What's Cropping Up?

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How Late Can You Plant Winter Wheat in New York?

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Because of the dramatic increase in soybean acreage in New York (210,000 acres planted in 2007), a significant portion of the wheat acreage now follows soybeans in the rotation. Soybeans typically are ready for harvest in early to mid-October. In 2005 and 2006, October was excessively wet so many growers were unable to harvest soybeans until late October or early November. Many farmers opted not to plant winter wheat after soybeans in either year because of potential negative effects of a November planting date. We expect that harvest delays of soybeans will occur fairly frequently in New York so we compared winter wheat at a timely planting date (September 15-25) and a late planting date (early November) to determine the grain and straw yield reduction with a November planting of wheat. We planted Caledonia soft white winter wheat at five seeding rates (1.0, 1.5, 2.0, 2.5, and 3.0 bu/acre) on the two dates to also see if an increased seeding rate (beyond the recommended 2.0 bu/acre) can ameliorate some of the negative effects of a delayed planting date.

The 2005-2006 wheat growing season was atypical because of excessively mild temperatures with all months recording above normal temperatures except for December and March (Table 1). Also, May and June were excessively wet, which resulted in significant scab damage in central New York in 2006. The 2006-2007 growing season also was quite warm until mid-January but then was exceptionally cool through April. Also, May and June were exceptionally dry, which resulted in a wheat crop of very short-stature with exceptionally low straw yields in 2007 (Table 2). Despite the very different growing seasons, grain yields were essentially the same and there were no year x planting date, year x seeding rate or year x planting date x seeding rate interactions for grain or straw yields.

When averaged across years, the September planting date yielded about 23% greater than the early November planting date (59 and 48 bu/acre, respectively). Regres-

Table 1. Average temperature and monthly precipitation at the Aurora Research Farm during the 2005-2006 and 2006-2007 wheat growing seasons.

	TEMPERATURE			PRECIPITATION		
Month	2005-2006	2006-2007	30-yr mean	2004-2005	2005-2006	30-yr mean
		°F			in.	
September	66.2	61.0	62.1	3.50	4.86	4.21
October	52.1	49.4	50.9	6.80	4.00	3.20
November	45.0	45.0	40.4	4.42	3.14	3.36
December	27.5	38.3	29.7	1.80	2.22	2.45
January	34.0	29.6	23.7	2.75	2.61	1.92
February	28.5	19.0	25.1	1.17	1.99	1.88
March	33.7	31.0	33.8	1.55	2.88	2.50
April	47.2	43.1	45.3	2.25	3.80	3.28
May	58.0	59.1	57.6	3.94	0.94	3.17
June	67.0	69.3	66.7	6.25	2.33	4.09

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Table 2. Grain yield and straw yield of Caledonia soft white winter wheat for timely planted wheat (9/14/05 and 9/27/06) and late-planted wheat (11/04/05 and 11/02/06) at 1.0, 1.5, 2.0, 2.5, and 3.0 bu/acre seeding rates at the Aurora Research Farm.

	PLANTING DATE					
Seeding Rate	9/14/05	9/27/06	Avg.	11/4/05	11/02/06	Avg.
Bu/acre	Grain Yield (bu/acre)					
1.0	52	54	53	42	44	43
1.5	59	59	59	44	52	48
2.0	64	62	63	47	50	49
2.5	60	61	60	47	58	53
3.0	60	62	61	49	52	50
Mean			59			48
LSD 0.05†			4.5			
	Straw Yield (Tons/Acre)					
1.0	2.2	0.8	1.5	1.5	0.5	1.0
1.5	2.4	1.0	1.7	1.8	0.7	1.3
2.0	2.5	1.0	1.8	1.6	0.7	1.2
2.5	2.4	1.2	1.8	1.6	0.9	1.2
3.0	2.4	1.1	1.8	1.8	0.8	1.3
Mean			1.7			1.2
LSD 0.05†			0.20			

†LSD 0.05 compares means between planting dates.

sion analysis estimated a 0.25 bu/acre/day yield penalty for delaying planting from about September 20 until early November. Nevertheless, the data clearly indicate that respectable grain yields can be achieved in the Finger Lakes Region with an early November planting date.

