Extension
UNIVERSITY OF WISCONSIN-MADISON
MARINETTE COUNTY

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If you will need any type of accommodation or assistance as you attend any Extension sponsored event, please contact the host county or Scott at the Marinette County office at least two days prior to the event. All requests will be confidential.

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May, 2022 Newsletter

With this newsletter, we introduce what will hopefully be the last major change in Agricultural Extension programming situation for awhile. Our counties have entered into a regional programming model, through which I will be serving as Crops/Soils Educator for Marinette, Oconto, Shawano, Langlade, and Lincoln Counties. Kimberly Schmidt, based out of the Shawano office, will be serving as Dairy Educator for Marinette, Oconto, and Shawano Counties.

One of the tricky parts of the arrangement is that individual counties are responsible for newsletters. Thus, you are not going to see as many newsletters moving forward, and I am going to be doing more electronic notification. You will also see changes in the type of programming delivered in our counties. We will be heavily focused on dairy and crops programming, and there will be fewer farm management and non-dairy livestock programs conducted, and there will be no local Extension horticulture programs conducted in the foreseeable future.

If you have a dairy management related question, you can contact Kimberly directly at kimberly.schmidt@wisc.edu or call her in Shawano at 715-526-4871. All other agricultural inquiries for our two counties can come to me. Please consider getting me your email address and cell phone number, so that I can add you to electronic notification systems that I will be developing more fully in the near future. Send me a text or email and feel free to send me contact info for others from your farm, as well.

Scott Reuss

Table of Contents:

Upcoming Events

May 19, 26, June 1, possibly more — Alfalfa First crop Monitoring Project (See page 2)

Watch for news (signing up for GBWS Demo Network texts on pg. 8 is an easy way to do this) for field day regarding winter triticale transition to corn silage. Also, a Soil Health Field Day that will be held in Marinette County during June.

June 12 — Oconto County Breakfast on the Farm - Blaser Farms
June 26 — Marinette County Breakfast on the Farm - Finger Family Farm

Recurring Programs: WOCO "Let's Talk" Agriculture Shows. Crops/Soils on the 1st Friday of each month, Dairy on the 3rd Wednesday. 8:05 - 9 a.m.

July — Youth Tractor & Machinery Safety Certification Course (see page 8).
July 12-14 — Farm Technology Days (Clark County)

Planning First-crop Forage Harvest Timing

Last year's perennial forage pattern was not normal, as we saw exceptional yields later in the year, with a lower than normal percentage harvested as first crop due to very dry conditions in most fields. We expect first crop to normally yield about 40-45% of overall tonnage, so it is very important to harvest at appropriate forage quality for your operation. Extension is assisting in the process of producer decision-making again this year. However, as explained in the opening letter, a larger coverage area means less field density in specific areas, but I will try to get into fields that are representative of the different growing regions.

Some considerations for your planning & scheduling thought processes:

+ A normally expected RFQ (Relative Forage Quality) drop per day would be about four or five points. Warm, sunny weather will accelerate maturation, causing RFQ to drop more quickly, as much as 8 or 9 pts/day.

+ Harvesting causes at least a 10% quality loss. Thus, cutting at 200 leads to 180 in the bunker. You also need to account for daily drops in quality and begin early.

++ What quality do you really need and which fields can achieve different goals most efficiently?

Grassy or weedy fields will have lower RFQ values than will pure alfalfa stands, usually by about 10-15%. If you only need dairy forage, start with grassy/weedy fields and then go to the pure alfalfa stands. If you need a mix of forages, you'll increase your efficiency by switching them around.

+ Red clover and low lignin alfalfa stands will hold their feed value longer.

+ Weigh the trade-offs for your operation. Every day you wait to cut, you lose quality, but gain quantity. Decide which is most important for your operation and plan your cutting schedule on those needs.

+++ Be ready to go with any post-harvest treatments, such as fertilization or manure spreading. You really need to get any post-harvest driving on those stands done as fast as possible, so that you minimize the wheel damage, preferably getting everything done within four days of cutting. This is particularly important if you have lower fall dormancy alfalfa cultivars in your fields.

