Focus on Forage

Optimizing forage production in Wisconsin

Strategies for Achieving Alfalfa Production Goals

Managing Alfalfa in Wisconsin's Changing Forage Landscape – Kevin Jarek, Extension Outagamie County

Panel Discussion – Aaron Barclay, 2019 World Forage Superbowl winner and Kevin Jarek

Fine Tuning Conservation – Dan Smith and Jamie Patton, Nutrient and Pest Management Program

Wednesdays – January 13 through March 3 – 12:30 to 1:30 pm

Register at https://go.wisc.edu/334pqz

NPM

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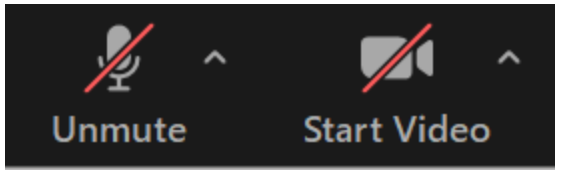
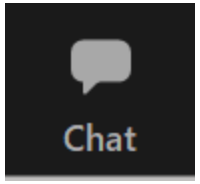
Webinar Recommendations

- Please keep microphones and videos off



- Enter questions in chat at any time



- CCA Credits are available – QR Code available at end of webinar

- If you have technical difficulties, post them in the chat or email Chelsea Zegler at zegler@wisc.edu

Many of Todays Concepts are Detailed in the Alfalfa Management Guide

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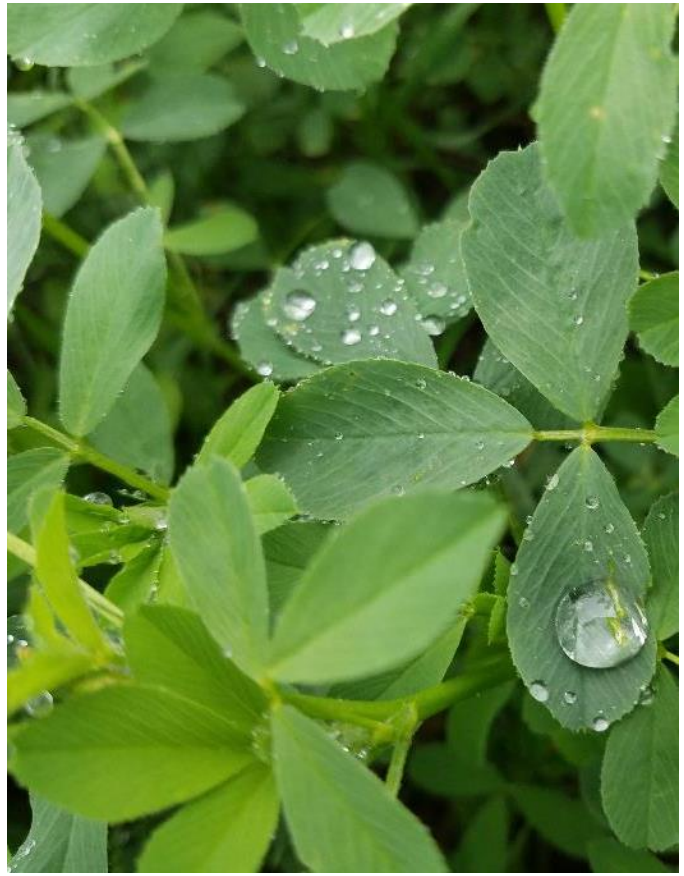
Not All Areas of the State of Wisconsin Have Been Impacted Equally



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However, If You Were Impacted, It has been Severe – Northeast/East-Central Wisconsin

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Establishing Alfalfa Production Goals

Specific – What Aspect are You Looking to Improve Upon?

Measurable – How Will You be Able to Develop a Baseline to Compare?

Attainable – What Improvement (Yield, Quality, Etc…) is Realistic?

Relevant – Focus on an Aspect that Has a Huge Influence on Profitability

Time Bound – Have a Beginning and End Time to Ensure Evaluation

Hope is Not a Strategy in 2021

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Hay Market Demand and Price Report for the Upper Midwest 1-11-2021

Upper Midwest Hay Price Summary by Quality Grade

Hay Grade	*Bale type*	--------- *Price ($/ton)* ---------		
		Average	Minimum	Maximum
Prime (> 151 RFV/RFQ)	Small Square	$240.00	$160.00	$320.00
	Large Square	$218.00	$120.00	$260.00
	Large Round	$148.00	$120.00	$175.00
Grade 1 (125 to 150 RFV/RFQ)	Small Square	$181.00	$140.00	$224.00
	Large Square	$170.00	$95.00	$230.00
	Large Round	$128.00	$90.00	$190.00
Grade 2 (103 to 124 RFV/RFQ)	Small Square	$117.00	$115.00	$120.00
	Large Square	$136.00	$85.00	$180.00
	Large Round	$109.00	$80.00	$130.00
Grade 3 (87 to 102 RFV/RFQ)	Small Square		No Sales Reported	
	Large Square	$115.00	$75.00	$150.00
	Large Round	$91.00	$50.00	$150.00

https://fyi.extension.wisc.edu/forage/h-m-r/ for the most recent Weekly Hay Market Demand Reports

Courtesy of Richard Halopka, University of Wisconsin-Madison, Division of Extension, Clark County

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Best to Categorize in the Following Way…

- Establishment Goals
- In-Season Production and Management Goals
- Harvest Management Goals
- Winter Checklist and Evaluation

Some Farmers Would Prefer this Activity to Crop Enterprise Budgets…

Establishment - Cost New Seeding Alfalfa in 2020/2021

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Direct Seeded Alfalfa | **Revised** | **April 8, 2020**

Enter your numbers in blue cells
Numbers in pink cells may be changed

	Unit	Quantity	Price	Amount
Direct Production Input Expenses			($)	($/acre)
Fertilizer				
Phosphorus (MAP)	lbs P_2O_5	0	0.43	0.00
(DAP)	lbs P_2O_5	50	0.44	22.17
(TSP)	lbs P_2O_5	0	0.87	0.00
Potassium	lbs K_2O	160	0.27	42.67
Lime	Tons / acre	2.0	28	56.00
Seed Plants				
Alfalfa Seed	cost /lb.	8.00	cost/acre	30.00
	lbs / acre	15		
Grass or other seed	cost/lb			
	lbs/acre			
Total years expect to keep stand		4		for example seeding year plus three full years is 4 years

Phosphorous	**MAP**	**DAP**	**TSP**
Price/ton	450	408	800
% P_2O_5	52	46	46
Cost / unit P_2O_6	0.43	0.44	0.87

Potash	
Price/ton	320
% K_2O	60
Cost / unit K_2O	0.27

			Cost/acre	
Tillage				
Chop cornstalks	acre	0	13.00	0.00
Plow, moldboard	acre	0	21.00	0.00
Plow, chisel	acre	1	17.00	17.00
Disc	acre	1	14.00	14.00
Field cultivator	acre	1	14.00	14.00
Cultimulcher	acre	0	12.00	0.00
Till-all	acre	0	17.00	0.00
Planting regular	acre	1	17.00	17.00
Rotary hoe	acre	0	10.00	0.00
Total Tillage				**62.00**
Harvest				
Mower/conditioning	times per season	2	14.00	28.00
Raking	times per season	2	7.00	14.00
Windrow merging	times per season	1	7.50	7.50
Bale sm sq (40# bale)	% of annual harvest	0	0.65	0.00
Bale lg sq (600#+)	% of annual harvest	0.5	10.50	35.00
Bale Round (1000#)	% of annual harvest	0.5	11.00	22.00
Bale Wrapping	% of annual harvest	100%	4.50	24.00
Hauling	hours/acre/season	1	20.00	20.00
Total Harvest				**150.50**
Land Rent	acre	1	142.00	142.00
Interest	8 mths @1%/mth * (Direct inputs plus 20% of Tillage)			15.74
			Total Operating Expense	**554.58**
Crop Produced		**Gross Returns**		**300.00**
Alfalfa	ton/acre	2.0	150.00	
			Net Return /Acre	**-254.58**

https://farms.extension.wisc.edu/topics/budgets-and-benchmarks/

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Establishment – Autotoxicity Risk Assessment and Herbicide Carryover Potential Considerations

Table 1. Alfalfa autotoxicity reseeding risk assessment.

	points	score
1. Amount of previous alfalfa topgrowth incorporated or left on soil surface		
Fall cut or grazed	1	
0 to 1 ton topgrowth	3	
More than 1 ton topgrowth	5	
2. Disease resistance of the variety to be seeded		
High disease resistance	1	
Moderate disease resistance	2	
Low disease resistance	3	
3. Irrigation or rainfall potential prior to reseeding		
High (greater than 2 inches)	1	
Medium (1 to 2 inches)	2	
Low (less than 1 inch)	3	
4. Soil type		
Sandy	1	
Loamy	2	
Clayey	3	
5. Tillage prior to reseeding		
Moldboard plow	1	
Chisel plow	2	
No-till	3	
6. Sum of points from Questions 1–5		
7. Age of previous alfalfa stand		
Less than 1 year	0	
1 to 2 years	0.5	
More than 2 years	1	
8. Reseeding delay after alfalfa kill/plowdown		
12 months or more	0	
6 months	1	
2 to 4 weeks	2	
Less than 2 weeks	3	
Your total score (multiply points from 6, 7, and 8)		

Alfalfa reseeding risk

If you score:	The autotoxity risk is:	Recommendation
0	low	Seed
4–8	moderate	Caution—potential yield loss
9–12	high	Warning—yield loss likely
>13	very high	Avoid reseeding—likely stand and yield loss

Source: Craig Sheaffer, Dan Undersander, and Paul Peterson, Universities of Minnesota and Wisconsin, 2004.

Source: Alfalfa Management Guide – Dan Undersander

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Establishment – Seed Bed Preparation

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Establishment - One Way to Deal with Alfalfa Autotoxicity

Source: Alfalfa fall dormancy and winterhardiness – Dan Undersander – Progressive Forage, January 13, 2017

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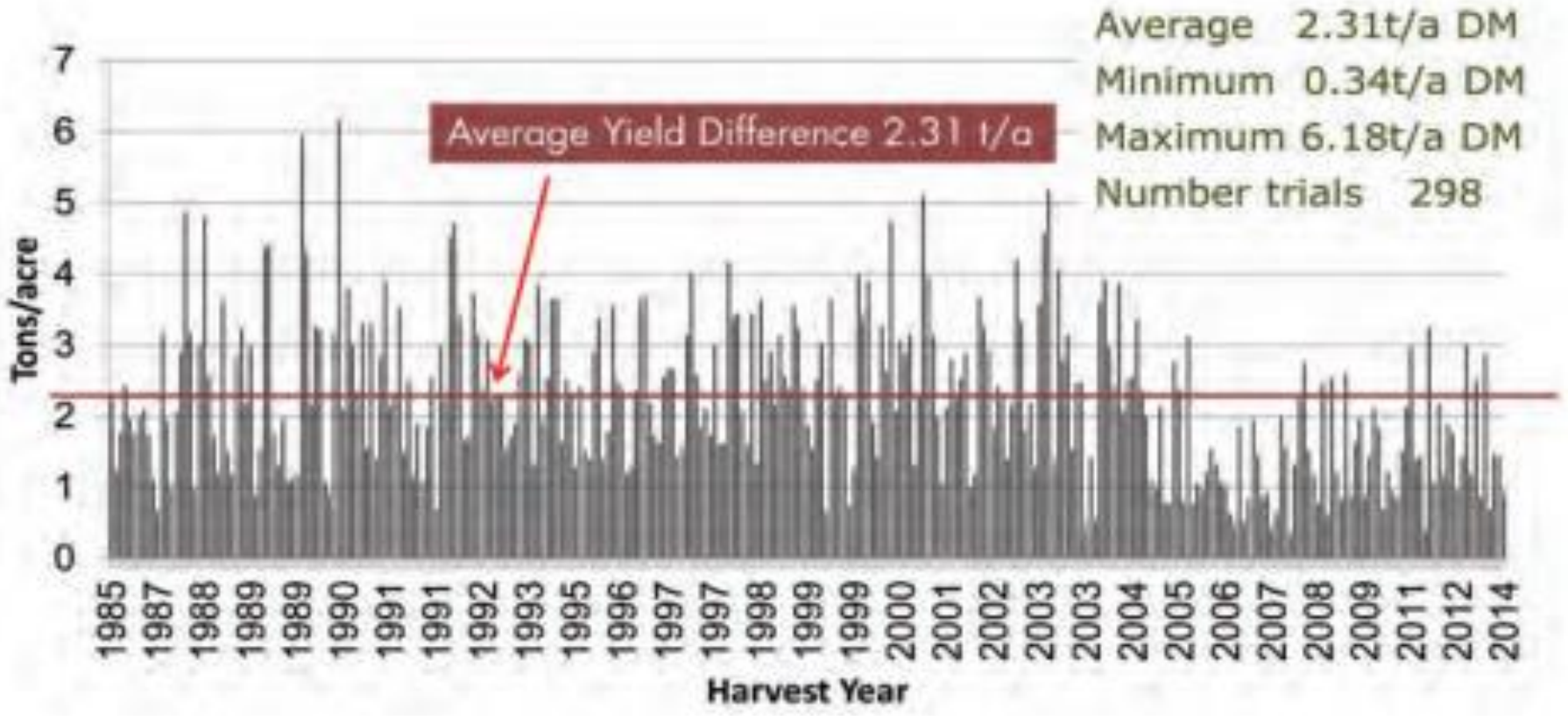
The Traits that Affect Profitability the Most…

- Yield Potential
- Persistence
- Winterhardiness/Winter Survival
- Disease Resistance
- Forage Quality

Establishment - Seed Selection Matters

Figure 6. Yield difference between top and bottom alfalfa entries in Wisconsin Alfalfa Trials, 1985 to 2014.