When averaged across years, the September planting date had about a 40% straw yield advantage when compared with the November planting date (1.7 vs. 1.2 tons/acre, respectively). Clearly, the straw yield penalty, which is estimated to be about 0.011 tons/acre/day, is greater than the grain yield penalty. If growers are planting wheat for straw in early November, they may be disappointed with the low straw yields.

Grain yields did show a planting date x seeding rate interaction. Regression analysis indicated that the 2.0 bu/acre seeding rate provided optimum grain yield for the September planting date but that the 2.5 bu/acre seeding rate provided optimum grain yield for the early November planting date. Surprising, straw yields showed less of a yield response to seeding rates with the 1.5 bu/acre seeding rate resulting in maximum straw yields at both planting dates. We are not sure why the straw yields showed less of a response to seeding rates in this study.

Based on the results of this study, we recommend that growers try to plant wheat as soon as possible after the Hessian fly-free date (~ September 15 in central/western New York) because of the 0.25 bu/acre/day yield penalty with delayed plantings. Wheat, however, often follows soybeans, dry beans, sweet corn or other crops that are not harvested until October or later. For regions in central/western New York that have relatively mild conditions in the late fall and good snow cover during the winter, we believe that wheat can be safely planted until early November with respectable grain yields. If the planting date is delayed until early November, we recommend increasing the seeding rate from 2.0 to 2.5 bu/acre. A November planting date, however, will result in a greater penalty for straw yields so if growers are more concerned with straw, they may wish to plant oats in the spring instead of wheat in November.

How Quickly Will Soil Test P Levels Increase?

Ryan Haden, Quirine Ketterings, Jason Kahabka and Karl Czymmek

Nutrient Management

Introduction

Agronomists know that corn silage utilizes roughly 2 pounds of N for every pound of P. Meeting crop needs with manure can be challenging. One issue is that the ammonia portion of manure is often lost, meaning dairy manure typically has a usable N to P ratio of 1:1. Exceeding crop requirements for P over time will result in increasing soil test P. As environmental concerns have increased over the years, producers and planners are expected to decide whether to balance manure applications with crop requirements for either N or P. As soil test P levels increase beyond agronomic response thresholds, risk indices for environmental or regulatory purposes call for reductions or elimination of P applications in some circumstances. Producers and planners want to know how long it may be before soil test P increases into a high risk range that could trigger the need for alternative manure application sites. We conducted a laboratory incubation study to address this question, using MAP and liquid dairy manure as P sources, 0.01 M CaCl2 P as environmental P indicator, and Morgan P as agronomic soil tests. The study was conducted with non-calcareous NY soils.

Findings

- Extractable P decreased over 60 d with a greater proportion of P being fixed from the more labile pools (CaCl2 P decreased more rapidly than Morgan P which decreased quicker than Mehlich-3 P).
- The increase in soil test P was affected by P source; MAP raised P levels more efficiently than liquid dairy manure. This shows that not all P in liquid dairy manure is immediately plant available.
- Soils that are already high STP show a faster increase in soil test P when additional P is supplied, showing there is a lower capacity to bind P as STP increases.
- Extractable Al was a good indicator of the amount of P required to raise Morgan soil test P level one unit. Extractable iron had no effect on soil test P increase (Figure 1).
- In contrast to Morgan-based predictions, the Mehlich-3 data offered relatively poor estimates of the amount of P required to raise soil test P most likely reflecting the fact that the Mehlich-3 test extracts Al from a range of more stable compounds not directly associated with P sorption. The Morgan extraction releases Al from a readily available pool likely to bind with P.

