	735-08-50
Lab Number	PL70414
Soil Lab Number	C04674
Sampled	12-01-2008
Tested	12-10-2008

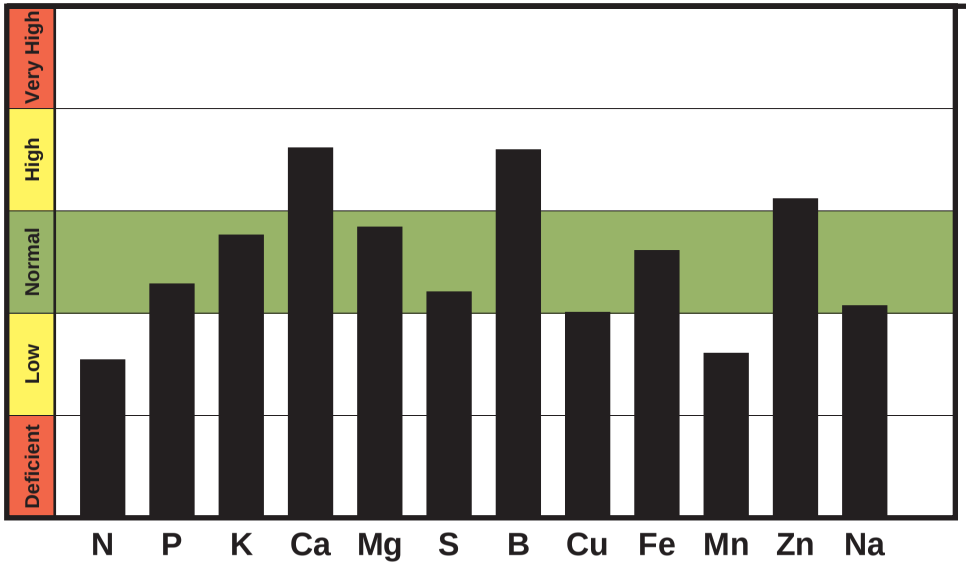
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	1.34 %	2.5 - 3.9
Phosphorus	0.17 %	0.1 - 0.3
Potassium	1.09 %	0.8 - 1.2
Calcium	4.84 %	0.7 - 1.5
Magnesium	0.55 %	0.3 - 0.6
Sulfur	0.2 %	0.1 - 0.4
Boron	151 ppm	20 - 45
Copper	10 ppm	10 - 30
Iron	201 ppm	50 - 300
Manganese	60 ppm	100 - 800
Zinc	144 ppm	50 - 100
Sodium	259 ppm	0 - 4000

Soil Test	Result	Normal Range
CEC	21.3	
Soil pH	7.6	6.0 - 7.0
Buffer pH	0	
Organic Matter	2.2 %	
Phosphorus	36 m3-ppm	40 - 70
Potassium	520 m3-ppm	210 - 320
Calcium	16198 m3-ppm	2800 - 4000
Magnesium	700 m3-ppm	280 - 460
Copper	4.4 m3-ppm	3.6 - 19.6
Iron	35.9 m3-ppm	9 - 40
Manganese	23 m3-ppm	63 - 218
Zinc	26.8 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments from Agronomist Scott Anderson

(The following comments apply to lab numbers 70400, 70401, 70402, 70403, 70405, 70406, 70408, 70409, 70412, 70413, 70414, 70416, 70418, 70419, 70420 and 70422)

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Prepared For
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Sample Information

Sample ID	736-08-51
Lab Number	PL70415
Soil Lab Number	C04675
Sampled	12-01-2008
Tested	12-10-2008

