How to Grow 10 Bales of Hops in Iowa

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WESTERN LABORATORIES

Your Potato and Onion Specialists Since 1973

- This years yield is over 60% dependent on your nutrient program from July 20 to harvest of last year

- 80%-90% of this years plant growth is dependent on last years root nutrient reserve. This occurs until the bine is 5 ½ foot tall and some leaves are ¾ expanded

- 15 pounds of Nitrogen minus the carry-over is my recommendations per bale of hops for greater than 8 bales

- From June 10 – July 20 – 2 pounds Nitrogen per day > 8 bales
  From June 10 – July 20 – 1 ½ pounds Nitrogen per day < 8 bales
  Soil test on July 20 to determine added Nitrogen to apply

- August 5, the tissue Nitrogen and water applied must get on curve to maximize cone size and alpha and other acid levels

ELEMENT	YOUR RESULTS	INTERP	SHOULD BE
pH-Your Soil	4.7	Strongly Acidic	
pH-Buffer*	5.2	Strongly Acidic	
Soluble Salts Ec-mmhos/cm	0.19	Optimum	< 1.5
% Lime Ca CO3	0.2	No crusting expected	
% Organic Matter-LOI	2.57	Medium	
Nitrates-ppm N03-N	8	Low	10 - 35
Ammonium-ppm NH4-N	7	Optimum	5 +
Phosphorus-ppm Olsen-P	28	Optimum	25 - 40
Phos-ppm Bray-P*	66	Optimum	50 - 100
Potassium-ppm K	119	Low	300 +
Sulfates-ppm S04-S	31	Optimum	20 +
Calcium-ppm Ca	1640	Low	1,800 +
Magnesium-ppm Mg	156	Low	250 +
Sodium-ppm Na	22	Optimum	< 225
Zinc-ppm Zn	6.2	Very High	1.0 - 3.0
Copper-ppm Cu	1.7	Optimum	0.8 - 2.5
Manganese-ppm Mn	7	Optimum	6 - 30
Iron-ppm Fe	106	Very High	25 +
Boron-ppm B	0.7	Low	0.7 - 1.5

Ratio	Yours	Ideal	Watch
Ca:P pH >7	:1	100:1	
Ca:Mg	11:1	6-20:1	
Ca:P pH <7	59:1	40:1	Watch P
P:Zn	5:1	15:1	

	NO3 ppm	NH4 ppm
1 Ft	8	7
2 Ft		
3 Ft		
Total PPM		15
Lbs N / Acre*		45
Your Texture		
Sandy Loam		
% Base Saturation		75

CATION BASES	IDEAL	YOUR % BASES
CALCIUM % of CEC	65-80	62
MAGNESIUM % of CEC	10-20	10
POTASSIUM % of CEC	2-6	2
SODIUM % of CEC	< 5	1
HYDROGEN % of CEC	< 15	25
CEC	13	
P Index		

FERTILIZER SUGGESTIONS IN POUNDS/ACRE BASED ON YOUR CROP & YIELD GOAL

Crop	Hops	Hops	Your Notes
Yield Goal	4 Bales	12 Bales	
Past Crop			
Acres	30		
Nitrogen	15	135	
Phosphate		54	
Potash		228	
Sulfate			
Elem-S			
Gypsum			
Lime	2225		
Dolomite	125		
Magnesium	10	10	
Zinc			
Manganese			
Copper			
Boron		1	

