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AMAG 117

TYPICAL RESULTS FROM ANALYSIS OF LEAVES
OF POTATO PLANTS

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KEY TO SYMBOLS USED IN TABLES

Major Nutrients

N - Nitrogen
P - Phosphorus
K - Potassium
Na - Sodium
Ca - Calcium
Mg - Magnesium

Micro-Nutrients

Mn - Manganese
Fe - Iron
B - Boron
Cu - Copper
Mo - Molybdenum
Zn - Zinc
Al - Aluminum

Sodium and Aluminum - not required

DEFINITION OF TERMS USED IN INTERPRETATION

Deficient

Nutrient element content has reached point at which growth, yield and/or quality would be detrimentally affected. Visual changes in leaves or plant will usually be evident. On the other hand in case of certain elements undesirable internal changes in composition affecting yield and/or quality may have been induced and not be visual to the observer.

Low

Content below the minimum requirement and in reality considered sufficiently low to be limiting to growth, yield and/or quality. Visual symptoms not evident although precise growth measurements might show a significant reduction. Undesirable internal effects would likely be taking place in affecting growth, yield, and/or quality. Upper limit would be technically considered the so-called critical level.

Sufficient

Values appreciably above the Critical Level or Minimum Requirement but not sufficiently high to induce a deficiency of another element. This category would include the amounts present in plants producing most acceptable growth, yield, and/or quality.

High

This category in case of nitrogen would probably result in undesirable effects upon growth, yield and/or quality. In case of the other nutrient elements such as amount might induce an incipient deficiency of another essential element. Not considered to be at toxic level. This category often indicates an unnecessarily high level of fertilization.

Excess

This category involves a magnitude sufficiently large to result possibly in a toxic condition. In other instances a deficiency of another essential element may be induced. Most frequently excessive applications of the element in question has occurred. Visual toxic effects may not necessarily be evident.

CRITICAL LEVELS OR MINIMUM REQUIREMENTS

N - Depends on month and cluster

P - 0.20

K - 2.50

Ca - not known

Mg - 0.40

Parts per Million

Mn - 30

Fe - 30

B - 30

Cu - 5

Mo - 0.3

Zn - 30

POTATO LEAF SAMPLE

Grower No. 1
Stark County

Variety Katahdin
Planted May 15, 1965

Sampled July 31, 1965
Leaves from directed location

Dry Weight Basis

	Percentage					Parts per million						
	N	P	K	Ca	Mg	Mn	Fe	B	Cu	Mo	Zn	Al
Deficient												
Low												
Sufficient	4.52	27	4.22	2.21	78			↑ 25	21		↑ 24	
High						1500	1100			100		
Excess												2500

Plants normal.

Fertilizer applied by plowing down 400 lbs. ammonium sulfate.

Fertilizer banded at planting time - 700 lbs. 8-16-16 - silt loam.

POTATO LEAF SAMPLE

Grower No. 1
Stark County

Variety Katahdin
Planted May 16, 1965

Sampled June 27, 1965
Leaves located as directed

Dry Weight Basis

	Percentage					Parts per million						
	N	P	K	Ca	Mg	Mn	Fe	B	Cu	Mo	Zn	Al
Deficient												
Low												
Sufficient	5.60	.38	5.20	2.17	.88	389	455	30	14		35	900
High										9.6		
Excess												

Plants good.

Fertilizer applied by plowing down 80 lbs. of Banded at planting time
700 lbs 8-16-16 silt loam soil.

Soil Test: January 1962
pH 5.8; P 240 lbs; K 210 lbs.

POTATO LEAF SAMPLE

Grower No. 2
Ross County

Variety Kennebec
Planted April 10, 1965

Sampled July 28, 1965 -
Harvest same date
Leaves sampled as directed

Dry Weight Basis

	Percentage					Parts per million						
	N	P	K	Ca	Mg	Mn	Fe	B	Cu	Mo	Zn	Al
Deficient												
Low								18				
Sufficient	3.94	.23	2.38	1.80	.70	137			17		27	
High							1700			10.0		
Excess												2300

Plants "not as green as I think they should be."

Fertilizer broadcast ahead of planting 500 lbs. 8-16-8.
Banded at planting time - 800 lbs. 8-16-16.

POTATO LEAF SAMPLE

Grower No. 3
Lorain County

Variety Cobbler

Sampled July 3, 1965

Dry Weight Basis

	Percentage					Parts per million						
	N	P	K	Ca	Mg	Mn	Fe	B	Cu	Mo	Zn	Al
Deficient												
Low												
Sufficient	5.64	.29	6.61	1.52	.37	200	282	30	19	1.6	36	210
High												
Excess												

Condition of plants: Lower leaves yellowing, top leaves look good, some rolling.

Fertilizer (lbs.): N 135; P₂O₅ 150; K₂O 150.
Manure - 15 tons

Soil Test (1964): pH 5.5; P 100; K 300.

Field has been in potatoes for 15 years, then a two year rotation of wheat and potatoes for the last two years. Average yield is 400 bushels per acre.

POTATO LEAF SAMPLE

Grower No. 4
Hardin County

Variety Katahdin

Leaves sampled August 26, 1964
Location of leaves sampled as directed

Dry Weight Basis

Percentage					Parts per million							
N	P	K	Ca	Mg	Mn	Fe	B	Cu	Mo	Zn	Al	
Deficient												
Low							19					
Sufficient	.25	2.61	1.33	.63	142	202		22	1.6		147	
High	7.08									113		
Excess												

Condition of plants: "Healthy only for plants being retarded because of dry weather."

