What's Cropping Up?

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Proactive Agricultural and Environmental Management by New York Dairy Farmers Greatly Reduces Cropland P Balances

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Introduction

To address P accumulation on agricultural land and reduce P losses to the environment, New York State farmers and their advisors, in collaboration with university researchers, have focused over the past 5-8 years on two of the major management strategies with potential to reduce P accumulation while maintaining strong production: (1) elimination of the use of P containing fertilizers on fields that test high or very high in soil test P, and (2) reduction of P in dairy rations to levels recommended by the National Research Council. We recently completed an assessment of state, regional and county-level cropland P balances for NY from 1987 through 2006 to answer the question: Did implementation of soil-test based P fertilizer management and precision feeding make any difference for P loadings in New York State?

Cropland phosphorus (P) balances (manure and fertilizer P minus crop P removal) combined with soil P assessments are illustrative of both challenges and opportunities for long-term sustainability of cropland management at the farm, county, and state scales.

How Were Balances Derived?

Cropland P balances were determined as the difference between major P inputs (manure and fertilizer) and outputs (harvested crops) following the approach used in the Mid-Atlantic Regional Water Program (http://mawaterquality.agecon.vt.edu): P balance = Manure P + Fertilizer P – Crop P. Balances were derived at the state and county level for U.S. Census of Agriculture years 1987, 1992, 1997, and 2002. The U.S. Census of Agriculture supplied animal population data, crop yields and acreage, and cropland use at state and county levels. For eleven of NY's 62 counties (including the boroughs of New York City) it was not possible to develop cropland P balances due to (1) little (<1250 acres) or no harvested cropland and/or (2) incomplete disclosure of county level crop yields in the Census.

A Word of Caution

The P balances were developed to quantify P accumulation and to derive general trends in cropland P loadings over time. These balances are partial balances because of the inability to accurately determine all P inputs and outputs for cropland. They should not be equated to annual P losses; a higher P balance may indicate greater P loss potential, but actual P losses will depend on such factors as within-farm distribution of P, landscape patterns, soil resources and management, and climate or weather patterns.

What Did We Find?

In 2002 (the most recent fully completed Census year), cropland P inputs were estimated at 28.1 and 46.1 million lb of P for fertilizer and manure, respectively. Of the manure P, 69% originated from dairy cows. Crop P removal was 46.5 million lb, resulting in an overall 2002 P balance of +27.6 million lb or +7.2 lb P per acre.

The 2002 New York State balance (+7.2 lb P per acre, not including herd nutrition improvement) was a considerable improvement over the +13.8 lb P/acre balance in 1987 and was almost entirely due to greatly reduced fertilizer use over time (see Figure 2). The 2002 statewide P balance decreased from +7.2 to +4.3 lb/acre when improvements in dairy nutrition were taken into account (a decrease in P excretion of dairy cows from 62 to 40 lb per cow per production period, see data

Reduced P fertilizer use for agricultural production led to a decrease in the P balance from +13.8 lb P/acre in 1987 to +7.2 lb P/acre in 2002.

The 2002 statewide P balance decreased from +7.2 to +4.3 lb/acre when improvements in dairy nutrition were taken into account.

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for 2002a: without herd nutrition improvements, and 2002b: with herd nutrition improvements in Figure 2). This P balance further decreased to an estimated +1.5 lb P/acre in 2006 (reflecting higher yields and lower fertilizer sales than in 2002). These assessments illustrate (1) the importance of precision feeding and soil-test based cropland fertility management for long-term sustainability of the dairy sector, and (2) the tremendous progress made through enhanced agricultural and environmental management in New York State.

The estimated cropland P balance for 2006 is +1.5 lb/acre illustrating (1) the importance of precision feeding and cropland fertility management for the long-term sustainability of the dairy sector, and (2) the enormous progress made through enhanced agricultural and environmental management in NY over the last 20 years.