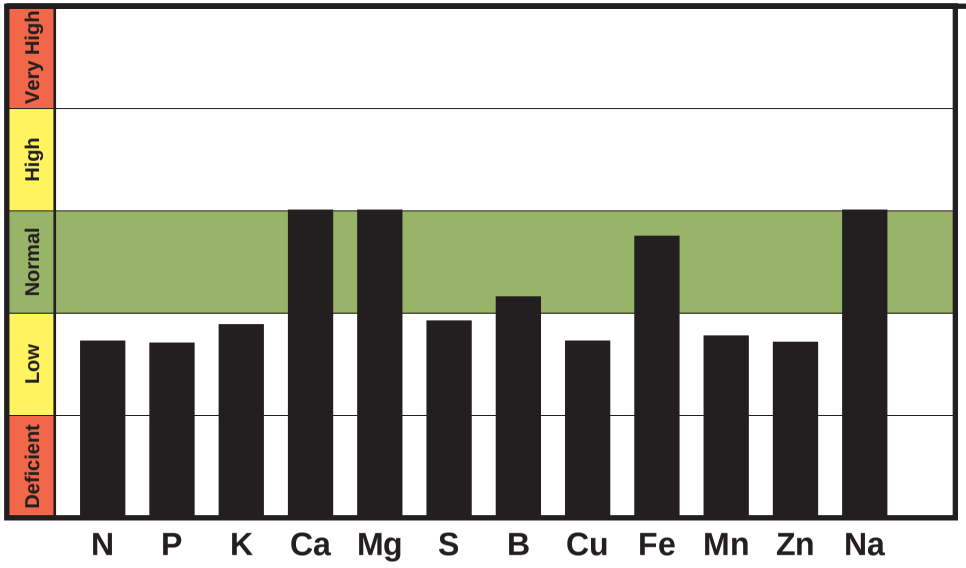
Plant Tissue Analysis Report

Type: Ceder, Eastern/Red *(Juniperus virginiana)* **Part:** Youngest/ Recently Mature Leaves **Stage:** Mid Summer

Plant Test	Result	Normal Range
Nitrogen	0.95 %	1.3 - 1.9
Phosphorus	0.14 %	0.2 - 0.3
Potassium	0.88 %	1.0 - 1.9
Calcium	3 %	1.0 - 3.0
Magnesium	0.29 %	0.1 - 0.3
Sulfur	0.11 %	0.1 - 0.2
Boron	28.8 ppm	25 - 50
Copper	3.6 ppm	5 - 20
Iron	231 ppm	30 - 300
Manganese	77 ppm	100 - 300
Zinc	17 ppm	24 - 50
Sodium	113 ppm	0 - 25

Soil Test	Result	Normal Range
CEC	20.6	
Soil pH	7.7	6.0 - 6.5
Buffer pH	0	
Organic Matter	4.3 %	
Phosphorus	81 m3-ppm	40 - 70
Potassium	462 m3-ppm	200 - 320
Calcium	66187 m3-ppm	2700 - 3800
Magnesium	629 m3-ppm	270 - 460
Copper	4 m3-ppm	5.5 - 21.5
Iron	40.8 m3-ppm	9 - 40
Manganese	21 m3-ppm	81 - 236
Zinc	38.2 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

This tree is reporting low in all the major nutrients even with the strong soil test levels. The soil pH is influencing the phosphorous uptake even with the strong soil test levels. Lowering the soil pH is likely not practical in this area either. You may want to try to apply additional phosphorous and potassium by drilling holes in the soil and putting the fertilizer in concentrated areas and see it the roots can pick the nutrients up that way. I would suggest making nitrogen applications based on the recommendations on the soil test report. The phosphorous is reporting in the low range in the tissue even with the high soil pH and the high phosphorous soil test level. The potassium is reporting a little low even with the high potassium soil test level. At this time the only way to get more potassium into the tree is to continue to raise the soil test levels and try to overcome the competition from that high calcium and magnesium soil test levels. The magnesium is reporting high in the tissue as well as the soil. In many plants we like to see a K:Mg ratio in the soil of 1:1, when the magnesium gets higher like in this soil it will suppress the potassium uptake by the plant. As I have said in other comments the high calcium is also affecting the uptake of the potassium and magnesium in these trees. The sulfur is reporting a little low; this is likely due to the low uptake of nitrogen. Sulfur uptake follows nitrogen uptake closely, when there is low nitrogen uptake by a plant there is also generally low sulfur uptake. The copper is reporting in the low normal range, this level is due to the high soil pH which is causing the copper to not be available to the

Continued

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Prepared For

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AUSTIN, TX

Sample Information

Sample ID	736-08-51
Lab Number	PL70415
Soil Lab Number	C04675
Sampled	12-01-2008
Tested	12-10-2008

Comments (continued)

tree. The manganese is reporting low in the tree at this time, this too is due to the high soil pH. Applications of soil applied manganese and copper would not be of benefit to the trees until the soil pH is lower. And even then copper and manganese are better applied as foliar applications or as a trunk injection. The zinc is reporting in the lower end of the normal range at this time. You may also want to make a trunk injection of zinc sometime in the future because when the other nutrient levels are corrected it is likely the zinc will fall into the low range. Trunk injections should be done by a trained arborist.