Height of Tallest Stem (from soil surface to stem tip)	Stage of Most Mature Stem: LATE VEGETATIVE	BUD STAGE	FLOWER STAGE
	Vegetative (>12") No buds visible	1 or more nodes with visible buds. No flowers visible	1 or more nodes with open flower(s)
-inches-	Relative Feed Value		
16	237	225	210
17	230	218	204
18	224	212	198
19	217	207	193
20	211	201	188
21	205	196	183
22	200	190	178
23	195	185	174
24	190	181	170
25	185	176	166
26	180	172	162
27	175	168	158
28	171	164	154
29	167	160	151
30	163	156	147
31	159	152	144
32	155	149	140
33	152	145	137
34	148	142	134
35	145	139	131
36	142	136	128
37	138	133	126
38	135	130	123
39	132	127	121
40	129	124	118
41	127	122	115
42	124	119	113

Where to get up-to-the-minute forage quality data:

Option #1. Conduct PEAQ (Predictive Estimated Alfalfa Quality) testing or collect forage samples in your own fields. Use the table here and collect values from across each field.

Option #2. Contact one of the following for First Crop Quality Data. Get local information by calling 715-732-7510 and listening to the message there, or find it on our local county's web sites, or email me at scott.reuss@wisc.edu or sreuss@marinettecounty.com You can access both local and state-wide data by visiting the web site at: https://fyi.extension.wisc.edu/scissorsclip/ When on this website, make sure you select the right range of dates you want, and the region, counties, etc... It may take a small amount of trial and error to get the settings the way you prefer.

Scott will be collecting PEAQ data every Thursday starting May 19th, until harvest. If you feel you have a field that is representative of your region and you are willing to let him walk it for this effort, contact him at 715-701-0966.

Winter Wheat Rotational Restrictions Following Common Soybean Residual Herbicides

Nicholas J. Arneson, Cropping Systems Weed Science Outreach Program Manager
Ryan DeWerff, Cropping Systems Weed Science Research Specialist
Rodrigo Werle, Assistant Professor and Extension Cropping Systems Weed Science Specialist
Department of Agronomy, University of Wisconsin-Madison and UW-Extension

The wheat rotational restrictions table (below) was generated on April 4, 2022 based on information obtained from each of the product's label. For additional information on product use consult individual product labels and/or your local agronomist/industry representative.

When selecting a residual herbicide program, it is important to consider the weed species history in the field, geographic restriction, soil properties, and plant back restrictions for intended crops following soybean in your crop rotation.

Inclusion of specific products does not constitute a recommendation or endorsement. **Always read, follow, and understand the pesticide label. The label is the law.**

Despite careful proof reading, there may be errors in this table. Should you find any information presented herein to be inaccurate, please contact:

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or

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Additional Resources:

- Herbicide Rotational Restrictions for Cover & Forage Cropping Systems
- 2022 Pest Management in Wisconsin Field Crops
- 2020 Wisconsin Herbicide Mode of Action Chart
- 2021 Wisconsin Weed Science Research Report
- Residual Control of Waterhemp with Pre-emergence Herbicides in Soybean
- 2021 WiscWeeds Herbicide Comparison for Residual Weed Control in Corn
- Post-emergence Corn & Soybean Herbicide Product Restrictions for Broadcast Applications