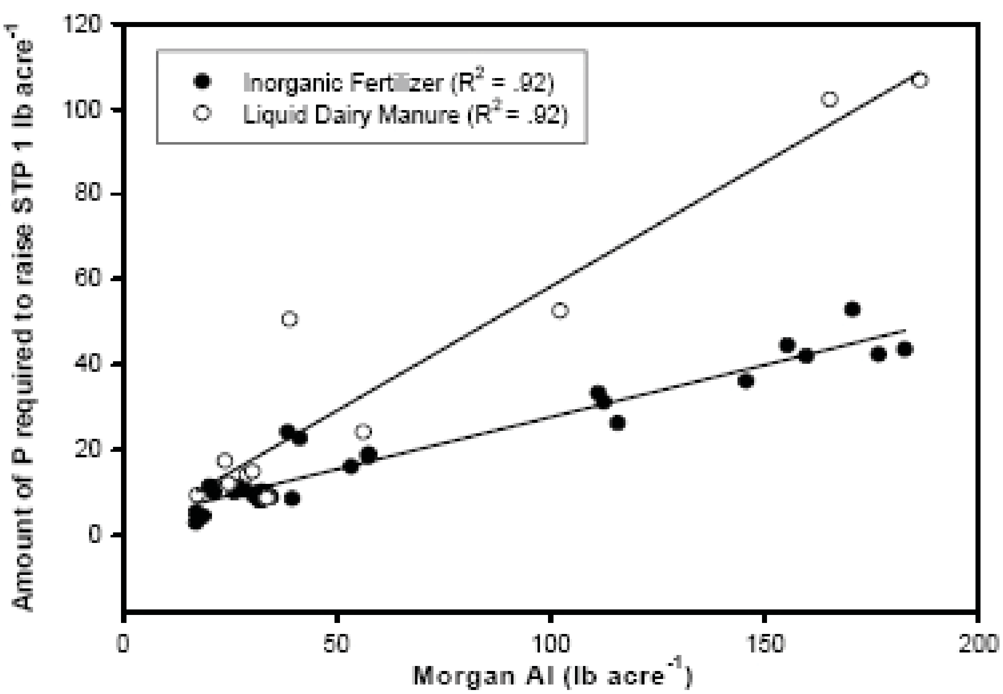


Figure 1. Relationship between Morgan extractable Al and the amount of applied P (lbs P2O5/acre) from MAP and liquid dairy manure required to raise Morgan soil test P levels 1 lb P/acre.

Nutrient Management

Implications

- All other factors (such as transport risk) being equal, soils with a higher amount of Morgan extractable Al will store more P over time.
- For planners that wish to reduce agronomic risk associated with converting Mehlich-3 data to Morgan values, it is important to avoid sampling within 2 months of manure application for more accurate assessment of fertility status for the next growing season.

Currently Ongoing Work

Additional studies are currently being conducted using 15 Northern New York soils (funded by the NNYADP program) ranging in Morgan extractable Al from 12 to 244 lbs Al/acre, Ca from 1003 to 7512 lbs Ca/acre and Fe from 4 to 143 lbs Fe/acre. In this study we are comparing soil test P increases (Morgan and Mehlich-3) upon addition of P from ten different P sources all added at the same P application level (and a control without any P addition):

The results of this study will become available toward the end of this year. Additional studies are needed to conclude if similar trends appear for calcareous soils.

Table 1: Treatments in currently ongoing soil test P research. This work is focusing on non-calcareous soils from Northern New York Counties.

Treatments		
1	Control (no P added)	
2	APP (10-34-0)	liquid
3	MAP (13-52-0)	granular
4	MAP (13-52-0)	liquid
5	Raw dairy manure	
6	Raw dairy manure	+ alum
7	Raw dairy manure	+ Al chloride
8	Separated liquids	
9	Separated liquids	+ alum
10	Separated liquids	+ Al chloride
11	Separated solids	

For More Details

This research was funded with grants from the Northern New York Agricultural Development Program (NNYADP) and the New York State Department of Agriculture and Markets (319 funds). For more details on the study, contact Quirine Ketterings (qmk2@cornell.edu) and/or read the following paper: Haden, V.R., Q.M. Ketterings, and J.E. Kahabka (2007). Factors affecting the change in soil test P levels following manure and fertilizer application. Soil Science Society of American Journal 71:1225-1232.

Harvesting Corn Stover for Bioenergy: Does it have Long-term Effects on Soil Health?

Soil Health

BiancaMoebius[1], Harold van Es[1], John Idowu[1], Robert Schindelbeck[1], Daniel Clune[1], David Wolfe[2], George Abawi[3], Janice Thies[1] and Beth Gugino[3]. [1]Dept of Crop & Soil Sciences, [2]Dept. of Horticulture, [3]Dept. of Plant Pathology

Using plant residues as feedstock for energy industries has received attention due to rising concerns about greenhouse gases, increasing fuel prices and the need to be less dependent on imported foreign fuel. The improvement in cellulose digestion technology, which makes ethanol production possible from plant residues, could create both opportunities and challenges for the agricultural sector. For commercial bioenergy production, corn becomes the most viable crop since it produces at least 1.7 times more residue than other leading cereals. While the use of corn stover offers the potential for a "new" high value agricultural product, the long-term effects of harvesting stover on soil health and environmental sustainability need to be assessed. Potential problems with using corn stover as feedstock for energy industry include competition for animal feed, competition for land to use in producing other agricultural crops, and long-term impact on soil health and the environment.

