

Focus on Forage

Optimizing forage production in Wisconsin

Optimizing Production of Grass and Mixed Grass Forages

Using Dairy Manure to Fertilize Forage Stands – Richard Halopka, Extension Clark County
 Optimizing Production of Grass and Mixed Grass Forages – Kevin Jarek, Extension Outagamie County
 Panel Discussion – Aaron Barclay, 2019 World Forage Superbowl winner and Kevin Jarek
 Fine Tuning Conservation – Dan Smith, Nutrient and Pest Management Program Presentation

Wednesdays – January 13 through March 3 – 12:30 to 1:30 pm
 Register at <https://go.wisc.edu/3349gz>

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ON WTAQ-WNFL RADIO IN GREEN BAY

"I'll say this, there's no way in heck that Aaron is not going to be on the Packers. I mean, he is going to be the MVP of the league. He might have had his best year ever. He's our unquestioned leader and, you know, we're not idiots."

MARK MURPHY
PACKERS PRESIDENT

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Optimizing Production of Grass and Mixed Grass Forages - Aaron (Barclay) 2019 World's Forage Analysis Superbowl Winner and Kevin Jarek - UW

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Make Sure You are Getting Advice and Grass Seed from a Reputable Supplier...

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The Benefits of a Grass/Alfalfa Mix – Fiber Digestibility

- Grass and Legume Mixtures have More Total Fiber Compared to Alfalfa Alone
- Grass has a Higher Proportion of Digestible Fiber than Either Alfalfa or Corn Silage Alone
- Grass Can be a Good Fit with High Corn Silage Rations Which Tend to be Lower in Fiber and Higher in Non-Fiber Carbohydrates (Grain Portion)

Source: Growing High-Quality Grasses for Dairy Rations Requires Attention to Detail available at <https://ivi.extension.wisc.edu/forage/growing-high-quality-grasses-for-dairy-rations-requires-attention-to-detail/>

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Italian Ryegrass Impact on Quality compared to Alfalfa

Chart 2. Composition of Pure Alfalfa and Alfalfa with 37% Italian Ryegrass

Component	Alfalfa with Italian Ryegrass (%)	Pure Alfalfa (%)
CP	~22	~22
ADF	~30	~28
NDF	~40	~38
NDFD	~68	~55

Source: Italian Ryegrass as a Companion for Alfalfa Seeding

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Italian Ryegrass Seeded into Damaged Alfalfa 7-13-2005
Seymour, WI – Outagamie County



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Forage Wet Chemistry Report

Report Number: 7549 Lab Number: 4308 Sample Description: Young Ryegrass

Item	Abbreviation	Unit	Result	Method
Dry Matter	DM	% as fed	14.44	WC
Moisture		% as fed	85.56	C
Protein Fractions				
Crude Protein	CP	% of DM	15.84	WC
Soluble Crude Protein	SCP	% of CP		NR
Fiber Fractions				
Acid Detergent Fiber	ADF	% of DM	45.97	NR
Neutral Detergent Fiber	NDF	% of DM	75.05	WC
Neutral Detergent Fiber Digestibility, 48 h		% of NDF		WC
Carbohydrates and Fats				
Non Fiber Carbohydrate	NFC	% of DM	23.90	C
Starch		% of DM		NR
Fat		% of DM	3.39	WC
Energy Calculations: 2001 NRC				
Total Digestible Nutrients, 1X	TDN	% of DM	68.58	C
Net Energy, Lactation, 2X	NE _L	Mcal/lb	1.71	C
Net Energy, Maintenance	NE _M	Mcal/lb	0.77	C
Net Energy, Gain	NE _G	Mcal/lb	1.08	C
Metabolizable Energy	ME	Mcal/lb		C
Relative Forage Quality	RFQ	lbs	192.88	C
Min/Ton			3,471	C
Macro Minerals				
Phosphorus	P	0.31	% of DM	WC
Calcium	Ca	0.74	% of DM	WC
Potassium	K	4.12	% of DM	WC
Magnesium	Mg	0.27	% of DM	WC
Sodium	Na		% of DM	NR
Chloride	Cl		% of DM	NR
Butyric	B		% of DM	NR
Micro Minerals				
Iron	Fe		ppm	NR
Manganese	Mn		ppm	NR
Zinc	Zn		ppm	NR
Copper	Cu		ppm	NR
Ash		13.97	% of DM	WC