Find these and other great resources on our blog: www.wiscweeds.info

Cropping Systems Weed Science
UNIVERSITY OF WISCONSIN-MADISON

Wheat Rotational Restrictions (updated March 25, 2022)			
Herbicide Trade Name	**Active Ingredient(s)**	**SOA Group**[1]	**Wheat Rotational Restriction**
Valor EZ	flumioxazin	14	**60 Days**
Fierce EZ	flumioxazin + pyroxasulfone	14 & 15	**2 Months**
Afforia[2]	flumioxazin + thifensulfuron-methyl + tribenuron-methyl	14 & 2 & 2	
Sharpen[3]	saflufenacil	14	**3 Months**
Surveil	flumioxazin + cloransulam-methyl	14 & 2	
Enlite	flumioxazin + chlorimuron-ethyl + thifensulfuron-methyl	14 & 2 & 2	
Pursuit	imazethapyr	2	**4 Months**
FirstRate	cloransulam-methyl	2	
Classic	chlorimuron-ethyl	2	
Canopy DF	chlorimuron-ethyl + metribuzin	2 & 5	
Prowl H20[4]	pendimethalin	3	
Tricor DF[5]	metribuzin	5	
Spartan	sulfentrazone	14	
Authority Assist	sulfentrazone + imazethapyr	14 & 2	
Authority First / Sonic	sulfentrazone + cloransulam-methyl	14 & 2	
Authority MTZ	sulfentrazone + metribuzin	14 & 5	
Valor XLT	flumioxazin + chlorimuron-ethyl	14 & 2	
Trivence	flumioxazin + chlorimuron-ethyl + metribuzin	14 & 2 & 5	
Fierce MTZ[6] / Kyber	flumioxazin + metribuzin + pyroxasulfone	14 & 5 & 15	
Fierce XLT	flumioxazin + chlorimuron-ethyl + pyroxasulfone	14 & 2 & 15	
Warrant	acetochlor	15	
Warrant Ultra	acetochlor + fomesafen	15 & 14	
Outlook	dimethenamid-P	15	
Verdict	dimethenamid-P + saflufenacil	15 & 14	
Perpetuo[7]	pyroxasulfone + flumiclorac	15 & 14	
Anthem Maxx	pyroxasulfone + fluthiacet-methyl	15 & 14	
Zidua PRO	pyroxasulfone + saflufenacil + imazethapyr	15 & 14 & 2	
Dual II Magnum	S-metolachlor	15	**4.5 Months**
Boundary[8]	S-metolachlor + metribuzin	15 & 5	
Sequence	S-metolachlor + glyphosate	15 & 9	
Authority Elite / Broadaxe XC	S-metolachlor + sulfentrazone	15 & 14	
Prefix	S-metolachlor + fomesafen	15 & 14	
Zidua SC[9]	pyroxasulfone	15	**6 Months**
Authority Supreme[10]	pyroxasulfone + sulfentrazone	15 & 14	
Authority Edge[11]	pyroxasulfone + sulfentrazone	15 & 14	**10 Months**
Treflan	trifuralin	3	**12 Months**

[1] Site of Action (SOA) Group for herbicide active ingredients.
[2] Afforia: 30 Days at 2.5 oz/acre; 2 Months at 2.5-3.75 oz/acre.
[3] Sharpen: 3 Months when using 5.0 fl oz/acre or more. No restriction for Sharpen at 3.0 oz/acre or less.
[4] Prowl H20: 4 Months for winter wheat; Full Year for spring wheat.
[5] Tricor DF: 8 Months if not following soybean.
[6] Fierce MTZ / Kyber: 8 Months if not following soybean or peas.
[7] Perpetuo: 1 Month at 8 fl oz/acre or less; 4 Months at 10 fl oz/acre.
[8] Boundary: 4.5 Months for winter wheat; 8 Months for spring wheat.
[9] Zidua SC: 1 Month at 3.25 fl oz/acre or less; 4 Months at 5.0 fl oz/acre to less than 6.5 fl oz/acre; 6 Months for 6.5 fl oz/acre.
[10] Authority Supreme: 4 Months at 9.8 fl oz/acre or less.
[11] Authority Edge: 4 Months at 13.4 fl oz/acre or less. 10 Months at 15.7 fl oz/acre.

Effects of potassium, sulfur, and boron fertilization rates on alfalfa production in Northeastern Wisconsin

- A study funded by the Midwest Forage Association through the Midwest Forage Research Program; Rock River Laboratory; and the Shawano County Forage Council.

- Investigators: Scott Reuss & Kimberly Schmidt. Marinette/Oconto and Shawano Counties Agriculture Agent/Educator with UW-Madison, Division of Extension.

- Special thanks to Mike Guseck, Porterfield, WI; and Townline Acres (Doug, Dillon, and Derek Breyer), Birnamwood, WI for hosting the research on their farms.

This two-site study was conducted to assess how potassium, sulfur, and boron fertilization affects alfalfa yield and forage quality. Specifically, we utilized methods in an attempt to get information to help assess:

+ How long these nutrients may impact alfalfa after an application?

+ Are there measurable, consistent interactions between these nutrients' applications? If so, should these interactions impact application decision-making?