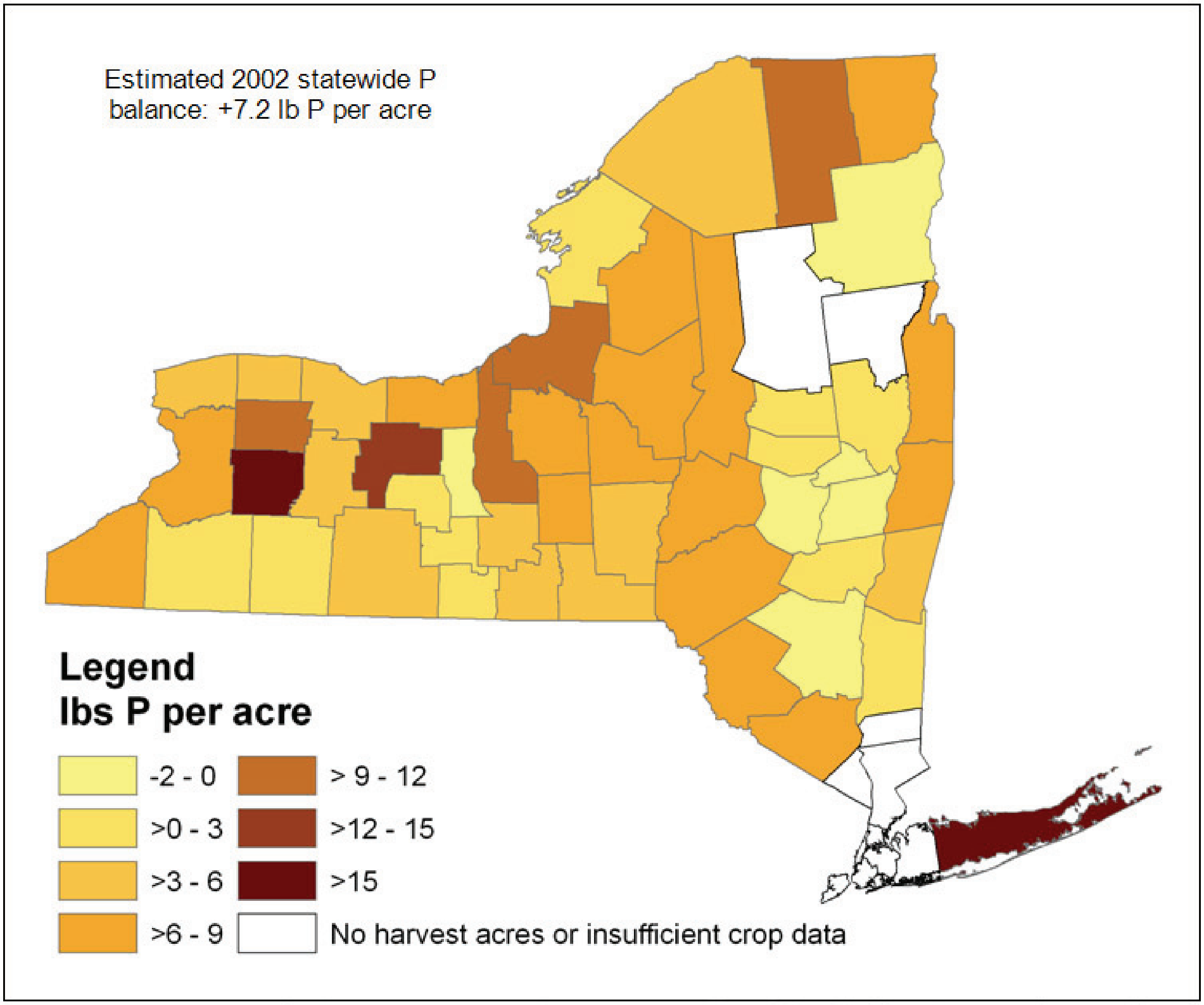

Figure 1: Phosphorus (P) balance per acre harvested cropland for 51 New York State counties in 2002. This assessment assumed a 62 lbs P excretion per cow per year (i.e., herd nutrition improvements not yet taken into account).