Source: Alfalfa Management Guide – Dan Undersander

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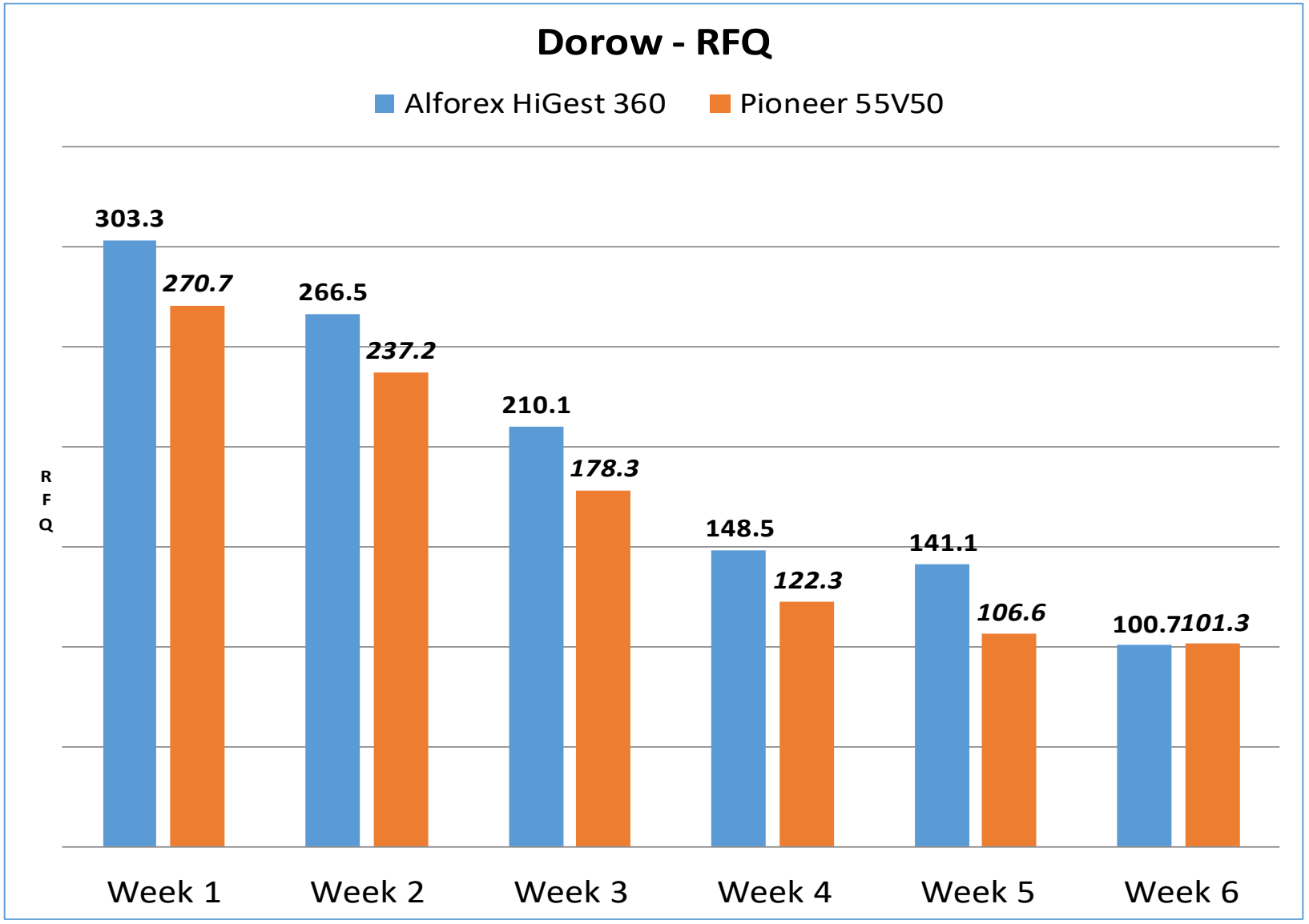
Outagamie Forage Council Alfalfa Plots



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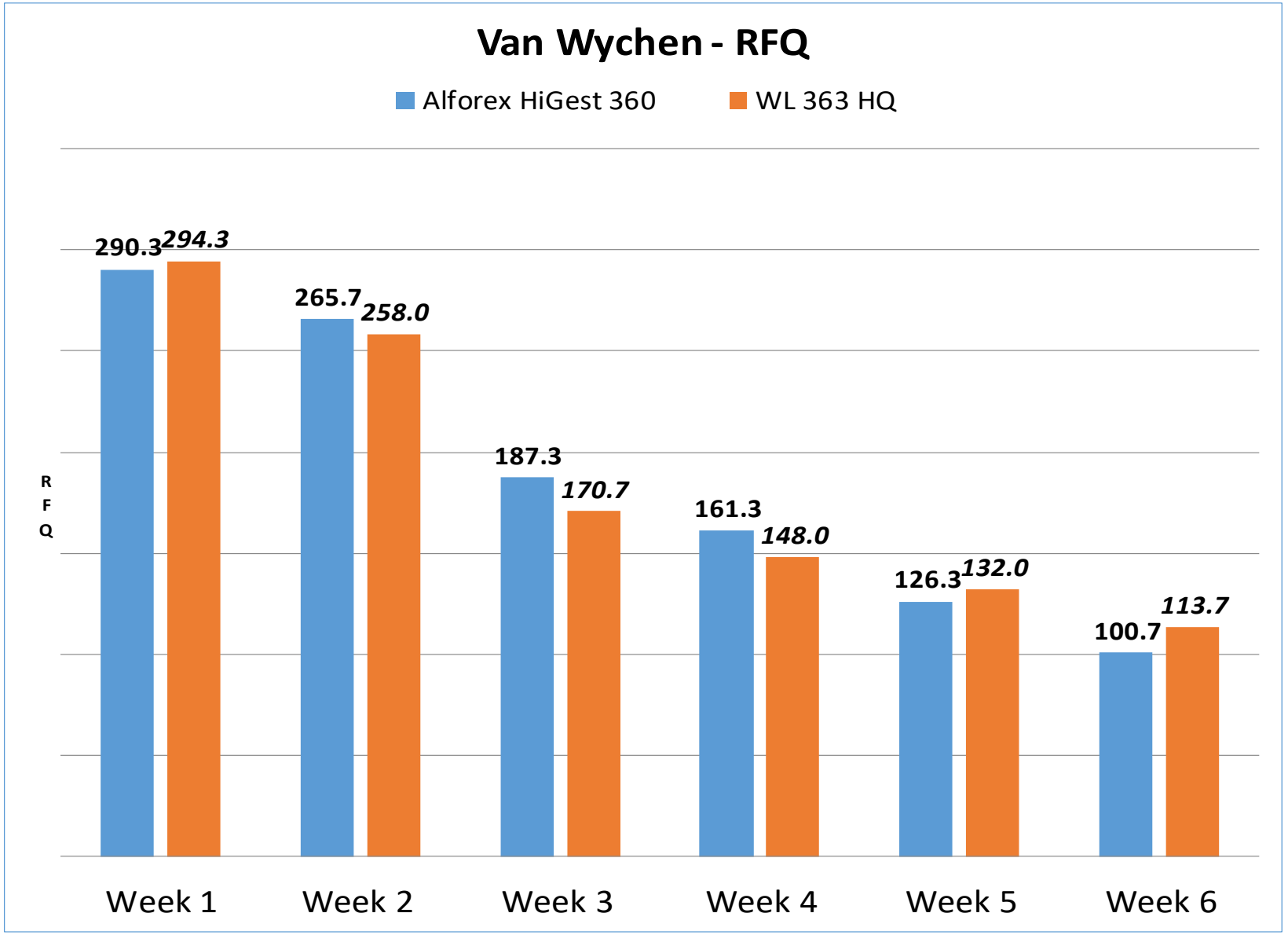
Outagamie Forage Council Alfalfa Plots



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Establishment - Address pH Problems Before They Manifest Themselves in Alfalfa Fields…

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Significant Yield Losses Can Occur if pH Issues are Not Resolved Early in the Stands Existence…

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Fall Dormancy and Winter Survival Ratings Have Been Put to the Test Recently - January 2020

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Establishment - Fall Dormancy Ratings and Winter Survival Ratings in Alfalfa

TABLE 1	Fall dormancy (FD) ratings
FD rating	Description
1, 2	Very dormant
3, 4	Dormant
5	Moderately dormant
6, 7	Semi-dormant
8, 9	Non-dormant
10, 11	Very non-dormant

TABLE 2	Winter survival ratings
Score	Category
1	Extremely winter-hardy
2	Very winter-hardy
3	Winter-hardy
4	Moderately winter-hardy
5	Slightly winter-hardy
6	Non winter-hardy

Source: Alfalfa fall dormancy and winterhardiness – Dan Undersander – Progressive Forage, January 13, 2017

What Happens When Fall Formed Buds (2018) are Damaged/Killed the Following Spring (2019)

Establishment - Calibration of Seeding Equipment

Seeder Calibration

1. Different lots of seed flow at different rates as shown in this table where seeding rates of two different seeders were measured for different seed lots with no change in drill settings.

Variety/ Seed Lot	Brillon Seeder	John Deere Drill
	lbs seed/ acre	lbs seed/ acre
1	18.3	21.4
2	17.0	20.3
3	15.0	16.3
4	13.8	16.3
5	20.8	16.5
6	20.3	16.8

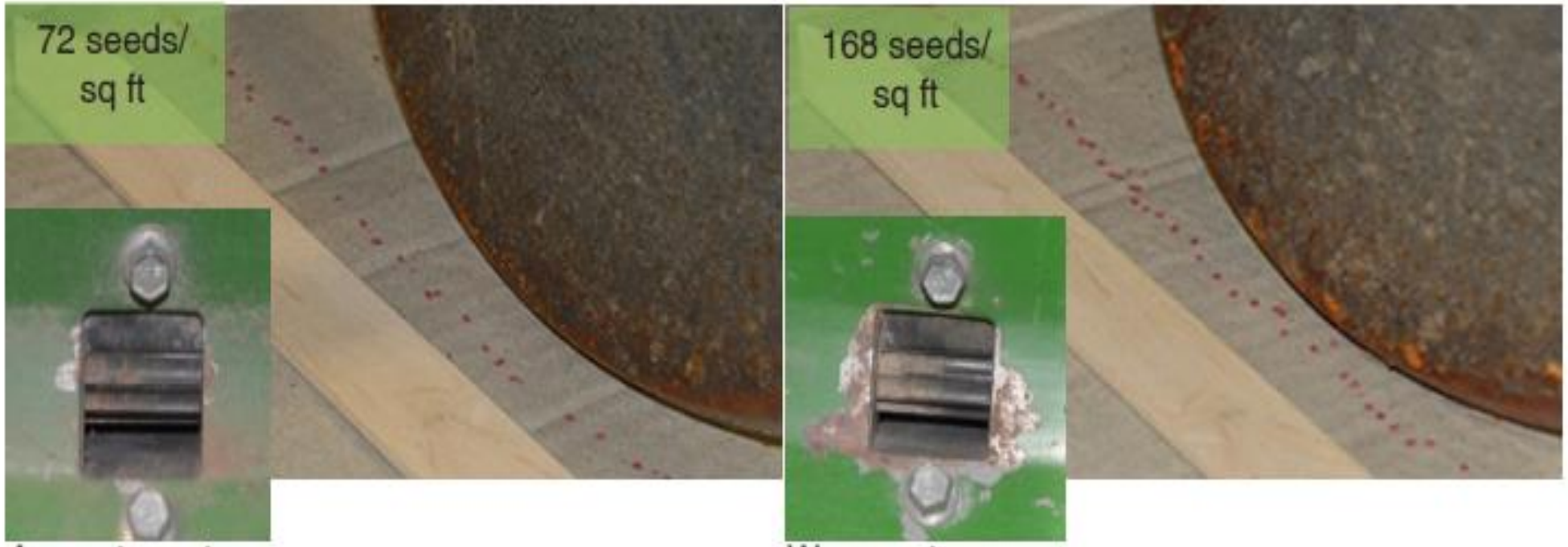
Ever run out of seed?
This could be why.

Calibrate seeder by monitoring acres seeded from first half of bag.

Source: How to Get a Good Stand of Alfalfa or Grass – Dan Undersander, Forage Agronomist, UW-Madison

Establishment - Calibration of Seeding Equipment

2. Worn seed metering devices may have different seeding rates for different rows. Box on right is seeding at twice the rate on the left.



Accurate meter.

Worn meter

Source: How to Get a Good Stand of Alfalfa or Grass – Dan Undersander, Forage Agronomist, UW-Madison

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Establishment - Calibration of Seeding Equipment

1. Seeding depth – seeds must be placed at ¼ to ½ inch deep. If deeper the seed may not be able to push the growing plant to the soil surface, if too shallow, soil moisture may not be adequate for germination

a. Brillion seeders will naturally place seed at the correct depth unless soil is crusted or too soft.

b. Drills with depth bands are best for keeping seed placement at consistent depth.

c. Press wheels close to disc opener are second best they reduce the disc crossing a furrow or ridge separately from the press wheel.

Source: How to Get a Good Stand of Alfalfa or Grass – Dan Undersander, Forage Agronomist, UW-Madison

Depth of Planting Considerations…

Soil should be firm enough at planting for a footprint to sink no deeper than 3/8 inch.

Source: Alfalfa Management Guide – Dan Undersander

Percent seedling emergence at5 seeding depths.

	Seeding depth (inches)				
Crop	0.25	0.5	1.0	1.5	2.0
Alfalfa	78	64	53	45	19
Birdsfoot trefoil	74	62	36	17	0
Kentucky bluegrass	70	43	27	4	0
Orchardgrass	93	79	52	41	12
Red clover	89	62	56	22	14
Smooth bromegrass	94	78	69	51	24
Timothy	98	89	81	39	12
White clover	91	47	28	2	0

Rules of Thumb:

Heal of shoe shouldn't sink in more than ½ inch.

About 10% of seeds should be on soil surface after planting!

Source: Ernest Weaver, Byron Seeds

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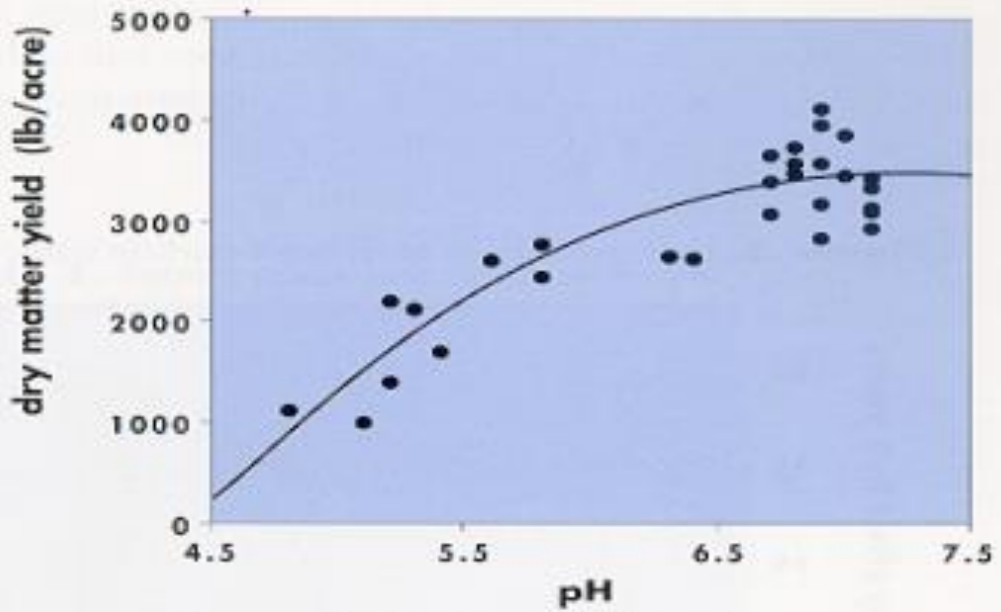
Establishment - Soil pH and Importance of Seed to Soil Contact

2. Soil pH must be 6.8 for alfalfa and 6 to 6.2 for grasses and clovers.

Figure 2. First-cutting alfalfa yield relative to soil pH.