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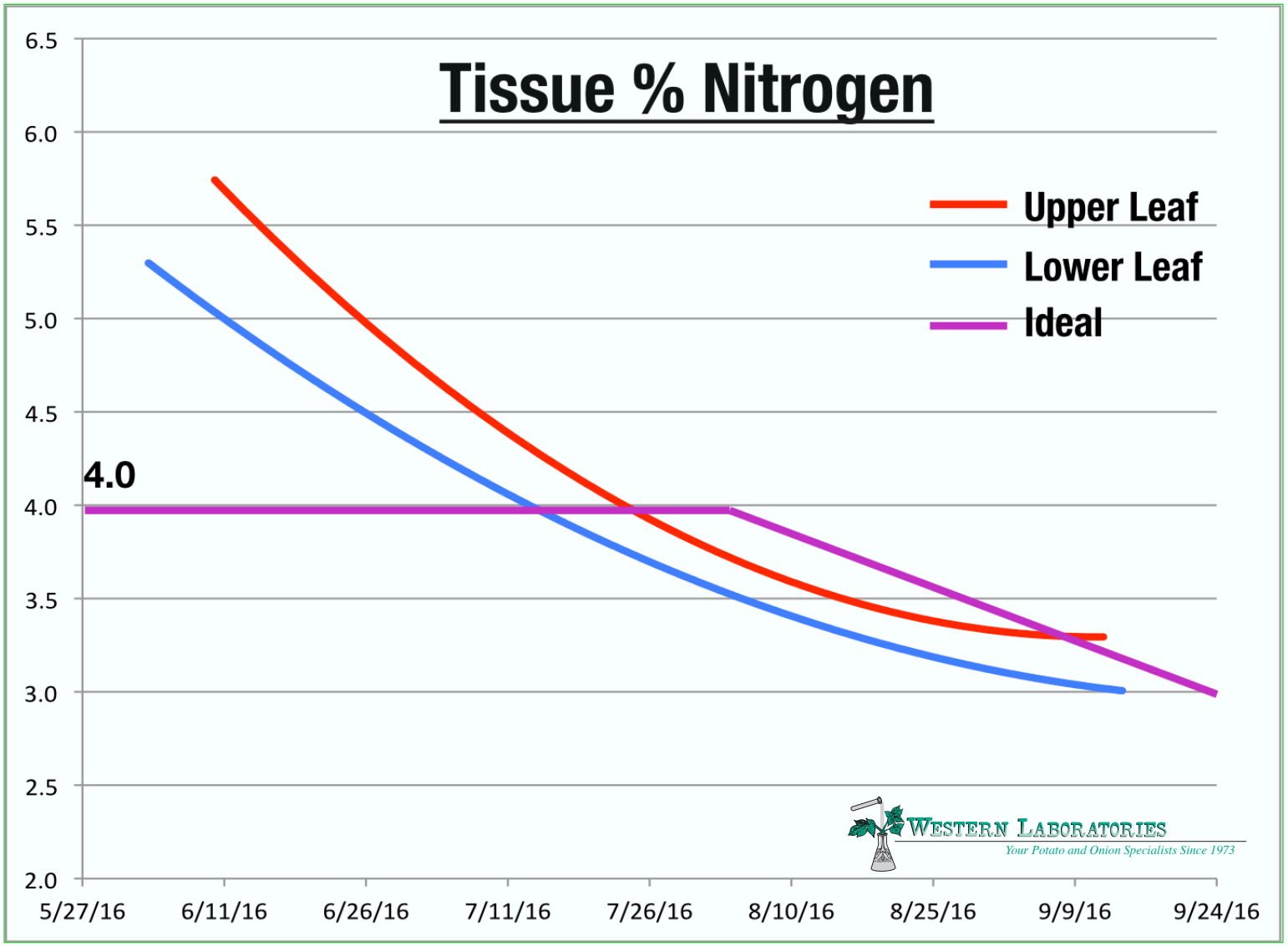
Tissue % Nitrogen
Upper Leaf
Lower Leaf
Ideal
4.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
5/27/16
6/11/16
6/26/16
7/11/16
7/26/16
8/10/16
8/25/16
9/9/16
9/24/16
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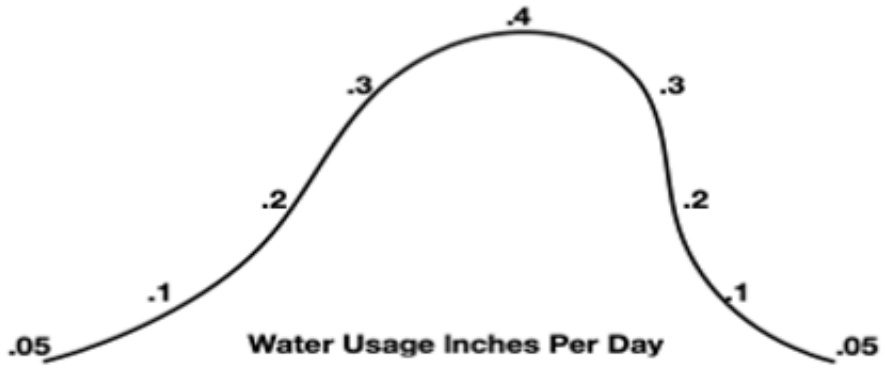
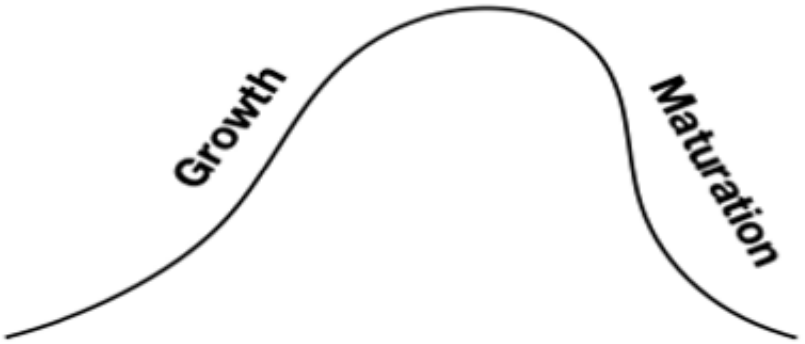
Allowable Depletion



Growth of a Crop



Nutrients Removed by Bines Sept 1st, 2016 Minus Cones on Bines Dry Matter Weight of 3400 Pounds										
Western Laboratories — Your Potato and Onion Specialists Since 1973	POUNDS						GRAMS			
	N	P*	K**	S	Ca	Mg	Zn	Mn	Cu	B
1 Bale	6	1.1	6	0.4	2.5	0.4	5	7	1.7	4
Bine	85	10	55	7	95	9	43	115	10	70
5 Bales	30	6	30	2	13	2	25	35	10	20
Total	115	16	85	9	108	11	68	150	20	90
10 Bales	60	11	60	4	25	4	50	70	20	40
Total	145	21	115	11	120	13	93	185	30	110
15 Bales	96	17	96	7	38	7	75	105	30	60
Total	181	27	151	14	133	16	118	220	40	130
20 Bales	120	22	120	9	50	9	100	140	40	80
Total	205	32	175	16	145	18	143	255	50	150
25 Bales	150	28	150	11	63	11	125	175	50	100
Total	235	38	205	18	158	20	168	290	60	170