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Sample Information

Sample ID	737-08-52
Lab Number	PL70416
Soil Lab Number	C04676
Sampled	12-01-2008
Tested	12-10-2008

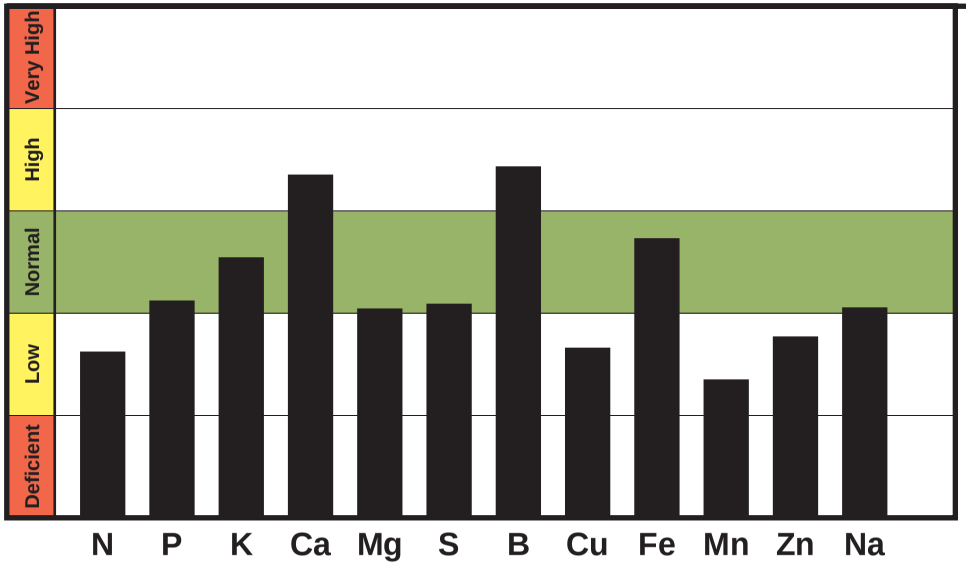
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	1.53 %	2.5 - 3.9
Phosphorus	0.14 %	0.1 - 0.3
Potassium	0.99 %	0.8 - 1.2
Calcium	3.38 %	0.7 - 1.5
Magnesium	0.31 %	0.3 - 0.6
Sulfur	0.17 %	0.1 - 0.4
Boron	121 ppm	20 - 45
Copper	6.5 ppm	10 - 30
Iron	230 ppm	50 - 300
Manganese	34 ppm	100 - 800
Zinc	38 ppm	50 - 100
Sodium	176 ppm	0 - 4000

Soil Test	Result	Normal Range
CEC	18.5	
Soil pH	7.7	6.0 - 7.0
Buffer pH	0	
Organic Matter	1.4 %	
Phosphorus	17 m3-ppm	40 - 70
Potassium	308 m3-ppm	190 - 300
Calcium	66154 m3-ppm	2500 - 3400
Magnesium	382 m3-ppm	260 - 430
Copper	3 m3-ppm	3.7 - 19.7
Iron	18.5 m3-ppm	9 - 40
Manganese	18 m3-ppm	66 - 221
Zinc	9 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments from Agronomist Scott Anderson

(The following comments apply to lab numbers 70400, 70401, 70402, 70403, 70405, 70406, 70408, 70409, 70412, 70413, 70414, 70416, 70418, 70419, 70420 and 70422)

See Attached letter

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Sample Information

Sample ID	738-08-53
Lab Number	PL70417
Soil Lab Number	C04677
Sampled	12-01-2008
Tested	12-10-2008