Source: Wollenhaupt and Undersander, University of Wisconsin, 1991

3. Soil packing -- failure to pack soil around seed inhibits the seed's ability to take up soil moisture necessary for germination.

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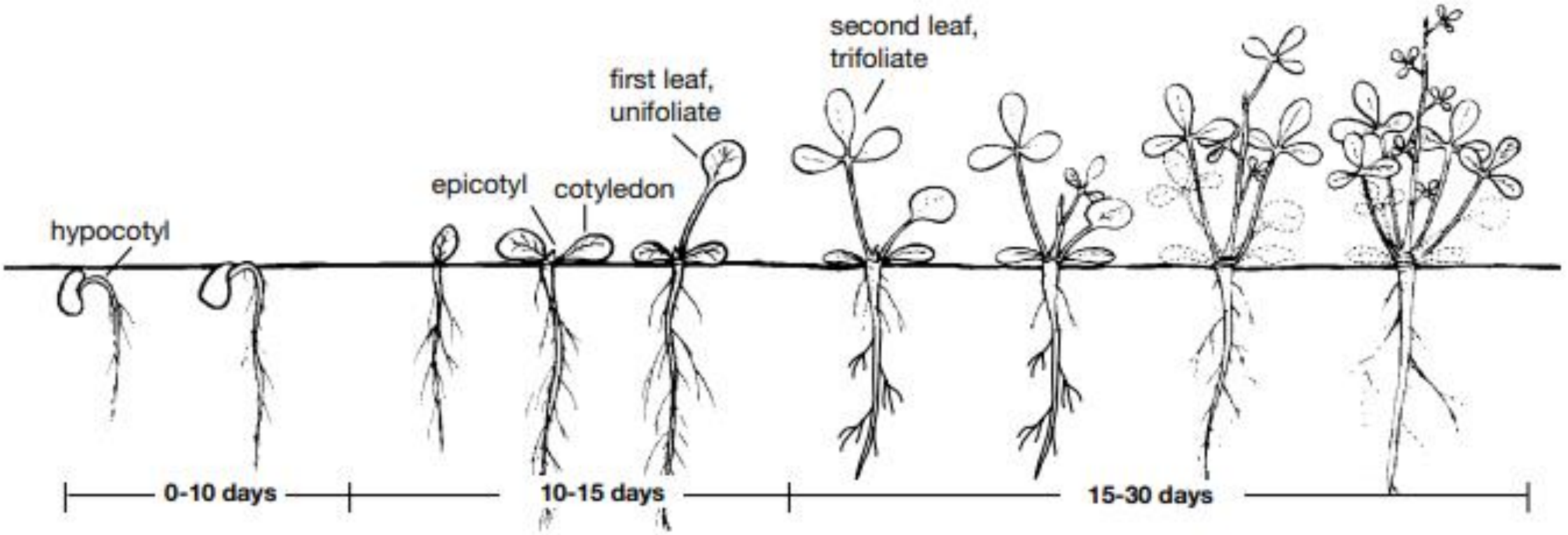
Establishment - Alfalfa Seedling Development



Source: Dodds and Meyer, North Dakota State University, 1984.

Source: Alfalfa Management Guide – Dan Undersander

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Establishment – Selecting Varieties for Your Soil Types and Conditions

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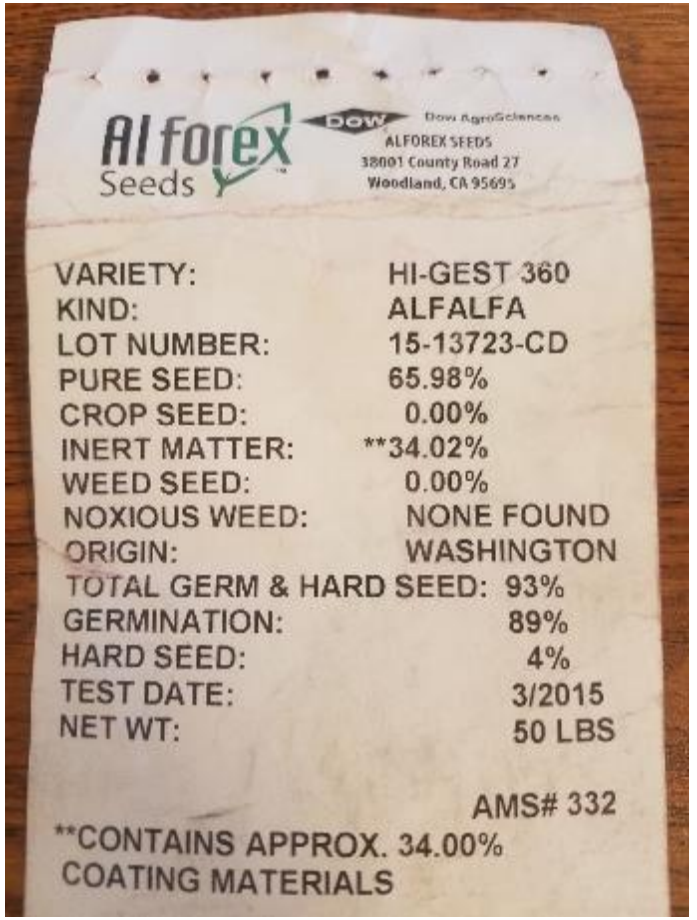
Alfalfa Seed Coatings – Rhizobium Bacteria, Fungicide, Colorant, and Polymers (Limestone, Gypsum, and Mica)

Heavy Coated Seed – Pure Live Seed (PLS) Calculations



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Alforex Hi-Gest 360 Pure Live Seed (PLS)

- Germination and Hard Seed = **93%**
- Pure Seed = **65.98%**

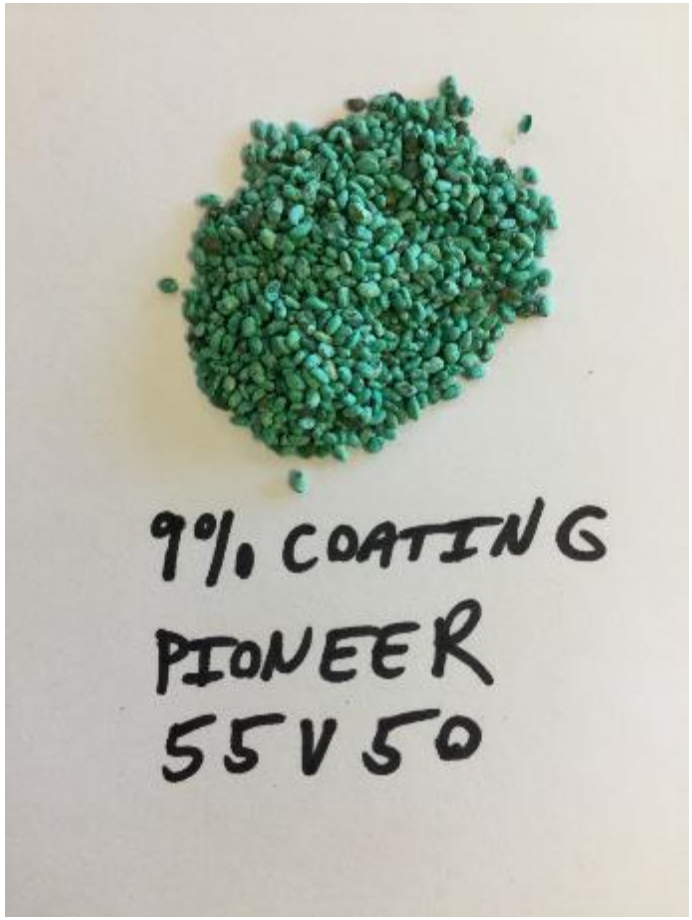
- Germination and Hard Seed (**93%)** X Pure Seed (**65.98%)** = **63.16% PLS**

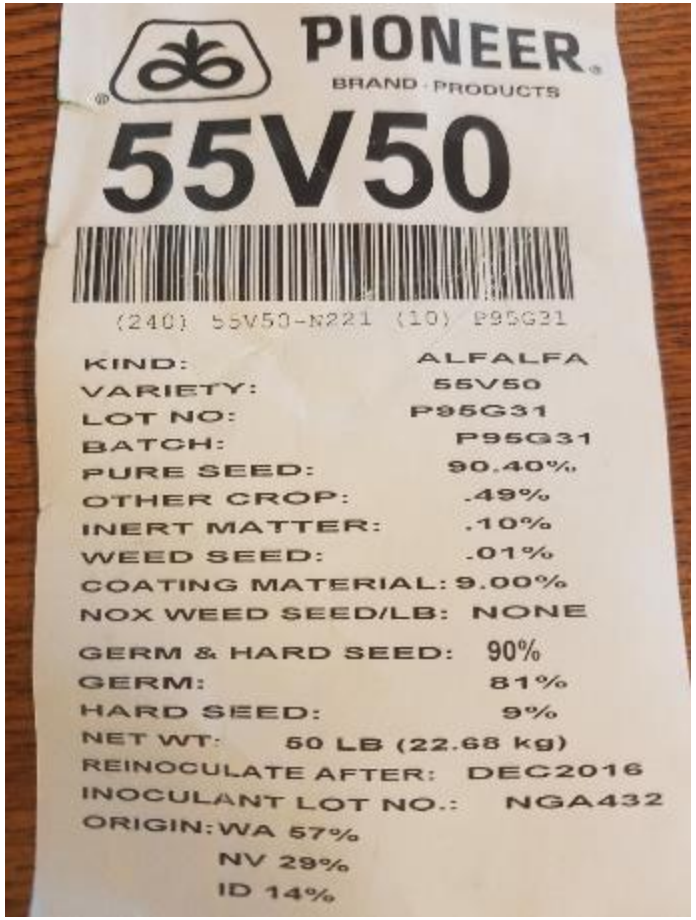
- A **50 lb.** Bag of Alforex Hi-Gest 360 would contain how many lbs. **PLS?**

- **50 lbs.** X **63.16%** PLS = **31.58 lbs. of PLS**

- Planting 16 lbs. of seed out of the bag X 63.16% PLS = 10.1056 lbs. PLS/Acre

Establishment - Light Coating – PLS Calculations





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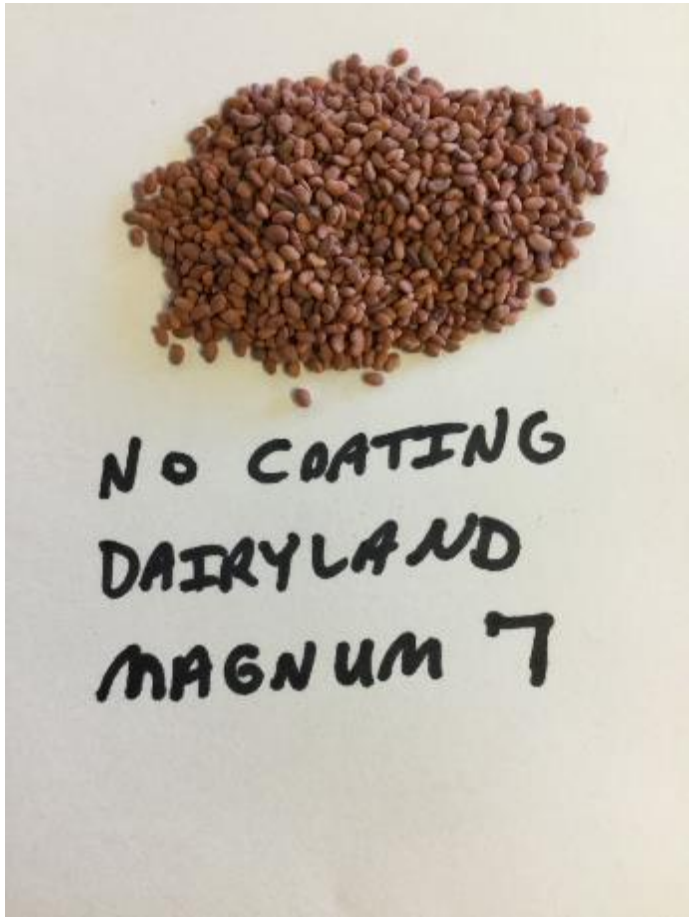
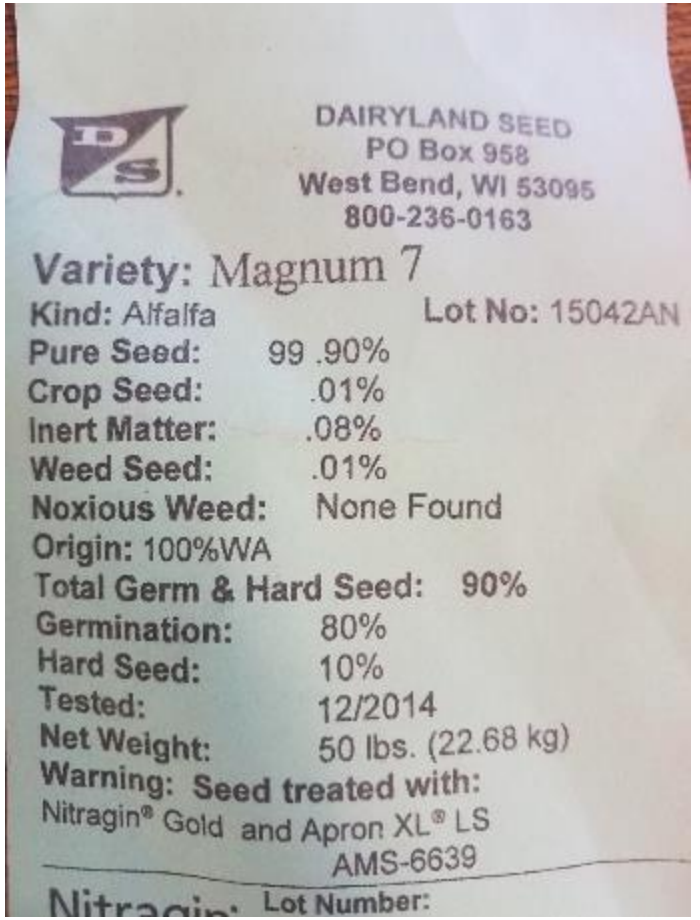
Wisconsin TEAM Forage

Establishment - No Coating – PLS Calculations





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Not Everyone is Utilizing the Latest Technology…

So, What is the Range in Alfalfa Planting Rates Across the State of Wisconsin?