Fertilizer applied (lbs) N 140; P₂O₅ 140; K₂O 140.
Side dressing (May 15) 12-12-12 1200 lbs.

POTATO LEAF SAMPLE

Grower No. 5
Richland County

Variety Katahdin
Carlisle Muck

Leaves sampled July 20, 1965

Dry Weight Basis

	Percentage					Parts per million							
	N	P	K	Ca	Mg	Mn	Fe	B	Cu	Mo	Zn	Al	
Deficient													
Low													
Sufficient		(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	
		.40	3.62	1.27	.53	149	154	↑ 26	↓ 26	1.8	44	79	
		(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	
		.38	3.98	1.43	.52	75	52	↑ 25	13	1.5	27	78	
High	(1)												
	↓ 6.76												
	(2)												
	6.70												
Excess													

Condition of plants: Good.

Fertilizer applied: 400 lbs. 18-46-0
500 lbs. 0-0-61

Soil Test (May 1965): pH 6.3: P 453-504: K 944: Mg 1800-3217.

POTATO LEAF SAMPLES
Samples 3

Grower No. 5
Richland County

Variety Katahdin
Alexandria Loam

Sampled July 20, 1965

Dry Weight Basis

	Percentage					Parts per million						
	N	P	K	Ca	Mg	Mn	Fe	B	Cu	Mo	Zn	Al
Deficient												
Low												
Sufficient		.38	3.6	1.17	.57	.48	331	↑ 25	24	3.0	↑ 27	
High	6.66											269
Excess												

Condition of plants: good

Fertilizer applied 1000 lbs. Calcium sulfate, 300 lbs. 45-0-0
400 lbs. 18-46-0
300 lbs. 0-0-60

Alfalfa, grass, and grain straw all plowed down.
Soil test pJ 6.3; P 274; K 510; Mg 736.

POTATO LEAF SAMPLE
Sample 4

Grower No. 5
Richland County

Variety Katahdin
Cardington and Alexandria Loam

Dry Weight Basis

	Percentage					Parts per million						
	N	P	K	Ca	Mg	Mn	Fe	B	Cu	Mo	Zn	Al
Deficient												
Low												
Sufficient		.42	2.88	1.36	.57	188	495	↑ 27	21	2.0	↑ 24	
High	6.86											
Excess												404

Condition of plants: good
Fertilizer applied: 1000 lbs. calcium sulfate
300 lbs. 45-0-0
400 lbs. 18-46-0
300 lbs. 0-0-60

POTATO LEAF SAMPLE
Sample 1

Grower No. 6
Huron County

Variety Superior
Muck Soil

Sampled August 25, 1964
Location of sampled leaves - near top of plant

Dry Weight Basis

	Percentage					Parts per million						
	N	P	K	Ca	Mg	Mn	Fe	B	Cu	Mo	Zn	Al
Deficient												
Low								18				
Sufficient		.54	4.12	1.05	.65	265	208		14	2.0	45	127
High	6.48											
Excess												

Location of plants: "good, green healthy"
Fertilizer applied
Broadcast ahead of planting 400 lbs. 0-0-50
banded at planting time 250 lbs. 16-48-0
Soil test pH 4.5; P 100; K 1110; Mg 1880

POTATO LEAF SAMPLE
Sample 2

Grower No. 6
Huron County

Variety Superior
Muck Soil

Leaves sampled August 25, 1964
Location of sampled leaves - near top of plant

Dry Weight Basis

	Percentage					Parts per million						
	N	P	K	Ca	Mg	Mn	Fe	B	Cu	Mo	Zn	Al
Deficient												
Low		.17										
Sufficient				1.21	.46	302		52	25	3.3		
High	5.08		6.00				435				80	624
Excess												

Condition of plants: "Mostly dead. Some plants green.

Leaves taken from green plants."

Fertilizer applied:

Plowing down 300 lbs. 0-0-60

Broadcast ahead of planting 300 lbs. 0-0-50

Banded at planting time 250 lbs. 16-45-0

Soil test pH 5.7; P 100; K 990; Mg 7102.

POTATO LEAF SAMPLES

Grower No. 7
Lucas County

Variety Katahdin

Leaves sampled September 6, 1965
Location of sampled leaves as directed.

- Sample No. 1: Sample from area in field with "very healthy green vines."
Sample No. 2: Sample from problem area in same field where "the vines were becoming yellow and starting to fall back."

Dry Weight Basis

	Percentage					Parts per million						
	N	P	K	Ca	Mg	Mn	Fe	B	Cu	Mo	Zn	Al
Deficient												
Low												
Sufficient	(1) 3.94	(1) .33	(1) 6.69	(1) 2.08	(1) .52	(1) 311	(1) 201	(1) 47			(1) 87	(1) 152
	(2) 3.26	(2) .23	(2) 4.84	(2) 2.38	(2) .55	(2) 308		(2) 53			(2) 58	
High							(2) 456			(1) 4.8		(2) 408
										(2) 7.6		
Excess									(1) 130			
									(2) 130			

Fertilizer applied - plowing down - 330 lbs. 20% ammonium sulfate
220 lbs. of 60% muriate of potash
Banded at planting time - 700 lbs 5-10-30
Side dressing - June 16 - 350 lbs. 14-14-14, Super Rainbow will trace elements.

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