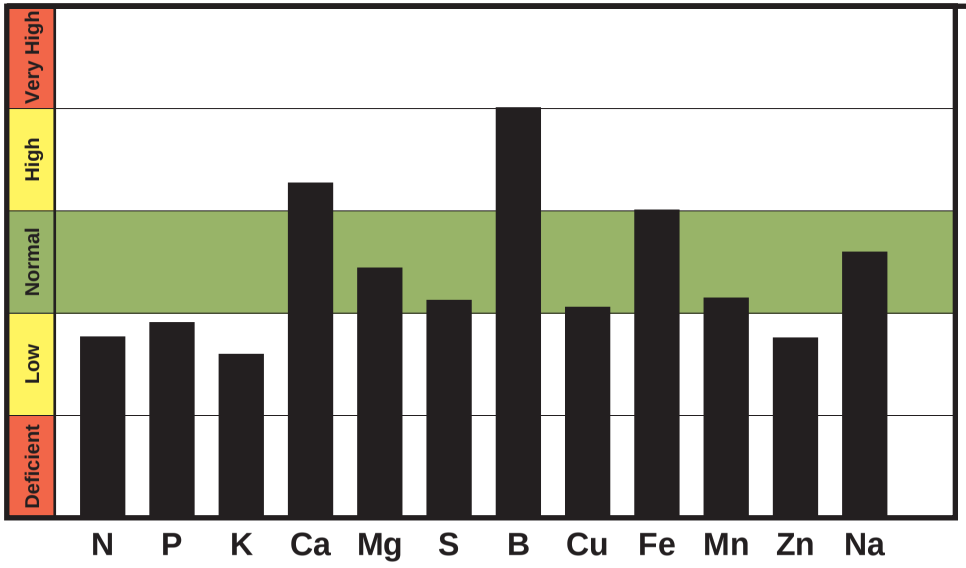
Plant Tissue Analysis Report

Type: Elm, Undefined *(Ulmus)* **Part:** Mature Leaf **Stage:** Mid Summer To Fall

Plant Test	Result	Normal Range
Nitrogen	1.52 %	2.0 - 3.0
Phosphorus	0.18 %	0.2 - 0.4
Potassium	0.59 %	1.0 - 2.0
Calcium	3.16 %	1.5 - 2.5
Magnesium	0.43 %	0.3 - 0.6
Sulfur	0.15 %	0.1 - 0.3
Boron	171 ppm	25 - 100
Copper	6 ppm	5 - 25
Iron	542 ppm	50 - 400
Manganese	99 ppm	50 - 400
Zinc	15 ppm	20 - 50
Sodium	589 ppm	0 - 1000

Soil Test	Result	Normal Range
CEC	18.1	
Soil pH	7.8	6.5 - 7.0
Buffer pH	0	
Organic Matter	2.5 %	
Phosphorus	37 m3-ppm	40 - 70
Potassium	330 m3-ppm	190 - 300
Calcium	66176 m3-ppm	2400 - 3400
Magnesium	323 m3-ppm	260 - 430
Copper	1.5 m3-ppm	4.8 - 20.8
Iron	29.5 m3-ppm	9 - 40
Manganese	24 m3-ppm	79 - 234
Zinc	14.5 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

(The following comments apply to lab numbers 70379, 70380, 70381 and 70417)

See attached letter.

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Sample Information

Sample ID	739-08-54
Lab Number	PL70418
Soil Lab Number	C04678
Sampled	12-01-2008
Tested	12-10-2008