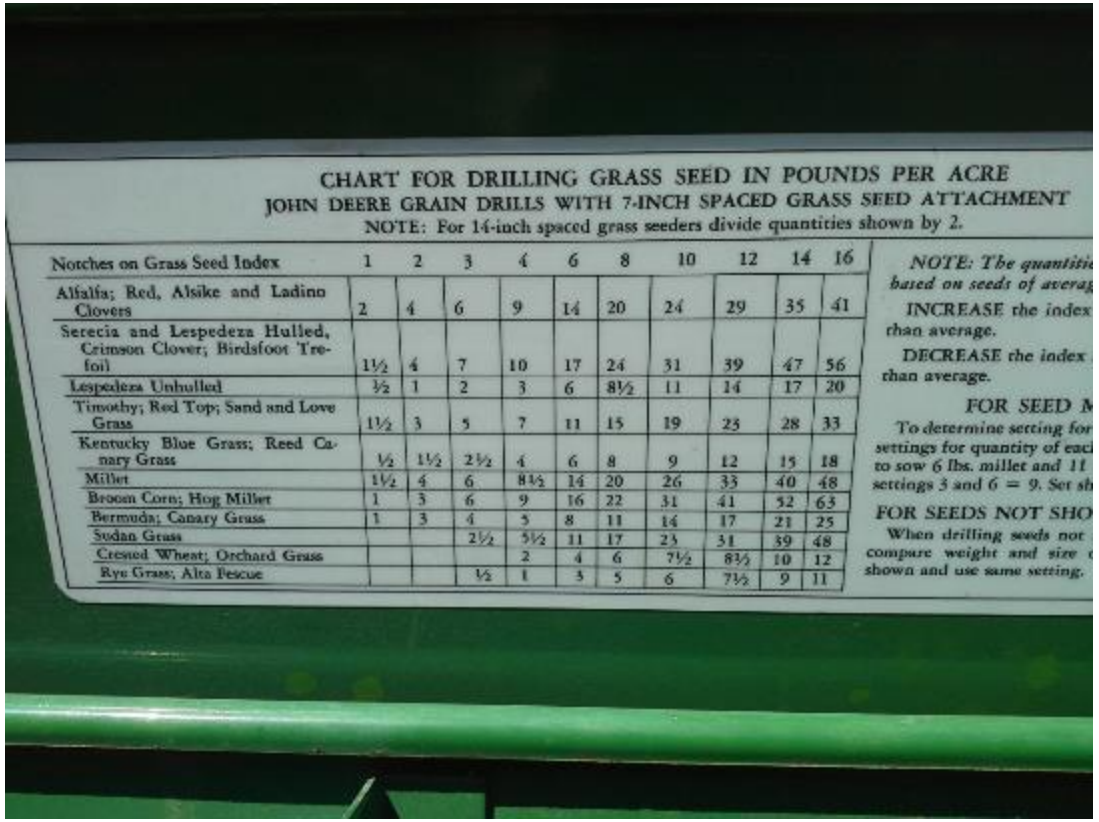

CHART FOR DRILLING GRASS SEED IN POUNDS PER ACRE
JOHN DEERE GRAIN DRILLS WITH 7-INCH SPACED GRASS SEED ATTACHMENT
NOTE: For 14-inch spaced grass seeders divide quantities shown by 2.

Notches on Grass Seed Index	1	2	3	4	6	8	10	12	14	16
Alfalfa; Red, Alsike and Ladino Clovers	2	4	6	9	14	20	24	29	35	41
Serecia and Lespedeza Hulled, Crimson Clover; Birdsfoot Trefoil	1½	4	7	10	17	24	31	39	47	56
Lespedeza Unhulled	½	1	2	3	6	8½	11	14	17	20
Timothy; Red Top; Sand and Love Grass	1½	3	5	7	11	15	19	25	28	33
Kentucky Blue Grass; Reed Canary Grass	½	1½	2½	4	6	8	9	12	15	18
Millet	1½	4	6	8½	14	20	26	33	40	48
Broom Corn; Hog Millet	1	3	6	9	16	22	31	41	52	63
Bermuda; Canary Grass	1	3	4	5	8	11	14	17	21	25
Sudan Grass			2½	5½	11	17	23	31	39	48
Crested Wheat; Orchard Grass				2	4	6	7½	8½	10	12
Rye Grass; Alta Fescue			½	1	3	5	6	7½	9	11

NOTE: The quantiti based on seeds of averag

INCREASE the index than average.

DECREASE the index than average.

FOR SEED M

To determine setting for settings for quantity of eac to sow 6 lbs. millet and 11 settings 5 and 6 = 9. Set sh

FOR SEEDS NOT SHO

When drilling seeds not compare weight and size shown and use same setting.

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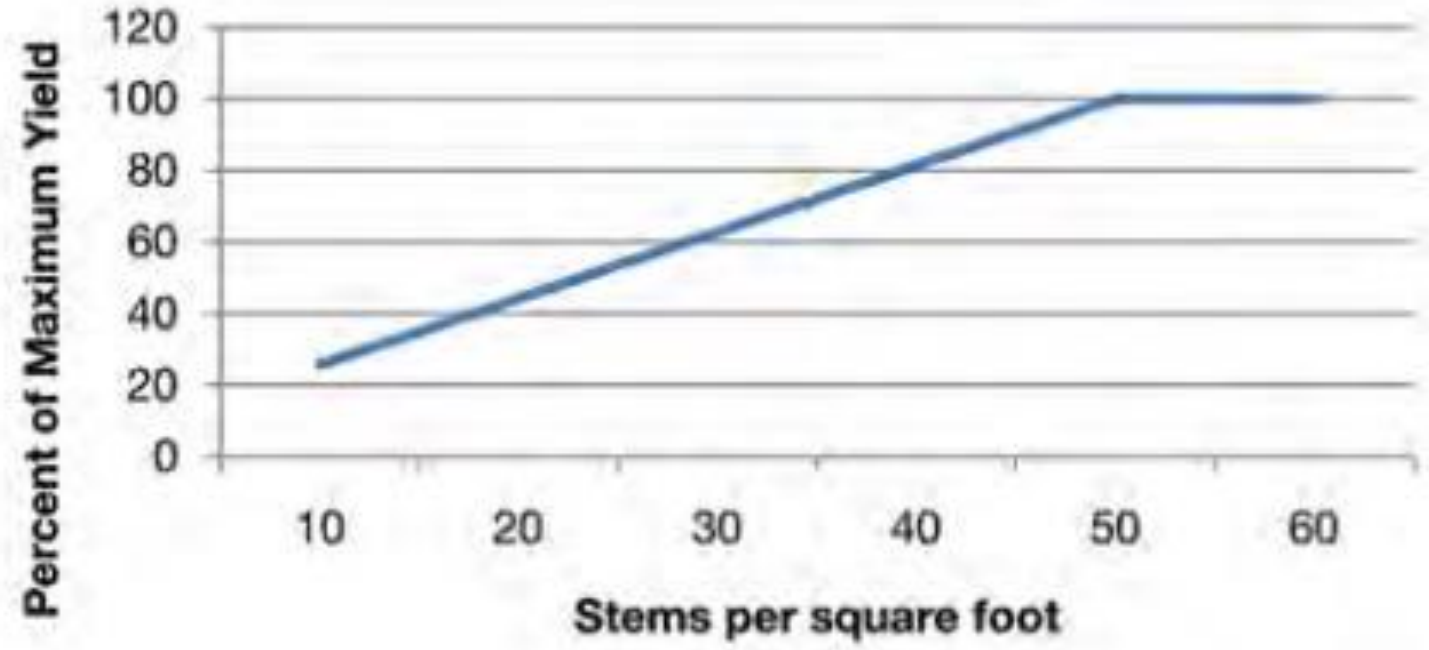
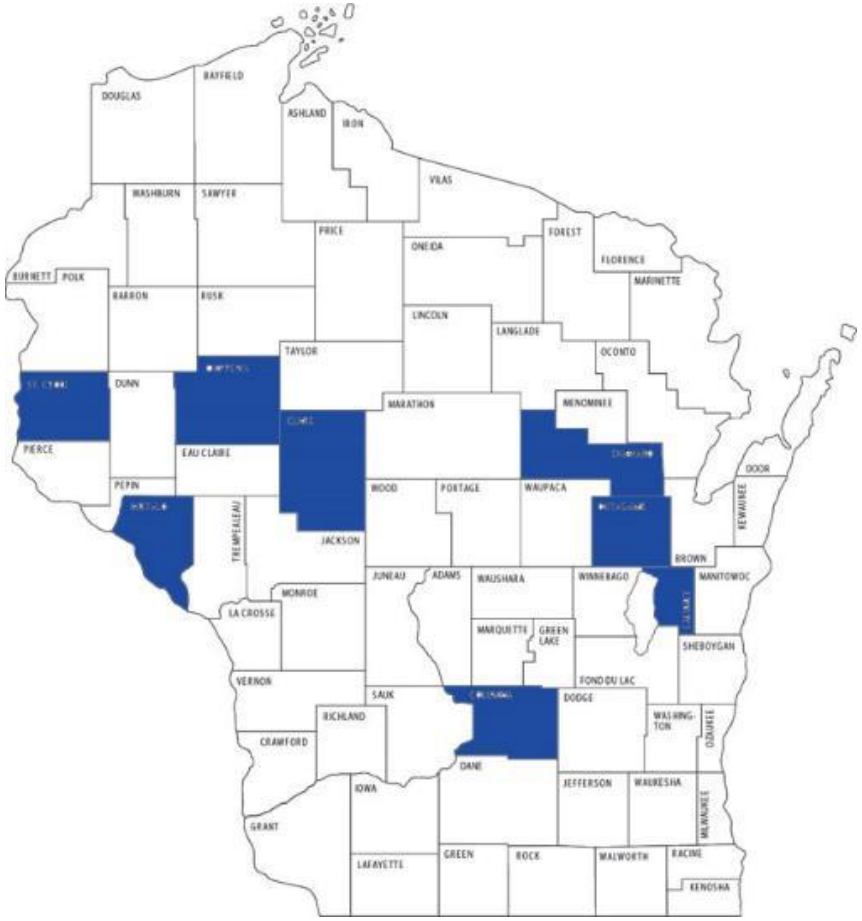
Evaluating Impact on Alfalfa Seeding Rates Statewide

Figure 18. Alfalfa stem count and yield potential.



Source: Undersander and Cosgrove, University of Wisconsin, 1992.



Source: Alfalfa Management Guide – Dan Undersander

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Stem Counts, Not Plant Counts are the Determining Factor for Yield Potential…

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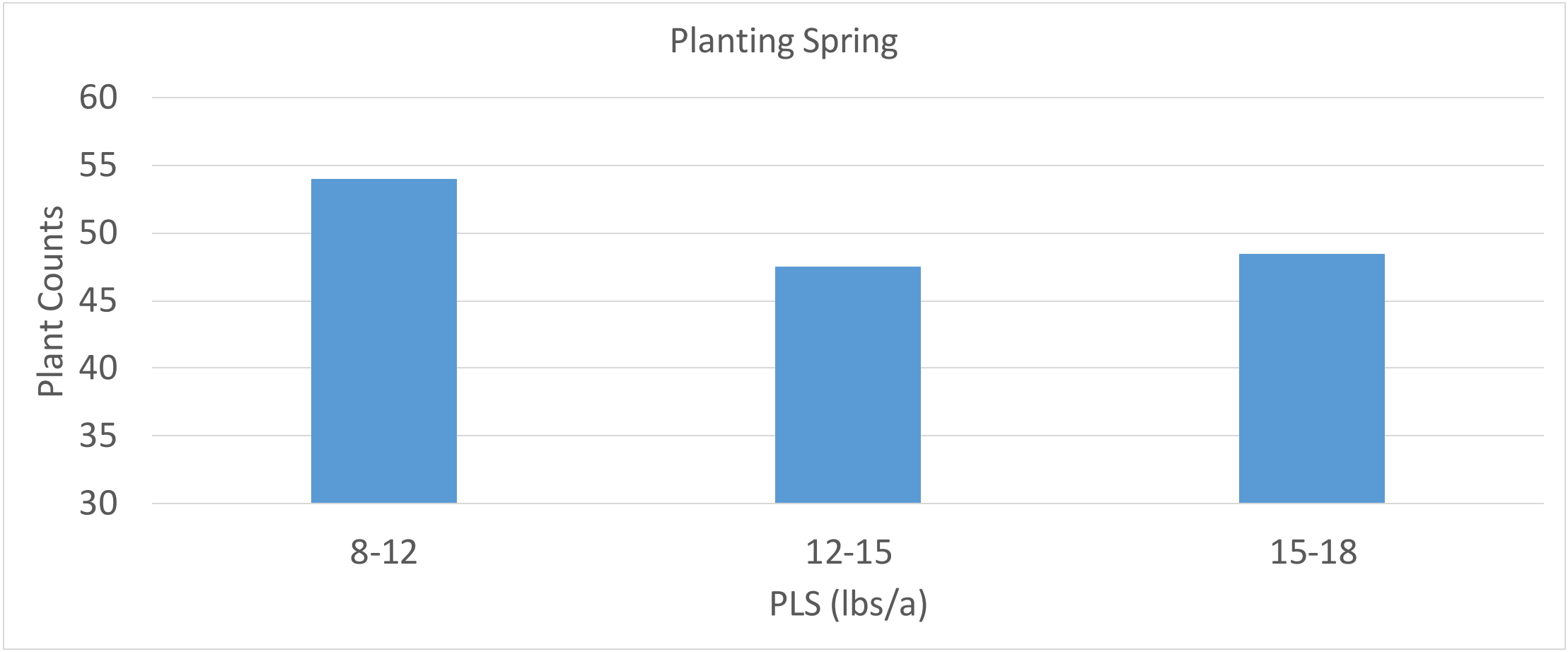
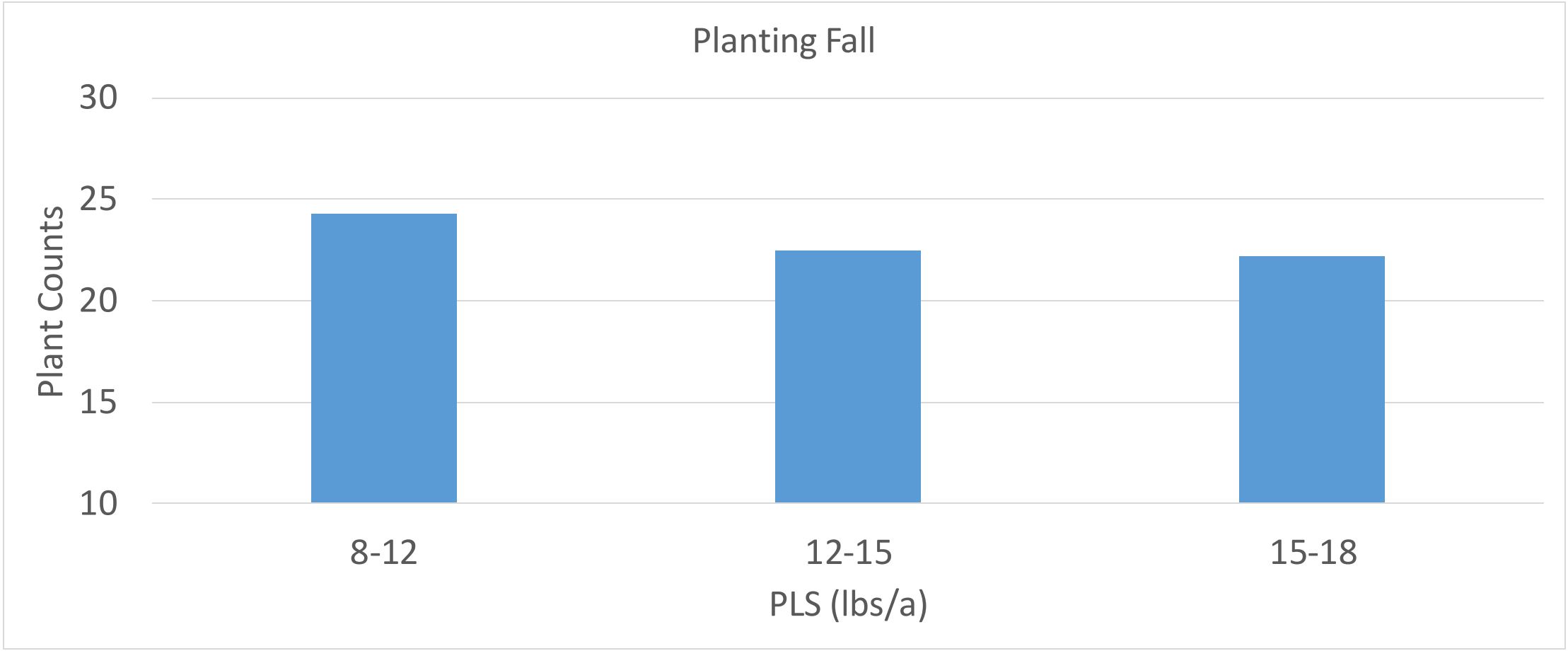
New Seeding in Spring, 30 Days after Planting - P=0.84