Our main purpose for this research was to look at the effect of long-term corn stover removal on soil health. This study, conducted in Chazy, NY, evaluated the effects of 32 years of corn stover harvest versus stover return on soil health in the surface layer under plow till and no till systems on a Raynham silt loam. The late Professor Bob Lucey initially designed this experiment to investigate the different tillage systems under silage and grain production systems, but the trial now provides a unique opportunity to evaluate soil health when corn stover harvested for biomass energy.

The experiment consisted of four treatments replicated in four blocks:

- plow-till with stover returned (PT-R),
- plow-till with stover harvested (PT-H),
- no-till with stover returned (NT-R) and
- no-till with stover harvested (NT-H).

PT plots were moldboard plowed in the fall of each year, disked in the spring and then planted. NT plots were planted at the same time. In stover-harvested (H) plots, all above-ground plant matter was removed in the fall of each year. In stover-returned (R) plots only grain was harvested. Corn residues were incorporated into PT plots, and left on the surface of NT plots.

Soil samples were collected from the surface horizon for the measurement of physical, chemical and biological soil properties to be used as indicators of soil health. Laboratory measurements were performed for 24 soil physical, biological and chemical properties, and additionally water infiltration was assessed in the field (Table 1).

RESULTS

Overall Treatment Effects

Residue treatment significantly affected eight out of the 25 measured soil properties while the tillage treatment affected 15 out of the 26 measured soil properties (Table 1). Nine out of the 25 measured properties did not respond significantly to either stover harvest or tillage (Table 1). It was noted that, during field sampling, soil on plots under plow till, especially those with stover harvested, were crusted, sealed, cracked, compacted and lacking aggregation, while this was not the case for no till plots.

Residue management effects

A comparison of the overall stover-harvested relative to stover-returned treatments means showed that the former consistently had lower soil health scores: They had less organic matter by 8%, lower decomposition rates by 57% and lower easily extractable and total glomalin contents (proteins involved in biological functions and soil aggregation) by 25% and by 16%, respectively. Stover harvest also decreased the available water capacity by 8% and increased the bulk density by 5%, while K and Mg concentrations decreased by 44%, and 20%, respectively.