+ Are the fine sandy loam soils of NE WI managed properly by applying the state-wide potassium and sulfur application recommendations for alfalfa?

+ What sulfur rate is best for NE WI alfalfa fields, as Midwestern recommendations vary significantly?

What we did:

- Compared interactions of four potassium rates (0, 50%, 100%, and 150% of soil test-based recommendation); four sulfur rates (0, 15, 30, and 45 lbs/acre); and 0 or 2 lbs boron/acre. I.e. 32 randomized treatments in 20' x 20' plots, with four full repetitions at each site. A couple details to go with the application methods are that the 100% and 150% Potassium recommendations were heavier than the maximum recommended single time application rate, so these were split in half and applied equally after first and second crops in 2020. Sulfur was applied via elemental sulfur, applied in one application after first crop, as was the boron fertilizer product.
- Measured yield for three cuts at Birnamwood (2020 2nd, 3rd, 4th) and four cuts at Porterfield (2020 2nd and 3rd, 2021 1st and 2nd).
- Counted stems in late summer 2020 and prior to 1st crop 2021.
- Collected quality samples from the Porterfield site's 2020 3rd crop and 2021 1st crop. Funding only allowed for 1 repetition (32 total samples) to be sampled each time.

What we found:

- Addition of potassium and sulfur increased yield, but only sulfur created positive economic return.
- Addition of potassium decreased forage quality.
- Addition of sulfur had slight positive impacts on forage quality.
- Addition of boron resulted in no measurable effects.
- Stem count increased over winter at both sites – in all treatments.
- Interactions between the nutrients were not consistent between the two sites.

Effects of Potassium or Sulfur Addition on DM Alfalfa Yield (DM Tons/Ac)

	Birnamwood	Birnamwood	Porterfield	Porterfield
Harvest date	Potassium effect	Sulfur effect	Potassium effect	Sulfur effect
2nd crop, 2020	.02	.02	.05	.03
3rd crop, 2020	.03	.04	.03	.07
4th crop, 2020	.05	.06	NA	NA
1st crop, 2021	NA	NA	.07	.08
2nd crop, 2021	NA	NA	.05	.08

The effect of adding any potassium or sulfur are summarized here, averaged over the three application rates and the repetitions. Number reported is increased tons DM/acre in comparison to the zero application rate plots for the nutrients. You can see that the effects lasted throughout the length of the study from one application.

Interactions between the three nutrients. In this study, we were not able to measure consistent interaction effects between potassium, sulfur, and boron. There were some interactions noted, but they were not consistent across sites, across harvest dates, nor across application rates.

Effects of Potassium or Sulfur Addition on measured alfalfa forage quality

The tables here report the results of the forage quality analysis conducted for third crop, 2020, and first crop, 2021 samples collected from one full repetition at the Porterfield site. Funding only allowed us to analyze quality parameters (done via wet chemistry methodology to ensure mineral accuracy) for these amounts, but the data strongly indicates that there are negative consequences of potassium addition. It also showed slight positive effects of adding sulfur. The milk/acre numbers at the end of each table are calculated using the actual forage quality results and actual forage yields for the associated treatment groupings. Milk/acre gives a one number way to measure the collective impact of forage yield and quality.

Sulfur appl. rate	CP%	Mg%	Ca%	RFQ	Milk /ton	aNDF %	$tNDFD_{30}$ %	$uNDF_{240}$ %	Calculated milk/ acre
0	19.7	0.22	1.00	166	2880	38.2	45.7	15.7	3053
15 lbs/acre	20.0	0.22	0.96	166	2887	38.3	46.0	15.5	3357
30 lbs/acre	20.2	0.20	0.96	162	2847	38.7	45.8	15.8	3564
45 lbs/acre	20.1	0.21	0.97	167	2861	38.0	45.8	15.4	3303

Potassium appl. rate	CP%	K%	Ca%	RFQ	Milk /ton	aNDF %	$tNDFD_{30}$ %	$uNDF_{240}$ %	Calculated milk/ acre
0	20.4	2.4	1.01	173	2959	37.9	48.0	14.7	3509
50% Rec.	20.2	2.7	0.99	167	2881	38.2	46.0	15.5	3318
100% Rec.	20.0	2.8	0.95	162	2823	38.4	45.0	16.0	3147
150% Rec.	19.5	2.9	0.92	159	2811	38.7	44.3	16.2	3303

Notes for Potassium results: Mg% decreased in concert with Ca%. All NDFD parameters tested decreased in a similar pattern to tNDFD30%.