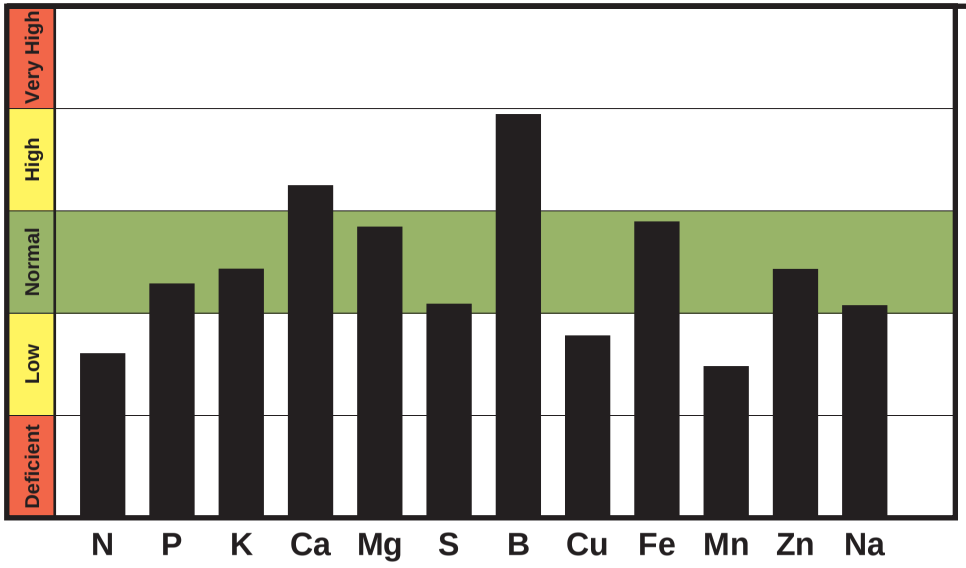
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	1.49 %	2.5 - 3.9
Phosphorus	0.17 %	0.1 - 0.3
Potassium	0.94 %	0.8 - 1.2
Calcium	2.81 %	0.7 - 1.5
Magnesium	0.55 %	0.3 - 0.6
Sulfur	0.17 %	0.1 - 0.4
Boron	213 ppm	20 - 45
Copper	7.7 ppm	10 - 30
Iron	271 ppm	50 - 300
Manganese	47 ppm	100 - 800
Zinc	71 ppm	50 - 100
Sodium	261 ppm	0 - 4000

Soil Test	Result		Normal Range
CEC	19.1		
Soil pH	7.8		6.0 - 7.0
Buffer pH	0		
Organic Matter	1.5	%	
Phosphorus	15	m3-ppm	40 - 70
Potassium	354	m3-ppm	200 - 310
Calcium	66182	m3-ppm	2500 - 3600
Magnesium	454	m3-ppm	260 - 440
Copper	1	m3-ppm	4.2 - 20.2
Iron	25.1	m3-ppm	9 - 40
Manganese	25	m3-ppm	74 - 229
Zinc	5	m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments from Agronomist Scott Anderson

(The following comments apply to lab numbers 70400, 70401, 70402, 70403, 70405, 70406, 70408, 70409, 70412, 70413, 70414, 70416, 70418, 70419, 70420 and 70422)

See Attached letter

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Sample Information

Sample ID	740-08-55
Lab Number	PL70419
Soil Lab Number	C04679
Sampled	12-01-2008
Tested	12-10-2008

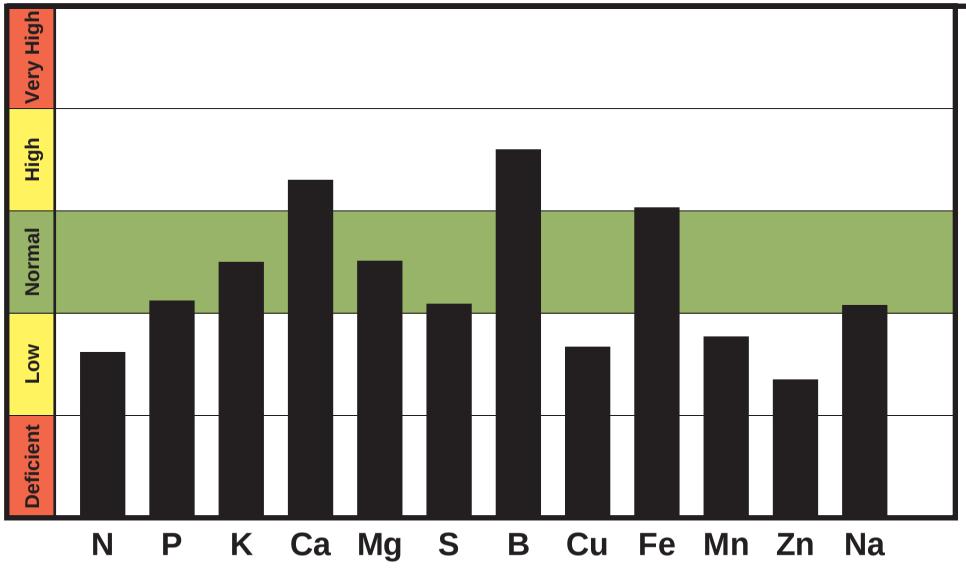
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	1.52 %	2.5 - 3.9
Phosphorus	0.14 %	0.1 - 0.3
Potassium	0.97 %	0.8 - 1.2
Calcium	3.1 %	0.7 - 1.5
Magnesium	0.45 %	0.3 - 0.6
Sulfur	0.17 %	0.1 - 0.4
Boron	151 ppm	20 - 45
Copper	6.6 ppm	10 - 30
Iron	326 ppm	50 - 300
Manganese	76 ppm	100 - 800
Zinc	17 ppm	50 - 100
Sodium	270 ppm	0 - 4000