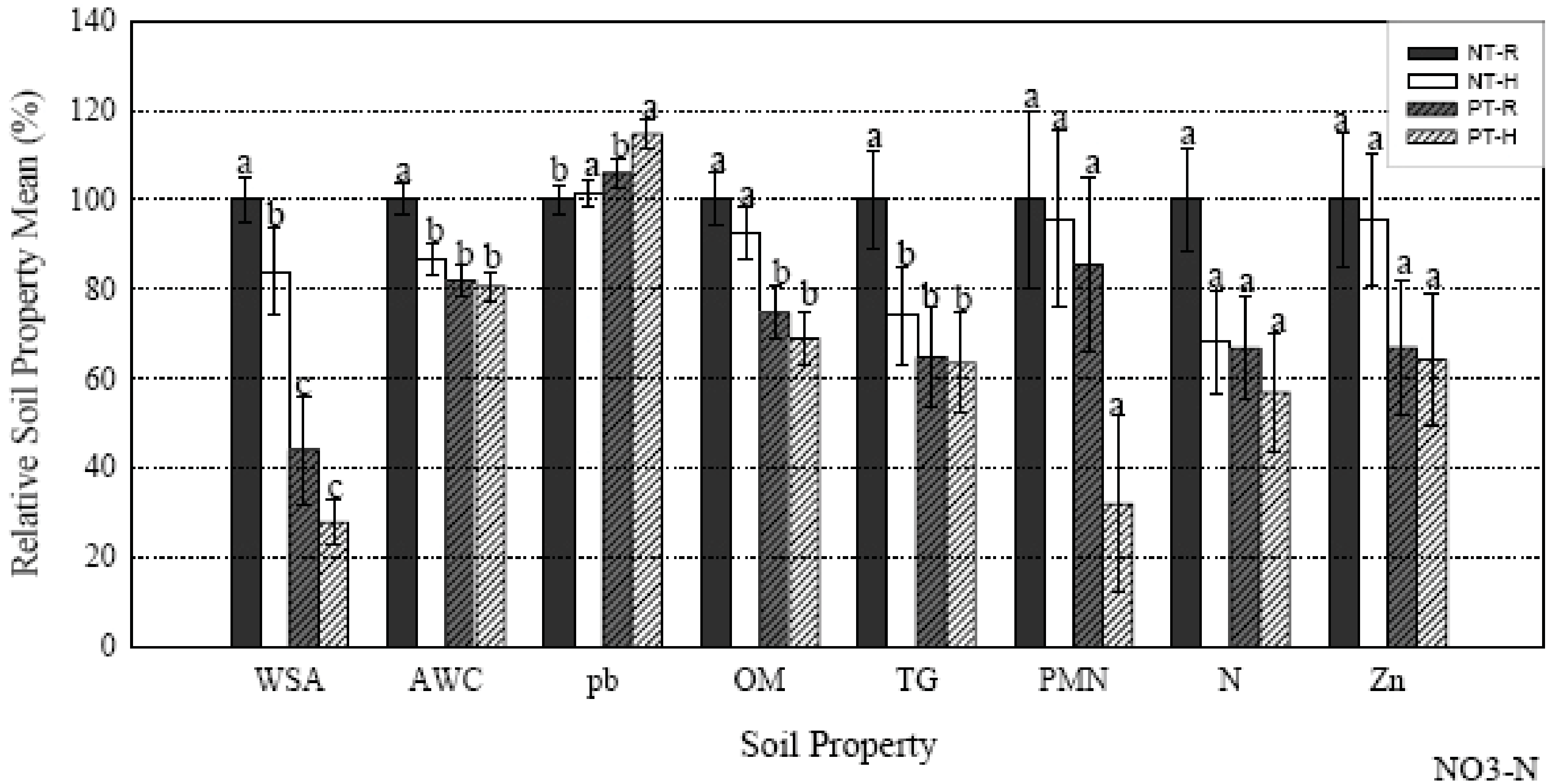
Soil Health

Table 1: Soil Measurements and their level of significance under tillage and residue effects

Physical Measurements	Tillage Effect	Residue Effect
Aggregate stability (WSA)	***	ns
Bulk Density (ρ_b)	***	*
Micro-penetration Resistance (within soil cores)	ns	ns
Saturated Hydraulic Conductivity	ns	ns
Macro-porosity (large pores)	ns	ns
Meso-porosity (medium pores)	ns	ns
Available Water Capacity (AWC)	***	**
Field Water Infiltration	ns	ns
Chemical Measurements		
Nitrate Nitrogen (N)	*	ns
Phosphorus	ns	ns
Potassium	ns	****
Magnesium	**	***
Calcium	ns	ns
Iron	ns	ns
Aluminum	**	ns
Manganese	**	ns
Zinc (Zn)	**	ns
pH	****	ns
Biological Measurements		
Organic Matter (OM)	****	**
Parasitic Nematodes	****	ns
Beneficial Nematodes	ns	ns
Decomposition Rate	**	**
Potential Mineralizable Nitrogen (PMN)	*	ns
Easily Extractable Glomalin	*	**
Total Glomalin (TG)	***	**
Total number of significant indicators	**15**	**8**

Significant at: * p = 0.10, ** p = 0.05, *** p = 0.01, **** p = 0.001, ns = not significant
(the more the asterisk, the higher the strength of significance)

Figure 1. Means of selected soil properties, which show the trend NT-R>NT-H>PT-R>PT-H or NT-R<NT-H<PT-R<PT-H, shown relative to the NT-R treatment mean (defined as 100%). Error brs designate one standard error.



Soil Health

Comparison of residue and tillage effects

Of the soil properties that were affected by tillage and residue treatment, the majority changed more dramatically due to tillage than due to stover harvest. In comparison to a 5% difference in bulk density due to stover harvest, tilled soils (PT) were 10% denser relative to NT. Relative to NT, PT decreased available water capacity by 13%, OM by 25%, total glomalin by 26%, Mg contents by 15%, decomposition rate by 51%, and easily extractable glomalin by 19%. Other soil properties also showed significant differences between tillage treatments (Table 1): aggregate stability decreased by 62% under PT relative to NT, PMN by 40%, NO3-N by 27%, and Zn by 33%. Overall pH was higher, i.e. more alkaline under PT (8.05) compared to NT (7.81). Higher Al by 27%, higher Mn by 18% and lower NemParasitic by 85% were also found under PT.