New Seeding in Fall, 5 Months After Planting - P=0.19



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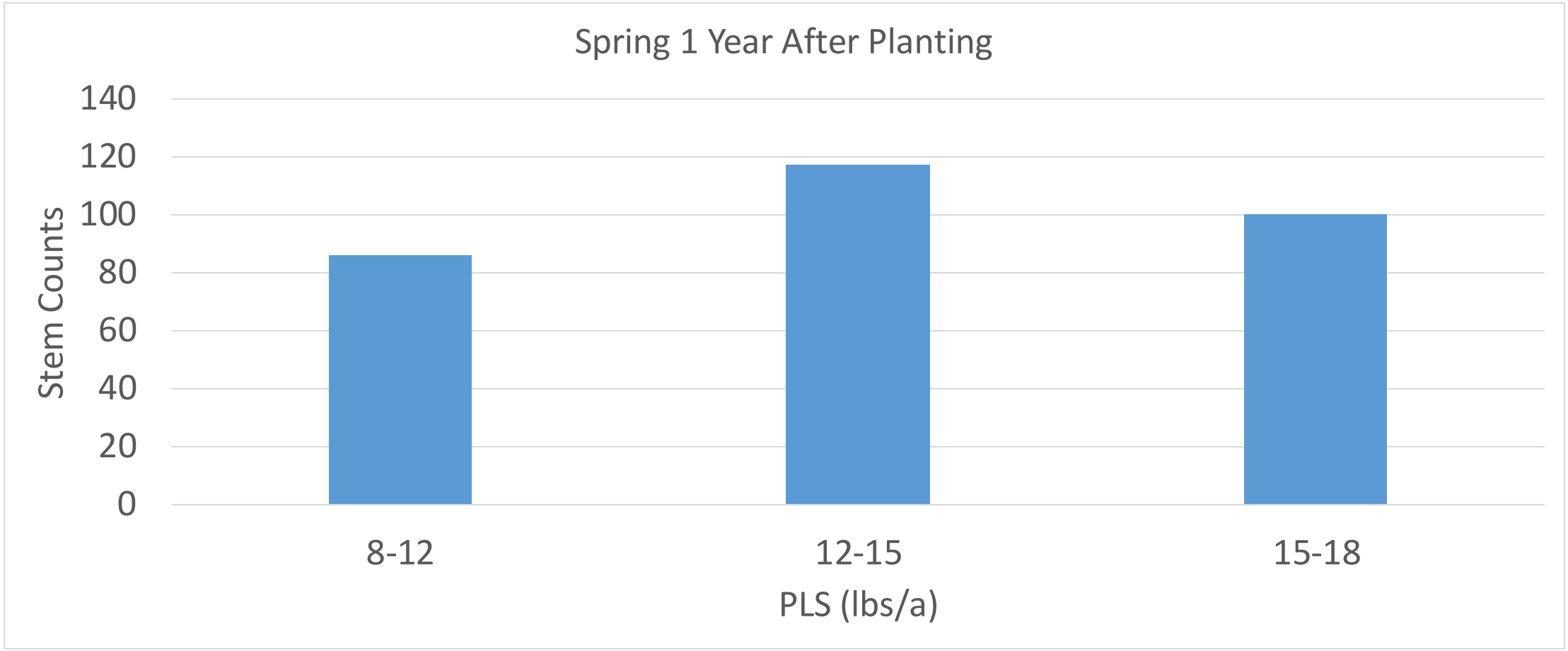
First Full Year of Production, Spring - P=0.50



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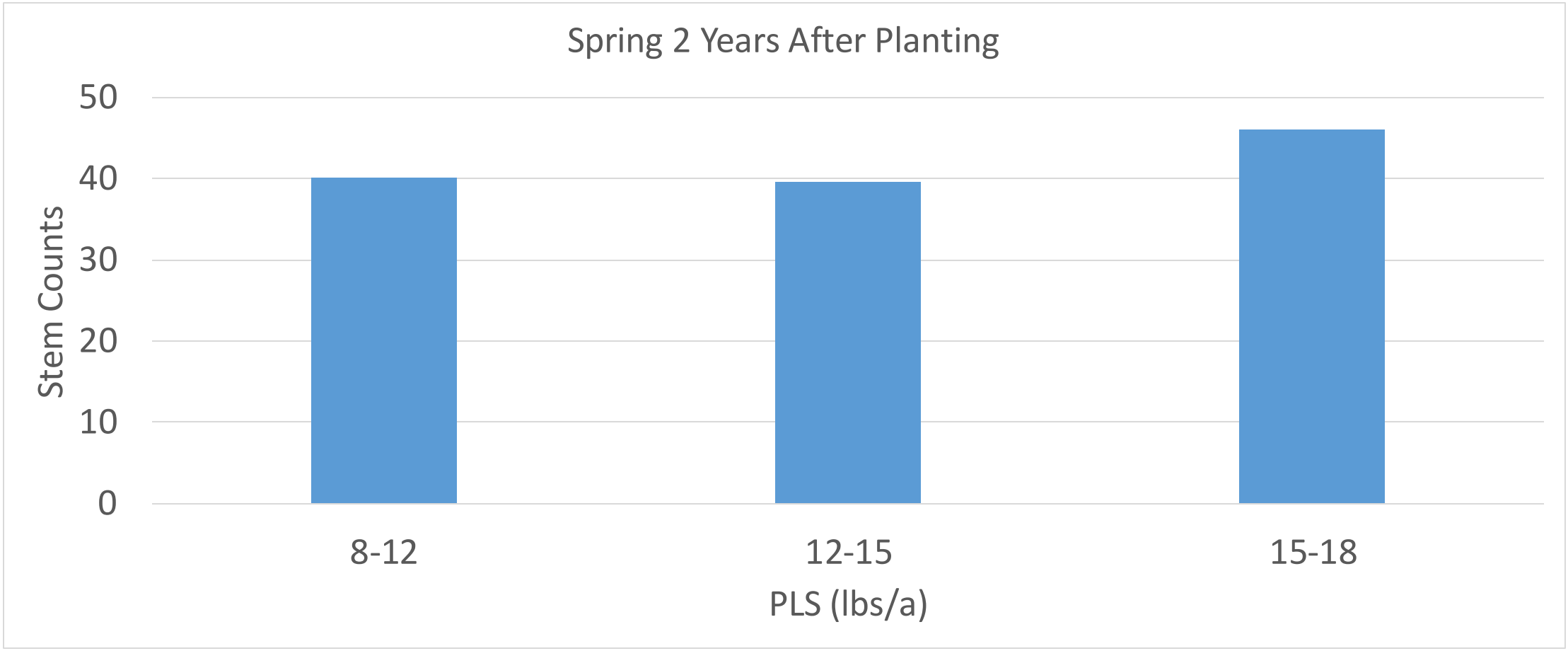
Second Full Year of Production, Spring - P=0.69



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Conclusions from the Statewide Alfalfa Seeding Rate Survey…

- We did not see a statistically significant difference in plant counts across the different seeding rates (12.5 lbs. to 22.5 lbs./8.8 lbs. PLS to 17.8 lbs. PLS) from the data collected across the state of Wisconsin.
- In addition, there was no observed statistically significant difference in stem counts from data collected across the state.
- The Upper Midwest Recommendation for PLS is not less than 10 lbs. per acre when establishing a new stand.
- Wisconsin recommendation is 10 – 12 lbs. PLS.
- Industry recommendations may be higher than Upper Midwest and Wisconsin recommendation.

In-Season Assessments – The Only Way to Get an Accurate Plant Count is to Dig the Plants up…

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Some of the Impediments to a Productive Alfalfa Stand…

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Residue from Previous Year(s), Cover Crops that Tiller, and Everyone's Favorite… Stones

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Oh, Did I Mention the Equipment Operators…

In-Season Management and Production Goals - Scout for Deficiency Symptoms

Potassium deficiency

Leaves of severely deficient plants turn completely yellow.

Lower leaves of deficient plants are edged with white spots (left).

Sulfur deficiency

Stems are spindly with weak growth.

Leaves turn light green (left). Symptoms are similar to nitrogen deficiency.

Source: Alfalfa Management Guide – Dan Undersander

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Sometimes We Have Blind Spots Where We Don't See the Whole Picture

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In-Season Production and Management - Another Consideration with Fall Dormancy

TABLE 3	Fall dormancy and speed of harvest
Fall dormancy	Days to remove forage from field
4.5+	1 to 2
3.5 to 4.5	3 to 4
<3.5	5 or greater

Source: Alfalfa fall dormancy and winterhardiness – Dan Undersander – Progressive Forage, January 13, 2017

In-Season Management and Production Goals - Need to Pay Attention to Nutrient Removal

In-Season Management - Pay Attention to Removal Rates

Table 4. Pounds of nutrient removed per ton of alfalfa produced, dry matter basis.

nutrient	dry matter removed (lb/ton)
phosphorus (P)	6
phosphate (P_2O_5)	14
potassium (K)	48
potash (K_2O)	58
calcium (Ca)	30
magnesium (Mg)	6
sulfur (S)	6
boron (B)	0.08
manganese (Mn)	0.12
iron (Fe)	0.33
zinc (Zn)	0.05
copper (Cu)	0.01
molybdenum (Mo)	0.002

Table 5. Sufficiency levels of nutrients, top 6 inches of alfalfa at first flower.

nutrient	low	sufficient	high
		%	
nitrogen	<2.50	2.50–4.00	>4.00
phosphorus	<0.25	0.25–0.45	>0.45
potassium	<2.25	2.25–3.40	>3.40
calcium	<0.70	0.70–2.50	>2.50
magnesium	<0.25	0.25–0.70	>0.70
sulfur	<0.25	0.25–0.50	>0.50
		ppm	
boron	<25	25–60	>60
manganese	<20	20–100	>100
iron	<30	30–250	>250
zinc	<20	20–60	>60
copper	<3	3–30	>30
molybdenum	<1	1–5	>5

Source: Alfalfa Management Guide – Dan Undersander

Harvest Management - Suggestions for Dry Hay

Table 13. Summary of good hay-making practices.

practice	reason	benefit
mow forage early in day	allow full day's drying	faster drop in moisture less respiration loss less likelihood of rain damage
form into wide swath	increase drying rate	faster drop in moisture less respiration loss less likelihood of rain damage higher quantity and quality
rake at 40–50% moisture content	increase drying rate	faster drop in moisture less respiration loss less likelihood of rain damage less leaf shatter higher quantity and quality
bale hay at 18–20% moisture content	optimize preservation	less leaf shatter inhibits molds and browning low chance of fire higher quantity and quality
store hay under cover	protect from rain, sun	inhibits molds and browning less loss from rain damage higher quantity and quality

Source: Pitt, Cornell University, 1991.