Soil Test	Result		Normal Range
CEC	18.9		
Soil pH	7.7		6.0 - 7.0
Buffer pH	0		
Organic Matter	2.2	%	
Phosphorus	39	m3-ppm	40 - 70
Potassium	384	m3-ppm	200 - 310
Calcium	16190	m3-ppm	2500 - 3500
Magnesium	417	m3-ppm	260 - 440
Copper	1	m3-ppm	4.3 - 20.3
Iron	22.7	m3-ppm	9 - 40
Manganese	24	m3-ppm	70 - 225
Zinc	4.7	m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments from Agronomist Scott Anderson

(The following comments apply to lab numbers 70400, 70401, 70402, 70403, 70405, 70406, 70408, 70409, 70412, 70413, 70414, 70416, 70418, 70419, 70420 and 70422)

See Attached letter

Spectrum Analytic Inc.
P.O. Box 639 - 1087 Jamison Road
Washington C.H., OH 43160
www.spectrumanalytic.com

Report To
THE DAVEY TREE EXPERT
CO-SOIL LAB
PO BOX 5193
KENT, OH 44240

Prepared For
CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	741-08-56
Lab Number	PL70420
Soil Lab Number	C04680
Sampled	12-01-2008
Tested	12-10-2008

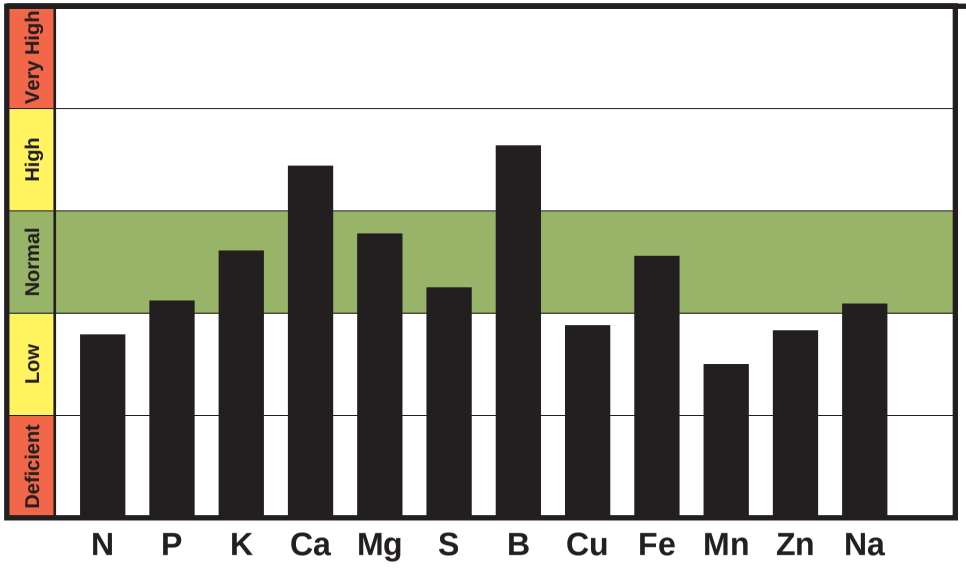
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	1.95 %	2.5 - 3.9
Phosphorus	0.14 %	0.1 - 0.3
Potassium	1.02 %	0.8 - 1.2
Calcium	3.86 %	0.7 - 1.5
Magnesium	0.53 %	0.3 - 0.6
Sulfur	0.21 %	0.1 - 0.4
Boron	158 ppm	20 - 45
Copper	8.7 ppm	10 - 30
Iron	187 ppm	50 - 300
Manganese	49 ppm	100 - 800
Zinc	41 ppm	50 - 100
Sodium	326 ppm	0 - 4000