Economic Return – the Key result! Extra forage yield and/or better forage quality are both good things, but do applications of these nutrients pay for themselves? Certainly, for boron, the answer was easy- NO! Even though the cost of adding two lbs. of boron is very low, it led to zero measurable effects. For sulfur additions, the answer was also easy – YES! Each rate of added sulfur and both sites led to measurable positive economic return. This positive return ranged from $4.50 to $43 across rates and sites, but was greatest at both sites at the 30 lbs. S/Ac. application rate. At $0.50/lb. S, application costs were calculated to be $7.50. $15, and $22.50 for the three Sulfur application rates.

Potassium cost of application was much higher than the other nutrients. At the time of the study, potassium cost $0.30/lb. K, thus application costs for this study ranged from $45 to $153/acre across rates and sites. The relatively low forage yield increases and definite forage quality decreases combined in such a way that potassium application resulted in a negative return on investment in all situations except the 50% of recommendation rate at Porterfield. The impact was only a positive $5/acre. The other two rates at Porterfield both resulted in approximately a negative $100/acre return, and the rates of return to potassium application at Birnamwood worsened as rates increased. At the 50% application rate, return was -$21/acre; -$59/acre at the 100% rate; and -$111/acre at the 150% rate.

What does it all mean? This is only one study, but our results clearly show that sulfur additions are warranted to alfalfa fields in NE WI, and indications are strong that 30 lbs./acre leads to optimum returns. Our results also strongly indicate that boron additions to alfalfa are not warranted, even though cost of application is low. Lastly, these results should give all of us pause when adding potash to alfalfa fields. We need it to get maximum yield, but overapplication is certainly negatively impacting our checkbook and our alfalfa quality. In a year such as 2022 when potash prices are extremely high, cutting application rates to half of recommendations appears to be warranted.

Nitrogen Enhancement Products
Local Envita Research – 2021 Results & 2022 Research Plans (Envita & Utrisha)

Nitrogen fertilizer prices created an opportunity for sales personnel to really pitch their nitrogen enhancement products for use in 2022 production. Extension and area farms started a project last year looking at the applicability of Envita in our environment and will be testing both Envita and Utrisha much more thoroughly in 2022. Plans are in place to have at least one grain trial site in each of Marinette, Oconto, Shawano, Langlade, and Lincoln Counties and one field-scale silage trial in Oconto County. The Envita and Utrisha products will be applied via foliar spray at V-4 (the one growth stage where the labels overlap for the two products) and there will be four nitrogen rates for each product and the control (0, 80, 120, and 160 lbs. N for grain sites). The results will hopefully give us a much better idea as to how these products may work for our environment and if they give us consistent return on investment.

Two trial sites were conducted in 2021 that tested Envita only, with results giving a slight positive response, but only providing positive return on investment at one of the two sites. The data tables below show the yields at varying nitrogen application rates with and without Envita applied at-planting. The Lena site had possible compaction issues that may, or may not, have impacted the data. The Abrams site had amazing corn yield at all nitrogen levels, but did show an advantage to Envita application.

Corn Grain Yield at Varying Nitrogen Application Rates, with and without Envita application – Abrams, WI
Results are bu/acre of 15.5% moisture equivalent yield, averaged across four repetitions of each treatment.

N Application Rate	Without Envita	With Envita	Envita Advantage
0	238.3	244.1	5.8
40	237.3	244.1	6.8
80	238.7	241.8	3.1
120	236.7	239.7	3.0
120 preplant	228.0	239.9	11.9
160	235.9	236.4	0.5
160 Split	244.0	240.8	-3.2
200	239.6	252.0	12.4
Trial Average	**236.1**	**242.3**	**6.2**

NOTE: N applied at V-6 growth stage, except for 120 preplant, which was applied at planting, and the 160 split which had 80 applied at V-6 and 80 applied at V-10.