Combined effects

When soil health indicator means were compared separately by tillage and residue treatment there was a consistent trend from "better" to "worse" as follows (Fig. 1): NT-R > NT-H > PT-R > PT-H. No-tillage significantly improves many soil processes (as measured through soil health indicators) irrespective of residue treatment, and stover return provides additional (although smaller) soil health benefits, especially with respect to several organic-matter-dependent soil processes. This results in improved soil structure and stability, water storage capacity, carbon storage, cellulose decomposition potential, and nutrient availability.

Conclusion

We conclude from this study that, on a silt loam soil in a temperate climate, long-term stover harvest had lower adverse impacts on soil health than long-term tillage. Stover harvest appears to be sustainable when practiced under no tillage management. In real commercial farm situations, management strategies such as crop rotation, cover cropping and additions of organic amendments can help improve soil health, making stover use as feedstock for energy industries a more viable and sustainable option. Also, partial stover removal, rather than complete harvest, may adequately address soil health and erosion concerns, while providing valuable additional income for biofuel..

Jensen: A New Soft White Winter Wheat Variety with Better Scab and Sprouting Resistance for New York

Crop Management

Margaret Smith, Mark Sorrells, David Benscher

Recent years have been challenging for soft white winter wheat growers in New York, with many years where fusarium head blight (scab) and pre-harvest sprouting were serious problems. Wheat with scab or sprouted kernels often does not meet the necessary quality grade for food markets, and ends up being sold at a much reduced price and can even be difficult to market at all. After a few difficult marketing years, many growers have reduced wheat acreage or switched to red wheat, which has better resistance to sprouting.

Now, growers have another option: a new variety, Jensen, that is available for the first time this fall. Jensen was developed by Dr. Mark Sorrells, the small grains breeder in Cornell's Department of Plant Breeding and Genetics, and his research team. Cornell's wheat breeding program has worked hard to improve resistance to scab and to pre-harvest sprouting in soft white winter wheats that have the excellent milling and baking quality for which New York's white wheats are known. The variety Jensen is an excellent addition to the lineup of varieties that have been developed by and released from this program.

Jensen is a top yielder and over the last four years it has shown yields comparable to those of Richland and Caledonia (see data table). It has very good test weight and good lodging resistance. The most important advantage that Jensen has over other current varieties is its improved resistance to fusarium head blight (scab) and pre-harvest sprouting. Where other soft white wheats had over 40% of the plants showing scab symptoms in two years of data, Jensen had only 7% of plants with symptoms – a dramatic improvement in scab resistance. Jensen also has shown less pre-harvest sprouting in two years of testing than any other commercially available variety except Cayuga (which has excellent pre-harvest sprouting resistance and unusually high test weight, but yields 7 or 8 bu/A less than top-yielding wheats like Jensen, Richland, and Caledonia).

Jensen is resistant to wheat spindle streak mosaic virus and powdery mildew, but is susceptible to wheat soilborne mosaic virus. Plant height for Jensen is midway between those of Caledonia and Richland and it heads a day or two later than these two varieties. Jensen is awnless and has white chaff color.

Milling and baking qualities were evaluated on Jensen over three years in four different evaluations. Its milling and baking properties were satisfactory, and comparable to those of Richland and Caledonia.

With its high yield and improved resistance to scab and pre-harvest sprouting, Jensen wheat is an excellent alternative for New York's wheat growers. Seed will be available for fall 2007 plantings from several regional and local seed companies. Get your seed quick, while supplies last!

Soft white winter wheat cumulative summary of yield and agronomic data, 2004 through 2007.

Variety	Grain Yield, bu/A 4 Yr	Grain Yield, bu/A 3 Yr	Test Weight, lb/bu 3 Yr	Lodging, 0-9 score* 2 Yr	Winter Survival, % 2 Yr	Heading Date 2 Yr	Fusarium Head Blight % Incidence 2 Yr	Fusarium Head Blight % Severity 1 Yr	Preharvest Sprouting, 0-9 Score* 2 Yr	Plant Height, cm 2 Yr	Mosaic Virus Rating, 0-9 Scale** Spindle Streak 2 Yr	Mosaic Virus Rating, 0-9 Scale** Soil Borne 2 Yr
Caledonia	74	72	57.1	0.3	100	6/3			3.9	87	R	MR
Cayuga	64	63	59.5	3.9	98	6/3			0.8	110	MR	R
Richland	73	69	57.6	1.2	100	6/3			2.9	101	R	R
Jensen	**72**	**70**	**58.0**	**1.3**	**100**	**6/4**	**7**	**2.9**	**1.5**	**96**	**R**	**S**
D8006	70	67	57.7	1.6	100	6/1	41	2.2	2.8	92	R	S
Pioneer 25W41		72	58.0	0.3	100	6/1	41	1.1	1.8	87	R	R