Source: Alfalfa Management Guide – Dan Undersander

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Harvest Management - Criteria for Judging Alfalfa Dry Hay Samples for the World's Forage Analysis Superbowl

Sample Number _____

A. Maturity

vegetative to early bud	15-35
mid bud	40
late bud	38
1/4 bloom	33
½ bloom	30
full bloom	15-22

Score _____ (max 40 pts)

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Harvest Management - Criteria for Judging Alfalfa Dry Hay Samples for the World's Forage Analysis Superbowl

B. Leafiness

50% or more	15
45 - 49%	14
40 - 44%	12
35 - 39%	10
30 - 34%	7
below 25%	0-5

Score _____ (max 15 pts)

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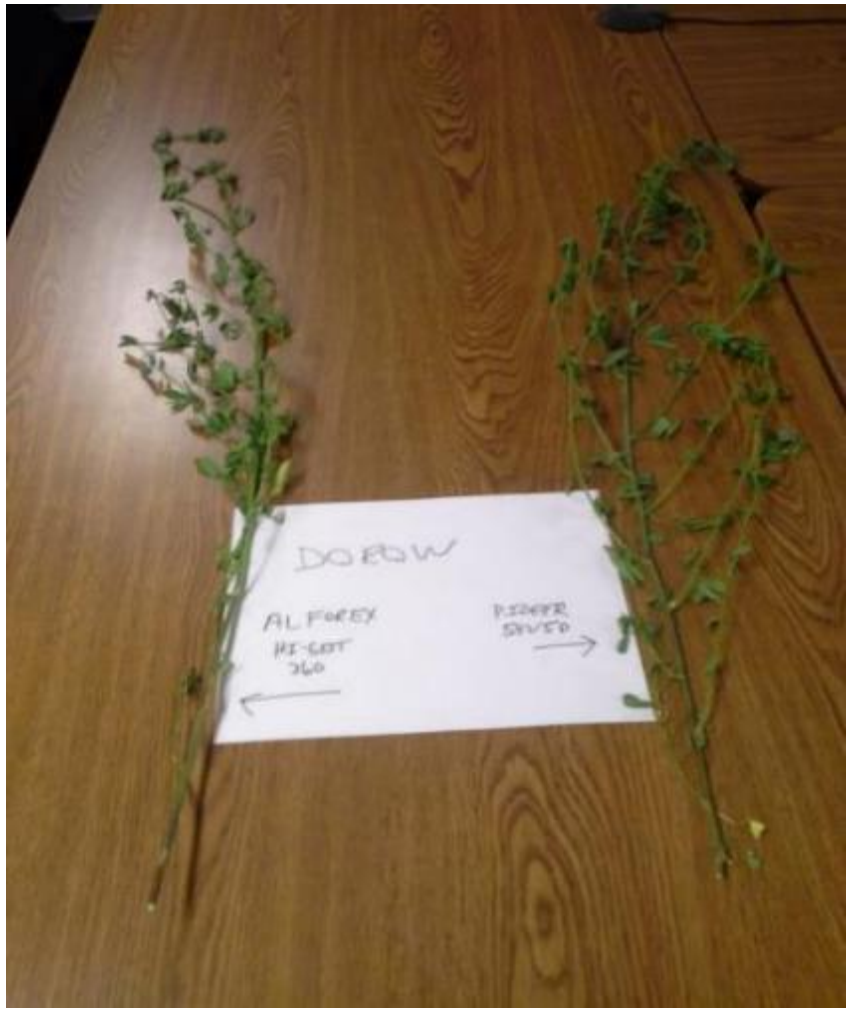
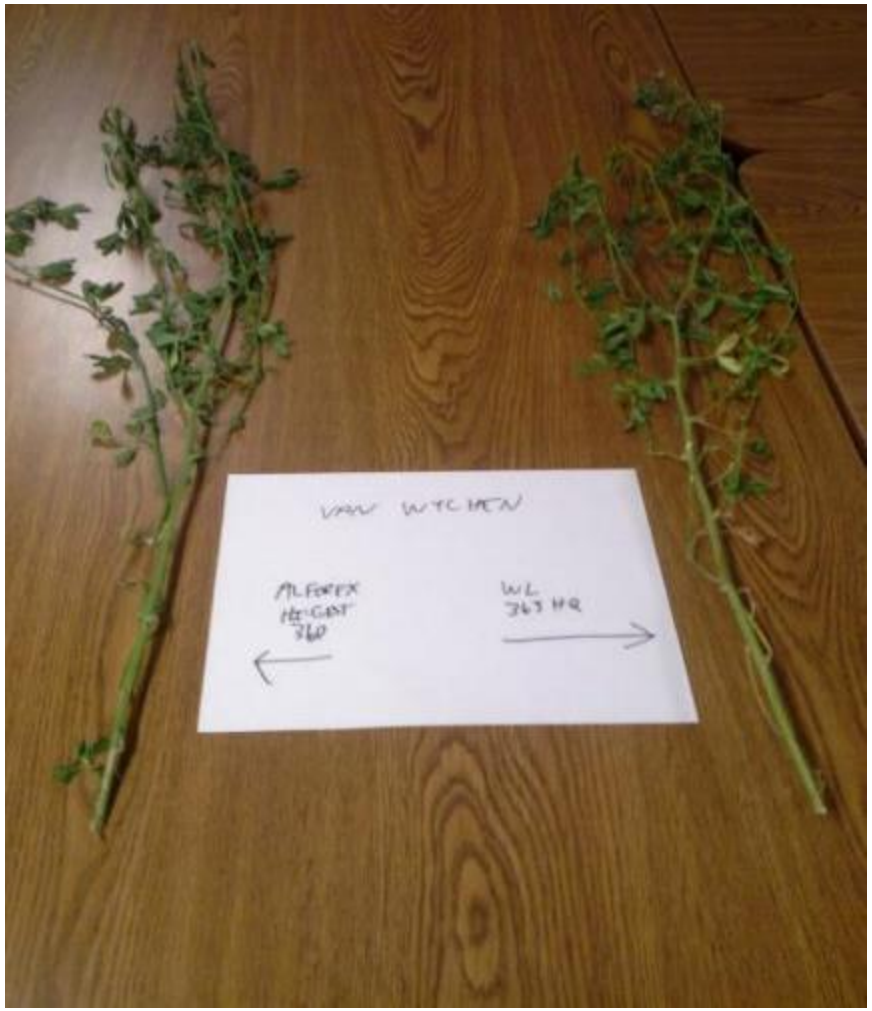
In-Season Management - Visual Observations Made by the Host Farmers Helping Collect Data





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Harvest Management - Criteria for Judging Alfalfa Dry Hay Samples for the World's Forage Analysis Superbowl

C. Color

dark green	15
medium green	14
grey green	11
yellowish green	8-10
bleached	<7

Score _____ (max 15 pts)

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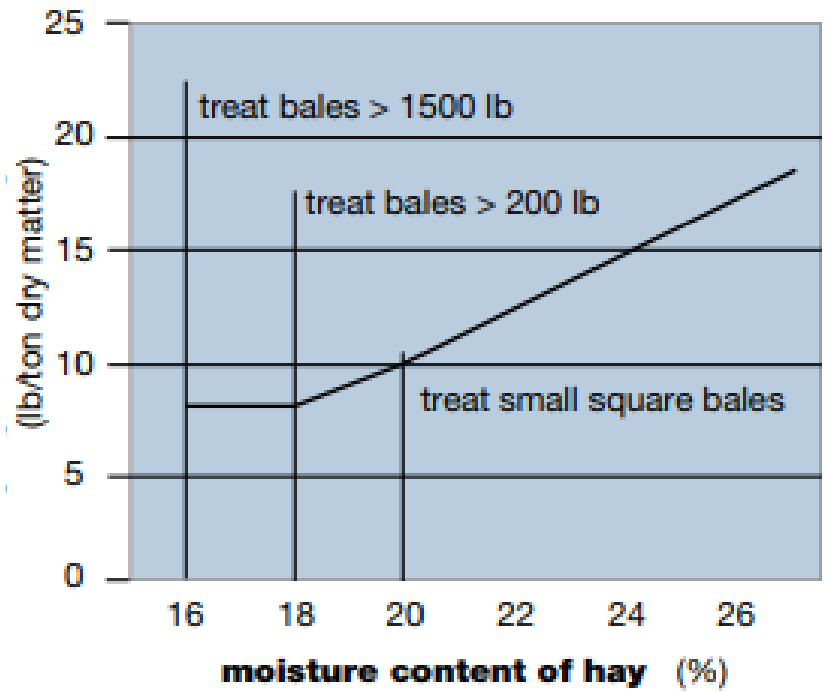
The Goal is to get the Alfalfa Down to 60% Moisture as Soon a Possible Due to Respiration Losses

igure 27. Propionic acid needed to preserve hay.



ource: Undersander, University of Wisconsin, 1999.

Harvest at Appropriate Dry Matter (DM)

Harvest Management - Criteria for Judging Alfalfa Dry Hay Samples for the World's Forage Analysis Superbowl

E. Texture

small, pliable stems	8-10
large, pliable stems	6-7
brittle stems	0-5

Score _____ (max 10 pts)

Total points _____

Foreign material* _____

Final Score _____

*Deduct 1 pt for each percent of foreign material.

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In-Season Management – Weeds Impact on Quality

Table 8. Impact of common weeds on forage quality.

	Relative seriousness		
	Serious	**Moderate**	**Slight**
annual weeds	cocklebur	green foxtail	lambsquarters
	Eastern black nightshade	pennycress	pigweeds
	giant foxtail	shepherd's purse	ragweed, common
	giant ragweed	velvetleaf	
	smartweeds		
	yellow foxtail		
perennial weeds	curly dock	Canada thistle	dandelion
	hoary alyssum	quackgrass and other grasses	white cockle
	yellow rocket		

Source: Doll, University of Wisconsin, 1998.

Harvest Management - Summary of Haylage Harvesting & Feeding Practices

practice	reason	benefit
minimize drying time	reduce respiration	reduced nutrient and energy losses more sugar for fermentation lower silage pH
chop at correct TLC[a] fill silo quickly enhance compaction seal silo carefully	minimize exposure to oxygen	reduced nutrient and energy losses more sugar for fermentation reduced silo temperatures less heat damage (browning) faster pH decline better aerobic stability less chance of listeria less protein solubilization
ensile at 30–50% dry matter content	optimize fermentation	reduced nutrient and energy losses proper silo temperatures less heat damage (browning) control clostridia prevent effluent flow
leave silo sealed for at least 14 days	allow complete fermentation	lower silage pH more fermentation acids better aerobic stability less chance of listeria
unload 2–6 inches/day keep surface smooth	stay ahead of spoilage	limit aerobic deterioration
discard deteriorated silage	avoid animal health problems	prevent toxic poisoning, mycotic infections prevent listeriosis, clostridial toxins

[a] TLC = theoretical length of cut. Chop alfalfa silage at 3/8-inch TLC.

Source: Pitt, R.E., Cornell University, 1990.

Harvesting Goals – Wide Swath Haylage

Criteria Used to Judge Haylage Samples

Sample Number _____

A. Maturity

vegetative to early bud	5-10
bud	15
1/10 bloom	13
½ bloom	10
full bloom	5

Score _____ (max 15 pts)

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Harvest at Correct Fiber Length

B. Fiber Length

> 1 inch mean particle size	0-10
3/8 to 1 inch mean particle size	15-20
3/8 mean particle size, with 15%> 1.5 inches	25
3/8 mean size, 0> 1.5 inches	20
< 3/8 mean particle size	10-20

Score _____ (max 25 pts)

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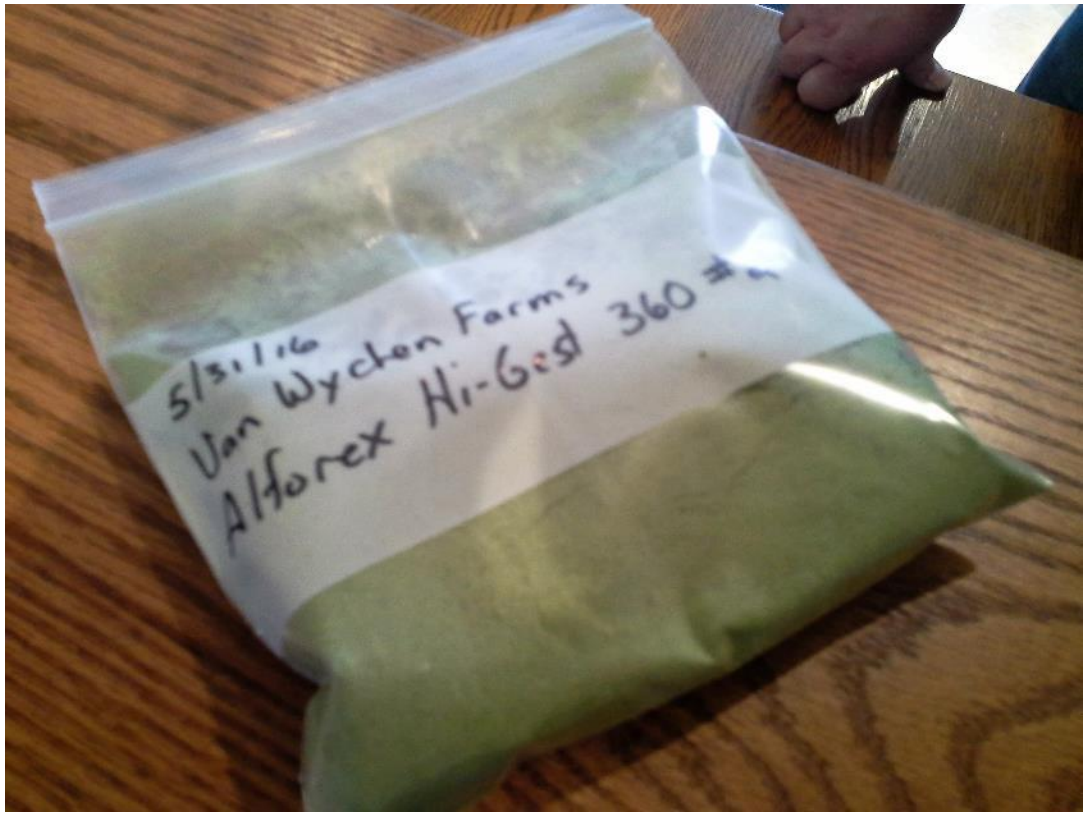
Color of the Haylage Samples is Evaluated



C. Color

Desirable -	26-30
Natural dark green	
Red clover may be darker	
Acceptable -	16-25
Deep dark green	
or very yellowish-green	
or slight brownish-green	
Undesirable -	0-15
brown or black (excessive heating)	
significant white or gray mold	
slimy	

Score _____ (max 30 pts)

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Fermentation Characteristics

D. Odor

Desirable - pleasant, no putrification	26-30
Acceptable - Somewhat strong, yeasty, musty or slight burnt odor	16-25
Undesirable -	0-15

Score _____ (max 30 pts)

Final Score _____

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Waste Not, Want Not…

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Waste Not, Want Not

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Harvest Management – Protect and Preserve What You Have Grown and Harvested