Soil Test	Result		Normal Range
CEC	19.7		
Soil pH	7.6		6.0 - 7.0
Buffer pH	0		
Organic Matter	2.8	%	
Phosphorus	21	m3-ppm	40 - 70
Potassium	437	m3-ppm	200 - 310
Calcium	66271	m3-ppm	2600 - 3700
Magnesium	508	m3-ppm	270 - 450
Copper	2	m3-ppm	3.2 - 19.2
Iron	24.1	m3-ppm	9 - 40
Manganese	28	m3-ppm	66 - 221
Zinc	8	m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments from Agronomist Scott Anderson

(The following comments apply to lab numbers 70400, 70401, 70402, 70403, 70405, 70406, 70408, 70409, 70412, 70413, 70414, 70416, 70418, 70419, 70420 and 70422)

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Report To
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PO BOX 5193
KENT, OH 44240

Prepared For
CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	742-08-57
Lab Number	PL70421
Soil Lab Number	C04682
Sampled	12-01-2008
Tested	12-10-2008

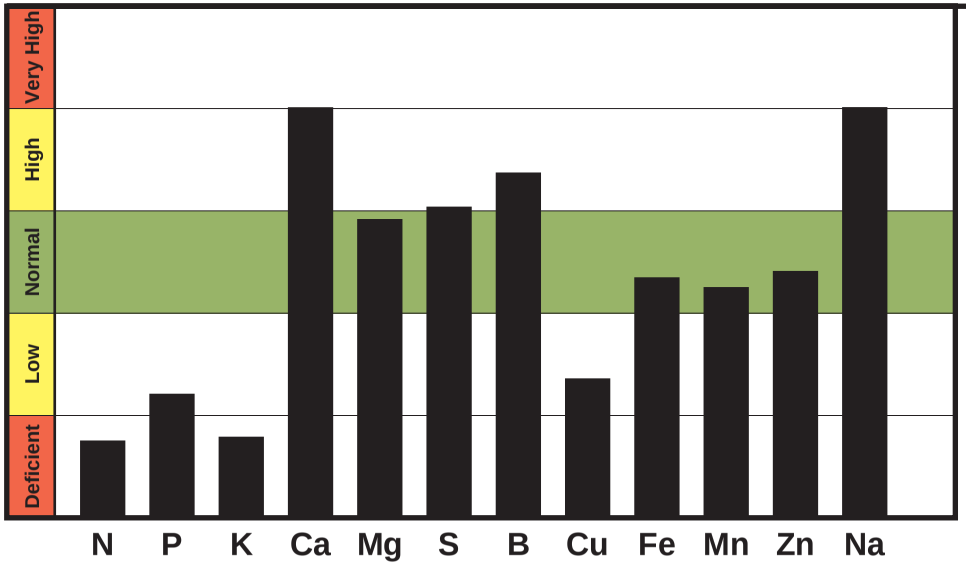
Plant Tissue Analysis Report

Type: Cottonwood *(Populus)* **Part:** Youngest/ Recently Mature Leaves **Stage:** Mid Summer

Plant Test	Result	Normal Range
Nitrogen	1.04 %	1.8 - 2.6
Phosphorus	0.11 %	0.1 - 0.3
Potassium	0.39 %	1.0 - 2.0
Calcium	4.35 %	1.3 - 2.3
Magnesium	0.67 %	0.2 - 0.7
Sulfur	0.32 %	0.2 - 0.3
Boron	126 ppm	30 - 84
Copper	3.7 ppm	5 - 20
Iron	151 ppm	75 - 300
Manganese	103 ppm	40 - 300
Zinc	58 ppm	30 - 100
Sodium	1150 ppm	1 - 25

Soil Test	Result	Normal Range
CEC	18.7	
Soil pH	7.8	6.0 - 6.8
Buffer pH	0	
Organic Matter	2.1 %	
Phosphorus	10 m3-ppm	40 - 70
Potassium	310 m3-ppm	200 - 300
Calcium	66218 m3-ppm	2500 - 3500
Magnesium	410 m3-ppm	260 - 440
Copper	1.3 m3-ppm	4.1 - 20.1
Iron	29.4 m3-ppm	9 - 40
Manganese	22 m3-ppm	77 - 232
Zinc	6.4 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments

(The following comments apply to lab numbers 70378, 70410, 70411 and 70421)

See attached letter.