Corn Grain Yield at Three Nitrogen Application Rates, with and without Envita application – Lena, WI
Results are bu/acre of 15.5% moisture equivalent yield, averaged across three repetitions of each treatment.

N Application Rate	Without Envita	With Envita	Envita Advantage
100	212.1	200.8	-11.3
140	207.0	207.8	0.8
180	189.2	204.7	15.5
Trial Average	**202.8**	**204.5**	**1.7**

The intent of these studies is to be able to better answer the question if these products pay for themselves consistently, and/or can we decrease nitrogen rates when using them and still achieve maximum profitability per acre. Last year's results show that the Envita product does have potential, but there were certainly inconsistencies to the results.

So, should I invest in these products for 2022? Our data from last year is probably not enough to change anyone's mind about whether or not to use these types of products. I would suggest trying them if they are interesting to you, but not on the entire farm, and consider running test strips of some sort to see if they worked for you. Also, make sure you read and follow the application instructions and product label. It is pretty easy to incorrectly apply these products and waste the money you invested.

News, Notes, and Upcoming Opportunities

Tractor & Machinery Certification to be held in July I've gotten a number of questions about the youth (ages 12-16) tractor & machinery certification. I am going to be offering the certification training in July. Course delivery will be through a combination of self-study, webinar (or equivalent), and in-person learning events. Anticipated cost of the certification is $45 per student, with in-person training sessions to be offered in Coleman and Antigo. If interested, contact me at 715-701-0966 or send an e-mail to scott.reuss@wisc.edu

Alternative Forages Quality Research If you are planting and feeding any of the 'alternative' forages, such as sorghums, winter rye/triticale, annual forage mixes, and others, there is an opportunity for your farm to assist in a state-wide forage quality project. The very short version of what will occur on your farm, if you enroll, is that the crop will be sampled at harvest and then the stored forage will be sampled between 1 and 3 times. There will be a fair amount of information you need to provide to the researchers, and will receive all the test results, feeding recommendations, and an honorarium for your involvement. If you are interested, contact Kimberly Schmidt, kimberly.schmidt@wisc.edu or 715-526-4871, as she is co-leading this project.

Dairy Farms needed for Soil Health Study If you are interested in soil health, have a dairy farm in the shaded zone of the image at right, and are willing to have some strange people (how else do you describe University types?) walk around one of your corn fields, here is an opportunity for you. As part of the Dairy, Soil, and Water Regeneration Project, soil samples from northeast Wisconsin (see attached map) will be used to establish a baseline assessment of soil carbon stocks and soil health on fields used for forage production. The project is seeking fields under a dairy rotation going into corn in 2022 that receive manure regularly – specifically, 15 fields managed in no-till, 15 fields managed with conventional tillage, and 15 grazing fields (heifers only ok). If you are interested, contact Mara Cloutier at either mcloutier@soilhealthinstitute.org or at 828-708-3490.

Copper accumulation in Alfalfa from footbath usage . A group of NE WI Extension personnel are collecting data regarding accumulation of copper in alfalfa. I need to collect samples from two farms in our two counties for this project. If copper toxicity, or its potential, is on your radar and you are willing to have me collect soil samples and fresh forage samples prior to first crop, let me know. I will also need to get footbath information and field specific information from you. Current animal data is indicating that copper levels in cattle are increasing and are beginning to negatively affect animal health on some farms. If interested, let me know soon at 715-701-0966 (Scott R.)

Green Bay West Shores Demonstration Farm Network If you haven't added your phone number to the contact listing for the GBWS Farm Network, you can do so by texting **GBWSDemo to (920) 260-6200.** This is case sensitive, so make sure the words are capitalized like they appear here. If you can't get it to work, contact Matt Brugger at 920-470-3889. The Demo Farm Network will be sponsoring field days, 'flash' in-field events, and will have occasional news they send out.

Nitrogen and Potassium Management this year; If in doubt, cut rates down a bit. As you fertilize forage stands and corn fields, this is probably the year to cut potassium rates by 10 to 30% across the board. Nitrogen-wise, make sure you have 80 to 100 lbs. Actual N/acre of corn for grain, and 120-140 for silage and then go up from there according to your experiences with a given field. Crop Prices merit fertilizer usage at near normal levels, but cash flow should be a determinant for you, as well.