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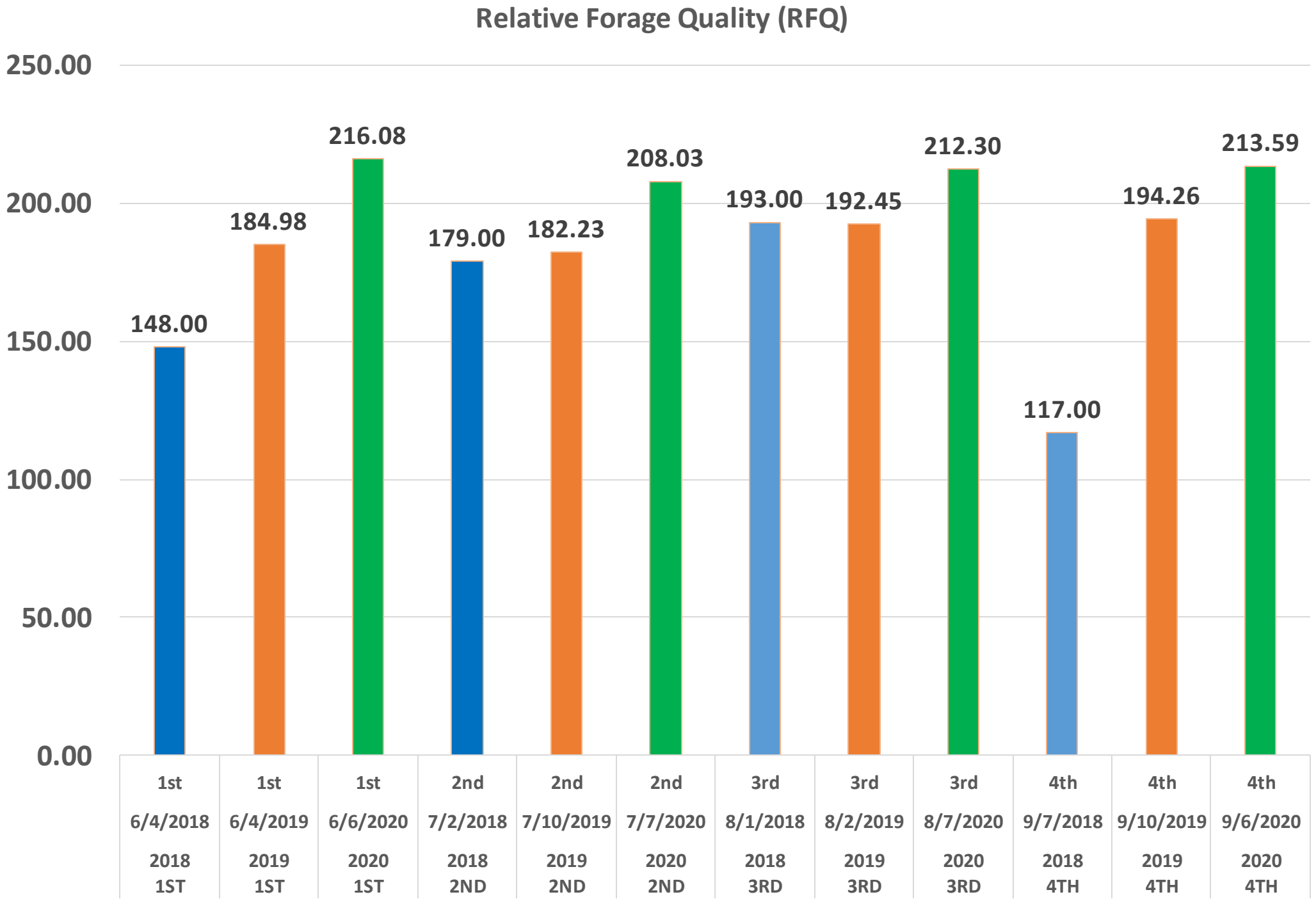
Storage Methods Only Have Limited Potential to Preserve Forage Quality…



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The Four Things Many Nutritionist Look at to Make a Quick Judgement about Forage Quality…

- **1) Dry Matter (DM)**
- **2) Crude Protein (CP)**
- **3) Neutral Detergent Fiber Digestibility (NDFD) 30-hour, 120-hour, 240-hour or TTNDFD**
- **4) Relative Feed Value (RFV), Relative Forage Quality (RFQ), or Milk Per Ton (MPT)**

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Haylage Report for Wisconsin Alfalfa Yield and Persistence (WAYP) Field in Outagamie County 2018 and 2019

	2018 1ST	**2019 1ST**	2018 2ND	**2019 2ND**	2018 3RD	**2019 3RD**	2018 4TH	**2019 4TH**	Changes from 2018 to 2019 (-Red) (+ Black)
HARVEST DATE:	6/4/2018	**6/4/2019**	7/2/2018	**7/10/2019**	8/1/2018	**8/2/2019**	9/7/2018	**9/10/2019**	
Cutting	1st	**1st**	2nd	**2nd**	3rd	**3rd**	4th	**4th**	
Dry Matter (DM) %	37.97	**46.33**	31.49	**35.99**	46.32	**47.59**	43.81	**42.67**	**3.25**
Moisture %	62.03	**53.67**	68.51	**64.01**	53.68	**52.41**	56.19	**57.33**	**(3.25)**
Crude Protein %	20.30	**15.96**	24.10	**21.20**	25.50	**22.99**	22.50	**24.45**	**(1.95)**
Acid Detergent Fiber	36.30	**32.60**	31.60	**32.01**	26.70	**29.36**	37.20	**30.35**	**(1.87)**
Neutral Detergent Fiber	42.30	**37.35**	37.80	**38.45**	33.70	**36.30**	43.30	**35.24**	**(2.44)**
Neutral Detergent Fiber Digestibiltiy	49.10	**51.40**	51.50	**53.46**	48.90	**51.71**	41.50	**50.78**	**4.09**
Relative Forage Quality-RFQ	148.00	**184.98**	179.00	**182.23**	193.00	**192.45**	117.00	**194.26**	**29.23**
Milk Per Ton (MPT) Lbs.	2,771.00	**3,166.50**	3,056.00	**3,165.50**	2,967.00	**3,220.00**	2,078.00	**3,146.50**	**456.63**
Wet Tons @ 55% Moisture	3.49	**2.53**	2.38	**2.58**	1.82	**1.18**	1.38	**1.62**	**(1.16)**
Dry Matter (DM) Tons	1.57	**1.14**	1.07	**1.16**	0.82	**0.53**	0.62	**0.73**	**(0.52)**
Milk Per Acre (MPA) Lbs.	4,350.47	**3,609.81**	3,269.92	**3,671.98**	2,432.94	**1,706.60**	1,288.36	**2,296.95**	**(56.35)**

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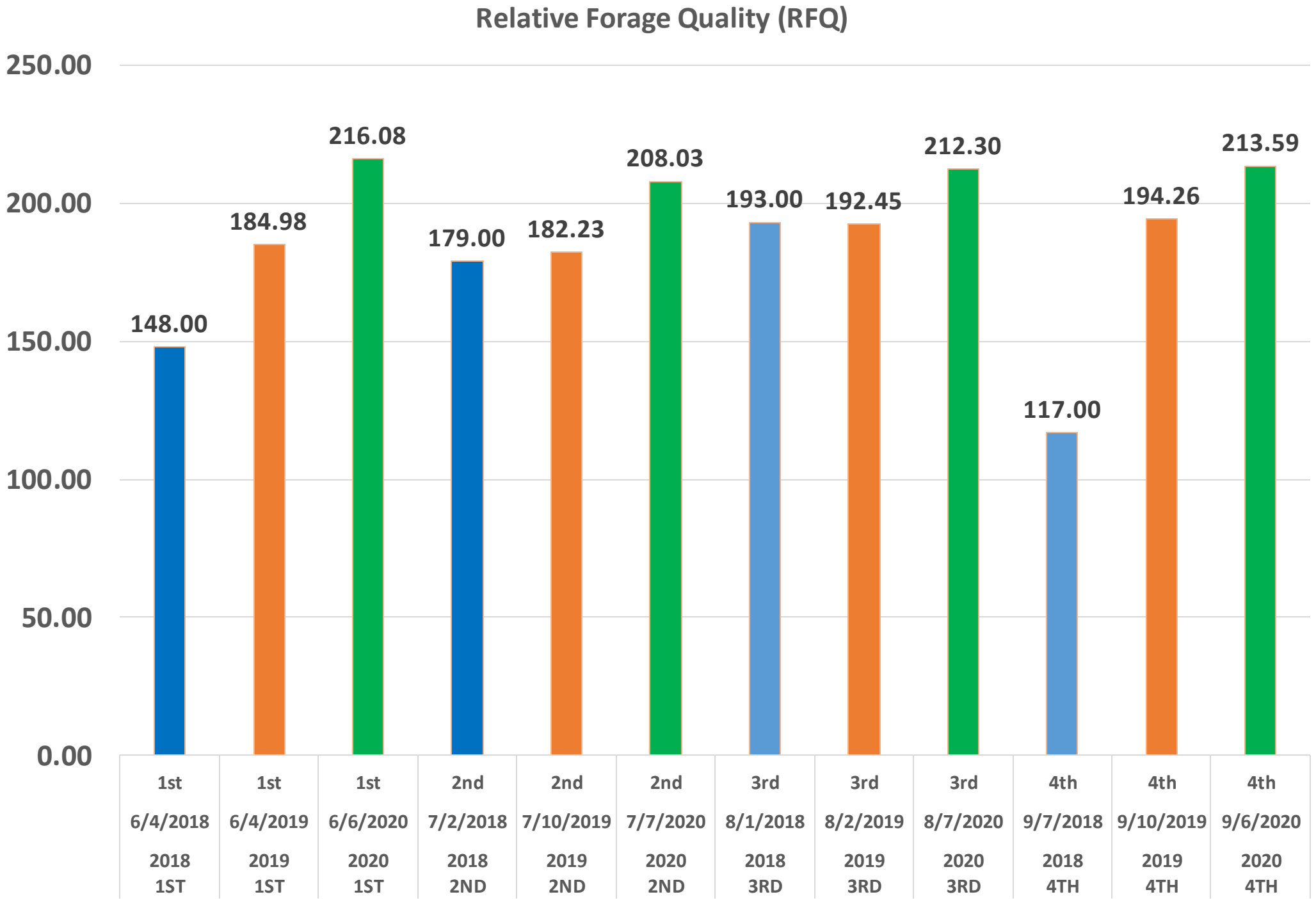

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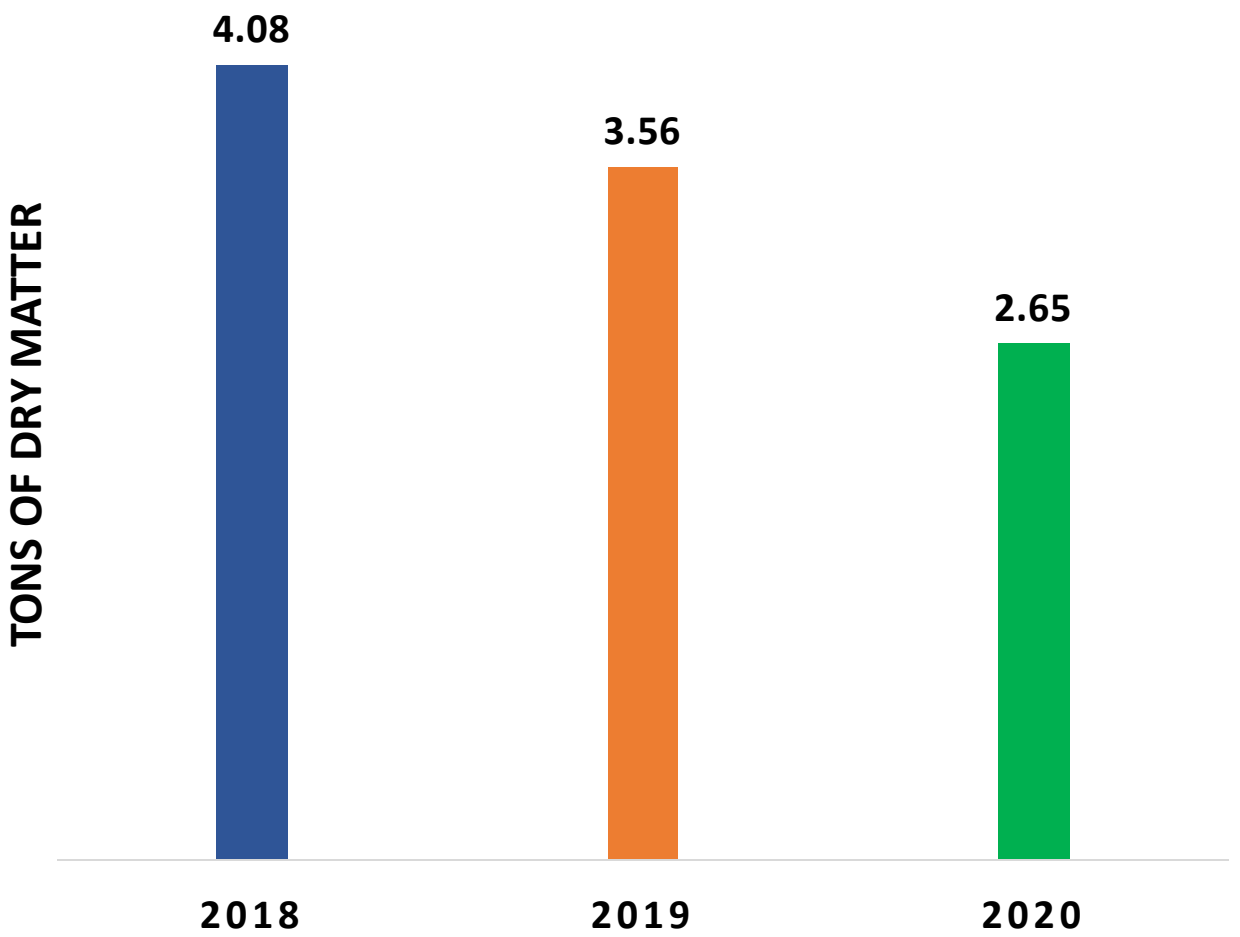
TONS OF DRY MATTER



Haylage Report for Wisconsin Alfalfa Yield and Persistence (WAYP) Field in Outagamie County 2019 and 2020

	2019 1ST	**2020 1ST**	2019 2ND	**2020 2ND**	2019 3RD	**2020 3RD**	2019 4TH	**2020 4TH**	Changes from 2019 to 2020 (-Red) (+ Black)
HARVEST DATE:	6/4/2019	**6/6/2020**	7/10/2019	**7/7/2020**	8/2/2019	**8/7/2020**	9/10/2019	**9/6/2020**	
Cutting	1st	**1st**	2nd	**2nd**	3rd	**3rd**	4th	**4th**	
Dry Matter (DM) %	46.33	**36.35**	35.99	**41.89**	47.59	**39.72**	42.67	**48.20**	**(1.53)**
Moisture %	53.67	**63.38**	64.01	**58.11**	52.41	**62.08**	57.33	**51.80**	**1.53**
Crude Protein	15.96	**23.12**	21.20	**27.49**	22.99	**20.54**	24.45	**20.65**	**1.79**
Acid Detergent Fiber	32.60	**31.52**	32.01	**29.99**	29.36	**29.47**	30.35	**30.36**	**(0.75)**
Neutral Detergent Fiber	37.35	**34.06**	38.45	**35.26**	36.30	**41.42**	35.24	**40.68**	**0.99**
Neutral Detergent Fiber Digestibiltiy	51.40	**54.99**	53.46	**56.65**	51.71	**71.77**	50.78	**73.61**	**12.42**
Relative Forage Quality-RFQ	184.98	**216.08**	182.23	**208.03**	192.45	**212.30**	194.26	**213.59**	**24.02**
Milk Per Ton (MPT) Lbs.	3,166.50	**3,402.00**	3,165.50	**3,313.00**	3,220.00	**3,665.50**	3,146.50	**3576.50**	**314.62**
Wet Tons @ 55% Moisture	2.53	**1.18**	2.58	**1.91**	1.18	**0.82**	1.62	**1.98**	**(2.02)**
Dry Matter (DM) Tons	1.14	**0.53**	1.16	**0.86**	0.53	**0.37**	0.73	**0.89**	**(0.91)**
Milk Per Acre (MPA) Lbs.	3,609.81	**1,803.06**	3,671.98	**2,849.18**	1,706.60	**1,356.24**	2,296.95	**3,183.09**	**(2,093.77)**