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Forage Wet Chemistry Report

Report Number: 7549 Lab Number: 4309 Sample Description: Mature Ryegrass

Item	Abbreviation	Unit	Result	Method
Dry Matter	DM	% as fed	15.55	WC
Moisture		% as fed	84.44	C
Protein Fractions				
Crude Protein	CP	% of DM	13.94	WC
Soluble Crude Protein	SCP	% of CP		NR
Fiber Fractions				
Acid Detergent Fiber	ADF	% of DM	48.97	NR
Neutral Detergent Fiber	NDF	% of DM	71.35	WC
Neutral Detergent Fiber Digestibility, 48 h		% of NDF		WC
Carbohydrates and Fats				
Non Fiber Carbohydrate	NFC	% of DM	23.54	C
Starch		% of DM		NR
Fat		% of DM	3.61	WC
Energy Calculations: 2001 NRC				
Total Digestible Nutrients, 1X	TDN	% of DM	67.53	C
Net Energy, Lactation, 2X	NE _L	Mcal/lb	0.70	C
Net Energy, Maintenance	NE _M	Mcal/lb	0.75	C
Net Energy, Gain	NE _G	Mcal/lb	0.48	C
Metabolizable Energy	ME	Mcal/lb	1.15	C
Relative Forage Quality	RFQ	lbs	174.83	C
Min/Ton			3,369	C
Macro Minerals				
Phosphorus	P	0.34	% of DM	WC
Calcium	Ca	0.79	% of DM	WC
Potassium	K	3.68	% of DM	WC
Magnesium	Mg	0.27	% of DM	WC
Sodium	Na		% of DM	NR
Chloride	Cl		% of DM	NR
Sulfur	S		% of DM	NR
Micro Minerals				
Iron	Fe		ppm	NR
Manganese	Mn		ppm	NR
Zinc	Zn		ppm	NR
Copper	Cu		ppm	NR
Ash		12.77	% of DM	WC

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UW Extension University of Wisconsin - Extension

Hay and Pasture Seeding Rate Calculator

Enter intended seeding rate (lb/acre) and seed cost (\$/lb) in yellow areas

Enter actual % germination and % purity from Seed Top if known

Species	Seeding Rate (lb/acre)	Germination (%)	Purity (%)	Seed Cost (\$/lb)	Actual Purity (%)	Species % of Mixture	Seeds/ft ²	Seeds/acre	Revised Seeding Rate (lb/acre)	Seed Weight (lb/acre)
Legumes										
Ryegrass, Kentucky	90	98	93.80	\$4.31	0	0	10	10	10	428.00
Medic/Vetch	90	98	93.80	\$4.31	0	0	5	5	15	214.00
Festulolm	90	98	93.80	\$4.31	0	0	5	5	15	214.00
Orchardgrass	90	98	93.80	\$4.31	0	0	4	4	10	107.00
Red clover/grass	90	98	93.80	\$4.31	0	0	5	5	15	214.00
Ryegrass, Perennial	90	98	93.80	\$4.31	0	0	4	4	10	107.00
Ryegrass, Bunch	90	98	93.80	\$4.31	0	0	4	4	10	107.00
Timothy	90	98	93.80	\$4.31	0	0	4	4	10	107.00
Grasses										
Alfalfa	18	95	84	\$12.00	\$19.74	100	55	137	8	200.00
White clover	90	98	93.80	\$4.31	0	0	2	2	214.00	
Birdsfoot trefoil	90	98	93.80	\$4.31	0	0	5	5	15	372.00
Red clover	90	98	93.80	\$4.31	0	0	5	5	15	372.00
Red clover	90	98	93.80	\$4.31	0	0	8	8	10	252.00
White clover, intermediate	90	98	93.80	\$4.31	0	0	2	2	5	107.00
White clover	90	98	93.80	\$4.31	0	0	2	2	5	251.00

Total Number of Seeds per lb = 100

Total Seed Cost per Acre = \$19.00

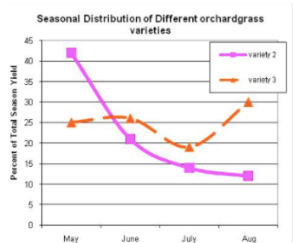
Compost: 100% (100% of 100)

Current retail prices as of 1/13/17

Download the Hay and Pasture Seeding Rate Calculator at: <https://fyi.extension.wisc.edu/forage/>

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Be Aware that Different Varieties Can Behave Quite Differently During the Growing Season



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Depth of Planting Considerations

Percent seedling emergence at seeding depths.

Crop	Seeding depth (inches)				
	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:
 Heel of shoe shouldn't sink in more than 1/2 inch.
 About 10% of seeds should be on soil surface after planting!

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Frost Seeding of Grasses – Which Species Work?