M.E. Sorrells, D. Benscher, G. Salm, J. Tanaka - Department of Plant Breeding & Genetics, Cornell University.
* Scores are done on a scale from 0 (no lodging or sprouting) to 9 (completely lodged or sprouted).
** Virus ratings are abbreviated as R=resistant, MR=moderately resistant, S=susceptible.

Weed Management

Size of Common Lambsquarters is Critical for Control with Glyphosate

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Less than desirable common lambsquarters control with glyphosate in Roundup Ready (RR) soybeans was reported from several locations around NY State in 2006. In each case, the grower and/or crop advisor questioned whether these surviving plants were a glyphosate-resistant biotype. Although problems with lambsquarters control in soybeans with glyphosate have been reported in other states as well, no one has reported (on an international web site) that they have confirmed glyphosate-resistant lambsquarters as of August 17, 2007.

Initial Report

We are most familiar with the initial report, which was from a Cayuga County soybean grower. Although this cash cropper grows both corn and soybeans, he has never grown RR corn and the main field in question had RR soybeans only twice during the past 10 years. In addition to the two in-season glyphosate applications when the fields were in RR soybeans, this field received two late-season glyphosate applications, once following wheat and once for quackgrass control later in the fall, during that 10-year period. Clearly, this lambsquarters population had not been subjected to excessive selection pressure from repeated glyphosate applications. Yet, there were lambsquarters plants, perhaps 12 inches tall at the time of spraying, that survived an application of 44 fl oz/A (2X) of glyphosate (5.5 lb ai/gallon). Seed was collected from these survivors for follow-up in the greenhouse. Through the course of three separate plantings, we tried to determine if these surviving plants were a glyphosate-resistant biotype or if there was some other reason for the lack of control with glyphosate.

Greenhouse Experiments

Plants from the first planting were sprayed with 44 or 88 fl oz/A (2X or 4X the normal rate) of fully loaded glyphosate (5.5 lb ai/gallon) when the plants averaged 3 or 5 inches tall. When lambsquarters averaged 3 inches tall, all of the plants died at these rates. When plants averaged 5 inches tall, most of the lambsquarters plants survived both the 44 and 88 fl oz/A applications, however, 88 fl oz/A did cause greater injury than 44 fl oz/A. Additional plants from this first planting were sprayed with 88, 176, or 352 fl oz/A (4X, 8X, or 16X the normal rate) when they averaged 12 inches tall and were flowering. At this advanced stage of development some of the plants survived at rates up to 176 fl oz/A (8X) but all were controlled at 352 fl oz/A (16X).

A second planting was made to refine the relationship between lambsquaters' size and control with glyphosate by more carefully selecting plants of the correct size for each application than with the first planting. When lambsquarters was sprayed with 88 fl oz/A of glyphosate, 3-inch plants were once again controlled, 5-inch plants were not consistently controlled, and 7-inch plants were injured but not controlled. These initial results suggest that this lambsquarters biotype is not glyphosate resistant since small (3 inches) plants were controlled with 44 fl oz/A (2X) of glyphosate and even maturing plants were controlled at an extremely high rate (16X). The results do suggest that the size of the lambsquarters at the time of application is perhaps of greater importance than with some other annual broadleaf weeds when applying glyphosate alone in RR crops.