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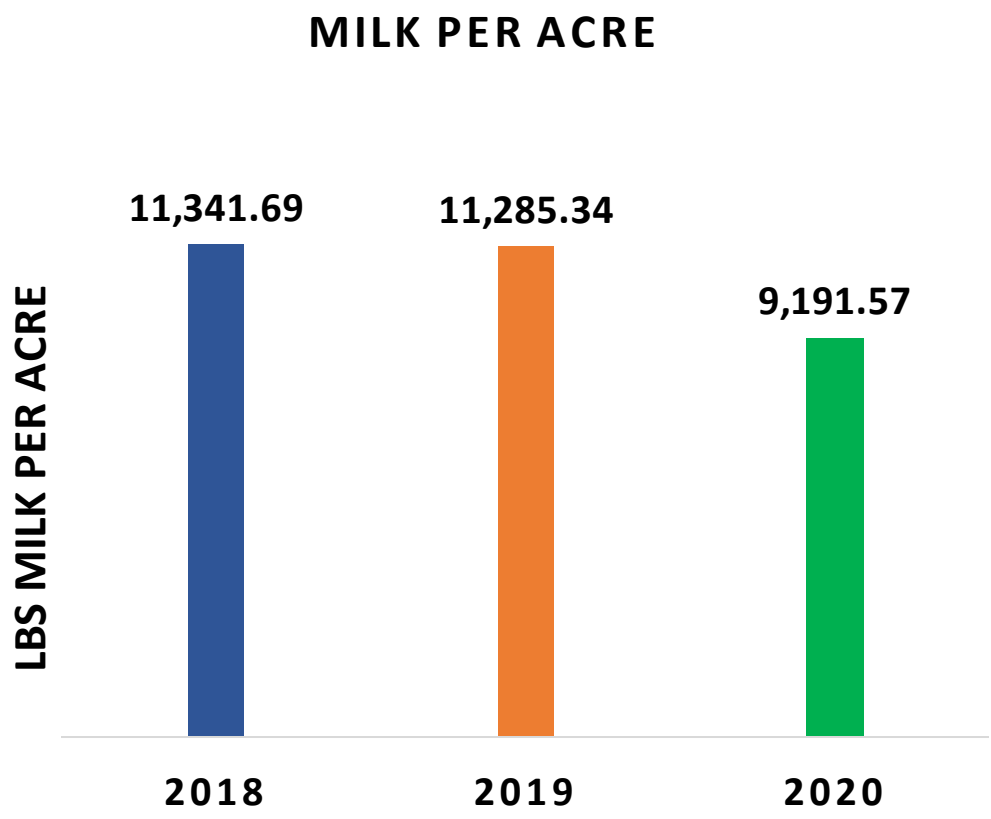
MILK PER ACRE
LBS MILK PER ACRE
11,341.69
11,285.34
9,191.57
2018
2019
2020

Evaluating Your Winter Survival Risk Factors

Table 12. Calculate your risk of alfalfa winter injury. Enter the score for answers that describe your situation.

	points	score
1. What is your stand age?		
> 3 years	4	
2–3 years	2	
≤ 1 year	1	
2. Describe your alfalfa variety:		
a. What is the winterhardiness?		
Higher than recommended for region	3	
Recommended for region	2	
Lower than recommended for region	1	
	a. total	___
b. What is the resistance to important diseases in your region?		
No resistance	4	
Moderate or low resistance	3	
High level of resistance	1	
	b. total	___
Alfalfa variety total score (multiply a and b)		
3. What is your soil pH?		
≤ 6.0	4	
6.1–6.5	2	
≥ 6.6	0	
4. What is your soil exchangeable K level?		
Low (≤ 80 ppm)	4	
Medium (81–120 ppm)	3	
Optimum (121–160 ppm)	1	
High (≥ 161 ppm)	0	
5. What is your soil drainage?		
Poor (somewhat poorly drained)	3	
Medium (well to moderately well drained)	2	
Excellent (sandy soils)	1	
6. What is your soil moisture during fall/winter?		
Medium to dry	0	
Wet	5	
7. Describe your harvest frequency:		
Cut interval / **Last cutting[a]**		
< 30 days — Sept. 1–Oct. 15	5	
< 30 days — After Oct. 15	4	
< 30 days — Before Sept. 1	3	
30–35 days — Sept. 1–Oct. 15	4	
30–35 days — After Oct. 15	2	
30–35 days — Before Sept. 1	0	
> 35 days — Sept. 1–Oct. 15	2	
> 35 days — After Oct. 15	0	
> 35 days — Before Sept. 1	0	
8. For a mid-September or late October cut, do you leave more than 6 inches of stubble?		
No	1	
Yes	0	
Determine your total score (sum of points from questions 1–8)	**total**	

[a] Dates listed are for northernmost states; states south of that area should use later dates.

Source: Adapted from C.C. Sheaffer, University of Minnesota, 1990.

Source: Alfalfa Management Guide – Dan Undersander

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Strategies to Extend the Life of Your Alfalfa Stand

Winter injury risk

If you score:	Your risk is:
3–7	low/below average
8–12	moderate/average
13–17	high/above average
>17	very high/dangerous

Source: Alfalfa Management Guide – Dan Undersander

- Get Crop Out of the Field within 48 Hours – Wheel Traffic on Regrowth
- Maintain Soil Test Potassium (K)
- Let One Cutting go to Bloom During the Growing Season
- Final Cut Should Occur When Less than 200 Growing Degree Days (GDD) or More than 500 GDD are Expected

Winter Survival Management – Letting One Cutting Go to Bloom to Rest and Restore Carbohydrates

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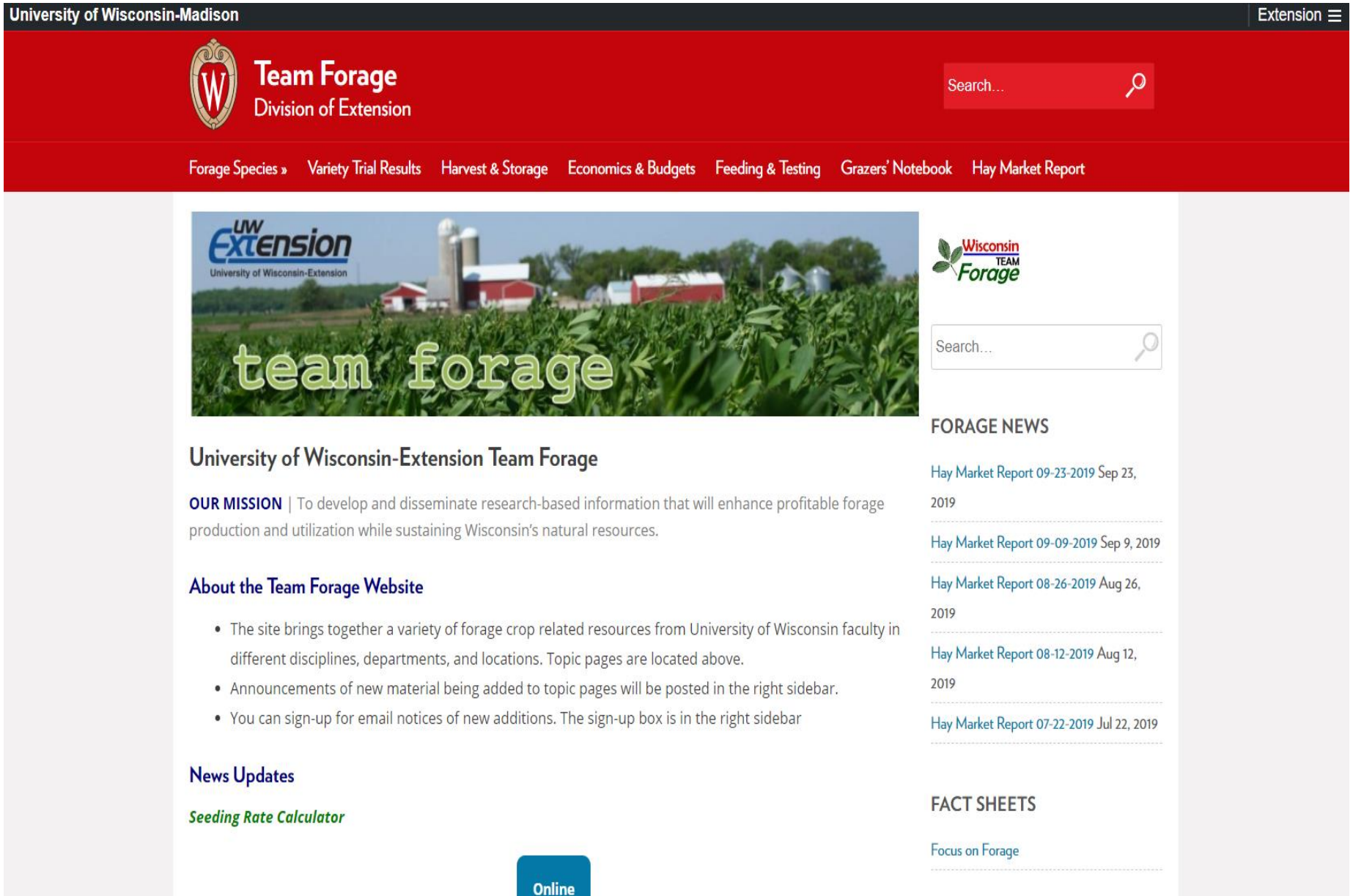
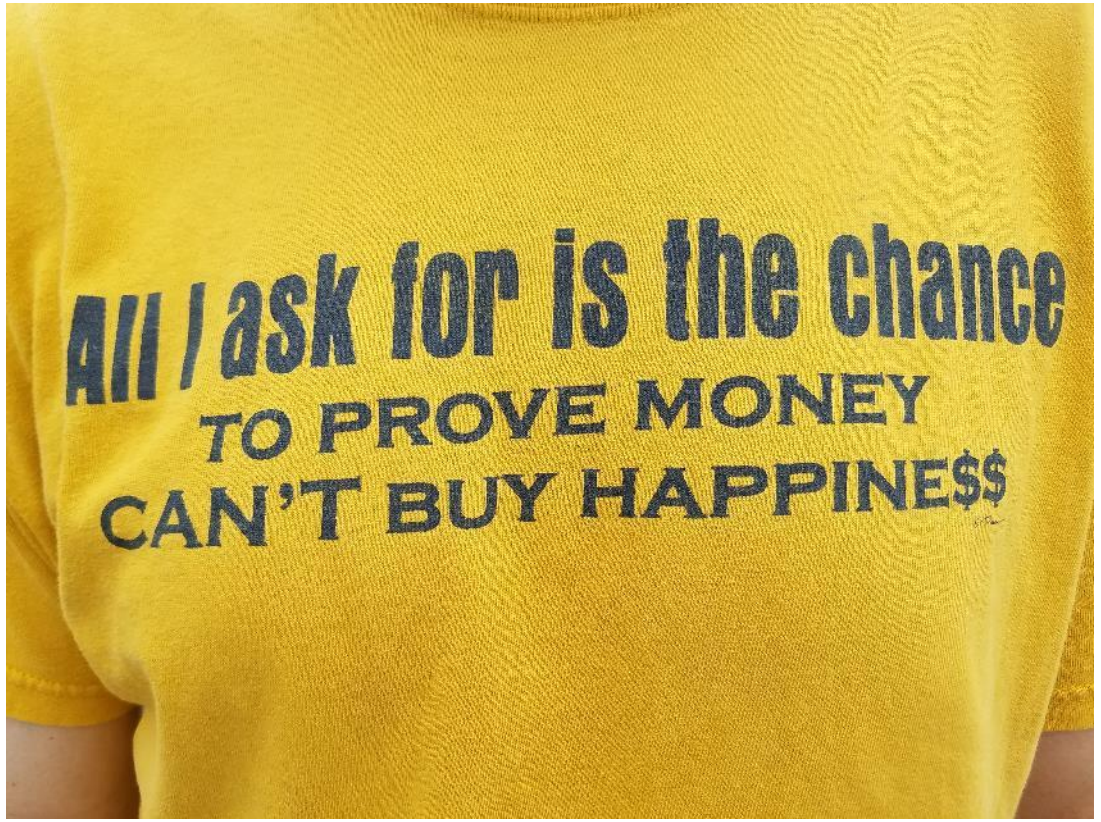
https://fyi.extension.wisc.edu/forage/



Discussion with Aaron Barclay on Winning the 2019 Alfalfa Haylage Category – World's Forage Analysis Superbowl



	NM	SW	PM	CM	PD
CEU Tracking Number: WI 56549 **Approved CEUs:**	0.0	0.0	0.0	1.0	0.0

Meeting Title: Focus on Forage Webinar
Location: Online, WI
Meeting Date: 01/20/2021, 01:00 PM to 01:30 PM

SIGN-IN SHEET FOR CCA, CPAg, CPSS and CPSC ONLY

Please scan code with your mobile device to receive CEUs immediately.

Once scanned, the app will automatically sign you in.

If you are unable to scan the QR code, please enter your First and Last Name and CCA/CPAg/CPSS/CPSC number in the Chat.

Focus on Forage

Optimizing forage production in Wisconsin

Wednesdays – January 13 through March 3 – 12:30 to 1:30 pm
Register at https://go.wisc.edu/334pqz

January 20	Strategies for Achieving Alfalfa Production Goals
January 27	Optimizing Production of Grass & Mixed Grass Forages
February 3	Using Small Grains to Fill a Forge Niche
February 10	Alternative Forage Strategies When Alfalfa Fails (Tom Kilcer, Advanced Ag Systems)
February 17	No webinar
February 24	To be determined
March 3	To be determined

NPM

EXTENSION

Questions?
Email Ashley Blackburn aablackburn@wisc.edu