Table 1. Suggested Seeding Rates for Frost Seeding into an Existing Grass or Legume Sod

Species	Rate (lb./acre)		Expected Established Plants*
	Seeded Alone	As Part of Seed Mixture	
Red Clover	4 - 8	3 - 4	2 - 5
Birdsfoot Trefoil	4 - 6	2 - 3	6 - 9 (in 2nd year)
Alfalfa	5 - 8	3 - 4	4 - 6
Ladino Clover	2 - 3	1 - 2	1 - 2
Alsike Clover	2 - 4	1 - 2	2 - 3
Perennial / Italian Ryegrass	8 - 15**	2 - 3	10 - 12
Orchardgrass	3 - 4	1 - 2	4
Tall Fescue	6 - 8	3 - 4	3 - 4
Smooth Bromegrass	Not recommended for frost seeding		
Reed Canarygrass	Not recommended for frost seeding		
Timothy	Not recommended for frost seeding		

* Expected plants based on "alone" seeding rates
 ** Use higher rate in "bare ground" situations and lower rate in existing sods
 Source: Frost Seeding Legumes and Grasses into Established Pastures, Mike Rankin



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Inter-seeding into Damaged Alfalfa Stands

Table 1. Overseeding to increase yield of thinned alfalfa stands, UW Lancaster, 1997 – 1999.

Treatment	Yield T/a, d.m.	CP -----%	ADF	NDF	RFV
Orchardgrass	3.98	20.8	32.9	45.5	129
Italian ryegrass, diploid	3.92	20.4	33.0	45.5	129
Italian ryegrass, tetraploid	3.86	21.2	32.5	44.3	133
Oats to sorghum-sudan	3.83	19.9	33.2	46.9	125
Sorghum-sudan alone	1.95	17.4	34.4	56.8	102
LSD (.05)	0.29	0.8	1.3	1.7	6



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Inter-seeding into Damaged Alfalfa Stands

Table 2. Overseeding vs. alfalfa alone, UW Lancaster, 1999.

Treatment	Yield (T/a)	CP %	RFV
Orchardgrass	4.78	20.5	122
Italian ryegrass, tetraploid	4.64	20.0	124
Italian ryegrass, diploid	4.64	19.5	117
Check: alfalfa alone	4.30	19.5	119
Oats to sorghum-sudan	4.28	18.8	119
Sorghum-sudan alone	2.14	18.5	106
LSD (.05)	0.42	1.2	9



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Inter-seeding into Damaged Alfalfa Stands

Table 3. Seeding & fertility information for overseeding other forage species into a thin alfalfa stand.

Forage	Seeding Rate*, lbs./acre	Seeding Depth, inches	Fertility Requirements
Orchardgrass	5 – 10	.25 - .75	40 – 60 lbs. N
Italian ryegrasses	5 – 10	.25 - .75	40 – 60 lbs. N
Red Clover	6 – 10	.25 - .75	Inoculate
Oats	50 – 75	1.0 – 2.0	40 – 60 lbs. N
Sorghum-sudangrass	20 – 30	1.0 – 2.0	50 – 75lbs. N

* Actual seeding rate used depends on seeding method—broadcast seeding should use higher rates.



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Italian Ryegrass as a part of a Cocktail Mix 6-28-20



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Italian Ryegrass as part of a "Cocktail Mix" – July 2020 – Barclay Farm, Seymour, WI



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Four inches cutting height allows for faster regrowth by leaving energy stored in crowns and leaf area for photosynthesis.




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When Dealing with Grasses, Cutting Height Matters...



Orchardgrass after two years of being cut with a 2-inch stubble. Orchardgrass after two years of being cut with a 4-inch stubble.

Source: Growing High-Quality Grasses for Dairy Rations Requires Attention to Detail available at <https://for.extension.wisc.edu/forage/growing-high-quality-grass-for-dairy-rations-requires-attention-to-detail/>

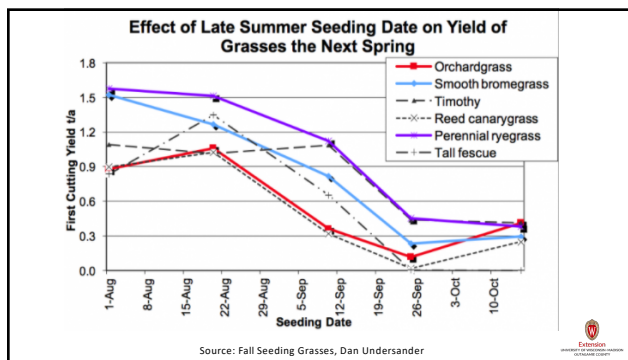


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Italian Ryegrass 2nd Cutting Cocktail Mix Regrowth 7-28-21




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