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Washington C.H., OH 43160
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Report To
THE DAVEY TREE EXPERT
CO-SOIL LAB
PO BOX 5193
KENT, OH 44240

Prepared For
CITY OF AUSTIN
AUSTIN, TX

Sample Information

Sample ID	743-08-58
Lab Number	PL70422
Soil Lab Number	C04683
Sampled	12-01-2008
Tested	12-10-2008

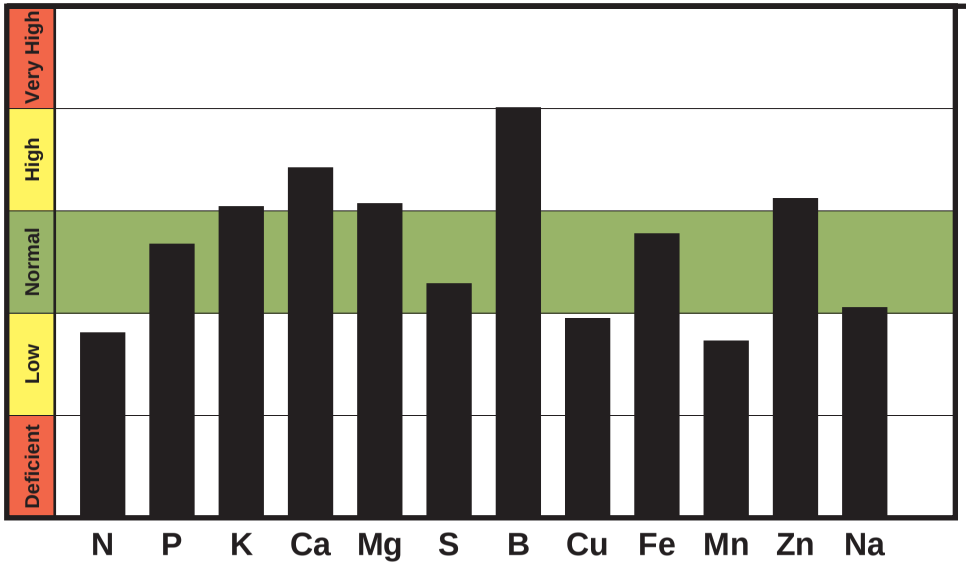
Plant Tissue Analysis Report

Type: Pecans *(Carya illnoensis)* **Part:** Vegetative **Stage:** Mature

Plant Test	Result	Normal Range
Nitrogen	2 %	2.5 - 3.9
Phosphorus	0.24 %	0.1 - 0.3
Potassium	1.36 %	0.8 - 1.2
Calcium	3.77 %	0.7 - 1.5
Magnesium	0.75 %	0.3 - 0.6
Sulfur	0.22 %	0.1 - 0.4
Boron	254 ppm	20 - 45
Copper	9.4 ppm	10 - 30
Iron	242 ppm	50 - 300
Manganese	72 ppm	100 - 800
Zinc	145 ppm	50 - 100
Sodium	185 ppm	0 - 4000

Soil Test	Result	Normal Range
CEC	19.9	
Soil pH	7.8	6.0 - 7.0
Buffer pH	0	
Organic Matter	2 %	
Phosphorus	23 m3-ppm	40 - 70
Potassium	595 m3-ppm	200 - 310
Calcium	15615 m3-ppm	2700 - 3700
Magnesium	490 m3-ppm	270 - 450
Copper	1.5 m3-ppm	4.4 - 20.4
Iron	38.8 m3-ppm	9 - 40
Manganese	25 m3-ppm	76 - 231
Zinc	4.9 m3-ppm	4 - 11

Plant Tissue Nutrient Levels



Comments from Agronomist Scott Anderson

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See Attached letter