A third greenhouse planting was used to see if additional surfactant would have an effect with a "normal" application rate of 22 fl oz/A. We spray in 20 gallons/A (higher than many commercial applications) and this volume may reduce the concentration of surfactant from fully loaded glyphosate below optimum. However, the addition of extra non-ionic surfactant (1 qt/100 gallons of spray or 0.25% by volume) did not improve performance of the 22 fl oz/A glyphosate application on 7-inch lambsquarters. Other 7-inch plants were used to determine whether tank-mixing FirstRate or Harmony GT XP with glyphosate would improve lambsquarters control. The tank-mix of 22 fl oz/A of glyphosate with 0.3 oz/A of FirstRate did not consistently control the 7-inch lambsquarters. On the other hand, the tank-mix of 22 fl oz/A of glyphosate with 1/12 oz/A of Harmony GT XP did provide better control of the 7-inch lambsquarters than glyphosate alone. The additional cost for this Harmony GT XP would be about $1.20/A but would clearly be a good investment if you've experienced difficulty controlling lambsquarters with glyphosate alone or if you have lambsquarters taller that about 3 inches at the time of glyphosate application.

Field Experiment

As a follow-up to the greenhouse work, a field experiment was conducted to obtain additional information on the effect of plant size on lambsquarters control with glyphosate. Roundup Ready soybeans (AG2406) were planted in 30-inch rows on May 25, 2007 in a Cayuga County field that was heavily infested with lambsquarters, Mid-postemergence (MPO) applications were made June 29 when lambsquarters averaged 4 inches tall (2 to 8 inches) while late postemergence (LPO) applications were made July 10 when lambsquarters averaged 14 inches tall (3 to 21 inches).

Lambsquarters control ratings in Table 1 were made 25 and 14 days after MPO and LPO applications respectively. A quick inspection of these results shows that MPO applications averaged 98% control and that 22 fl oz/A of Roundup WeatherMAX alone controlled 99% of lambsquarters that averaged 4 inches tall. When 22 fl oz/A of Roundup WeatherMAX were applied LPO when lambsquarters averaged 14 inches tall, control was only 75%. There was no advantage from the addition of 1/12th oz/A of Harmony GT XP as there had been in the greenhouse. Control did however increase to 97% with LPO application of 44 fl oz/A of Roundup WeatherMAX compared with the 75% control with LPO application of 22 fl oz/A of Roundup WeatherMAX.

These results suggest that growers who have concerns about lambsquarters control with “normal” glyphosate rates in soybeans should consider making applications before this difficult annual weed averages more than about 3 or 4 inches tall. This may mean the use of burndown herbicides in no-tillage soybeans for control of emerged lambsquarters at planting. Research indicates that lambsquarters up to about 12 inches tall can be controlled with increased rates of glyphosate alone or with combinations of glyphosate with Harmony GT XP in soybeans.

Table 1. Common lambsquarters control (%) following Roundup WeatherMAX applied alone or in tank-mix combinations when lambsquarters averaged 4 inches tall (MPO) or 14 inches tall (LPO) in Cayuga County NY in 2007.

Herbicide(s)*	Rate Amt./A	% Lambsquarters Control MPO	% Lambsquarters Control LPO
Roundup WeatherMAX	22 fl oz	99	75
Roundup WeatherMAX	44 fl oz	-	97
Roundup WeatherMAX + Harmony GT XP	22 fl oz 0.083 oz	96	75
Roundup WeatherMAX + FirstRate	22 fl oz 0.3 oz	99	70

*All treatments were applied with 0.25% (v/v) of Induce non-ionic surfactant.

Calendar of Events

Oct. 23, 2007	Field Crop Dealer Meetings, Comfort Suites, 7 Northside Drive, Clifton Park, NY
Oct. 24, 2007	Field Crop Dealer Meetings, Holiday Inn, 1777 Burrstone Road, New Hartford, NY
Oct. 25, 2007	Field Crop Dealer Meetings, Batavia Party House, 5762 East Main Road, Batavia, NY
Oct. 26, 2007	Field Crop Dealer Meetings, Auburn Holiday Inn, 75 North Street, Auburn NY
Nov. 4-8, 2007	American Society of Agronomy Meetings, New Orleans, LA
Dec. 4-6, 2007	NE Regional Certified Crop Advisor Meeting, Holiday Inn, Waterloo, NY

What's Cropping Up? is a bimonthly newsletter distributed by the Crop and Soil Sciences Department at Cornell University. The purpose of the newsletter is to provide timely information on field crop production and environmental issues as it relates to New York agriculture. Articles are regularly contributed by the following Departments at Cornell University: Crop and Soil Sciences, Plant Breeding, Plant Pathology, and Entomology. To get on the mailing list, send your name and address to Pam Kline, 234 Emerson Hall, Cornell University, Ithaca, NY 14853.

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