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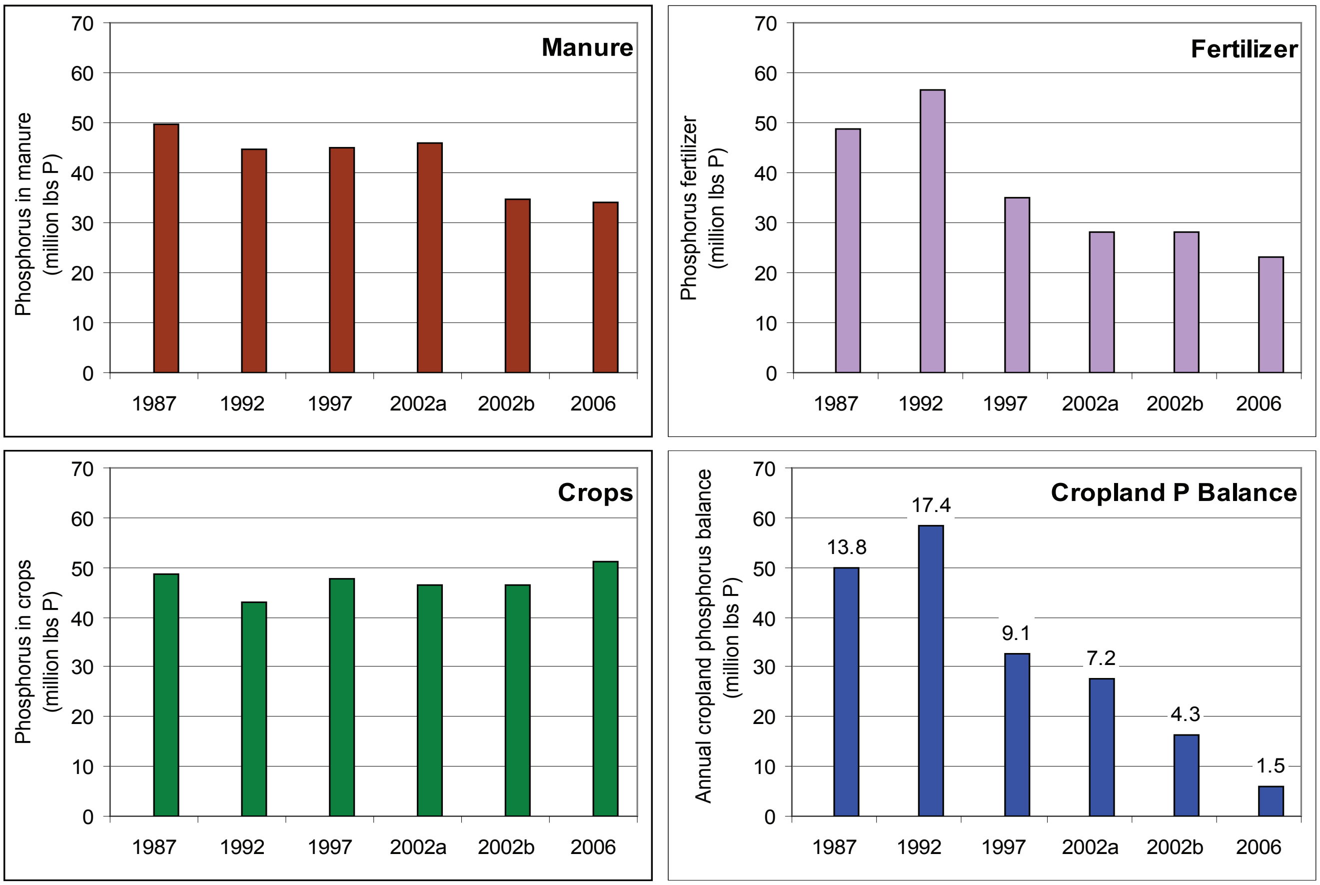

Figure 2: Total amount of phosphorus in manure (top left), fertilizer (top right), harvested crops (bottom left), and the statewide P balance (bottom right). The 1987-2002a cropland P balances assume a P excretion of 62 lb P per cow per year. Improved herd nutrition was taken into account in the assessments of 2002b and 2006. The P balance per acre of cropland is indicated above the bar for each year and was estimated to be +1.5 lbs P per acre in 2006.

Implications for Sustainable Animal Densities

For the 2002 cropland P balance, animal density explained 86% of the extra manure P over crop removal across all 51 counties. The relationship between animal density and manure P excess/deficiency suggest that if manure could be equally distributed over all cropland, an animal density of 0.42 AU per acre would be optimal while higher animal densities will lead to P applications that exceed crop removal (Figure 3).

The reduction in P excretion from 62 to 40 lbs per animal per production period, applied to the 2002 crop and animal production data, shifted the optimal animal density from 0.42 to 0.64 AU per acre. With improvements in yield and fertilizer use reductions in 2006, this critical animal density will be closer to 1 AU per acre, once again showing the importance of soil-test based P fertilizer management and precision feeding for the long-term sustainability of the dairy industry.

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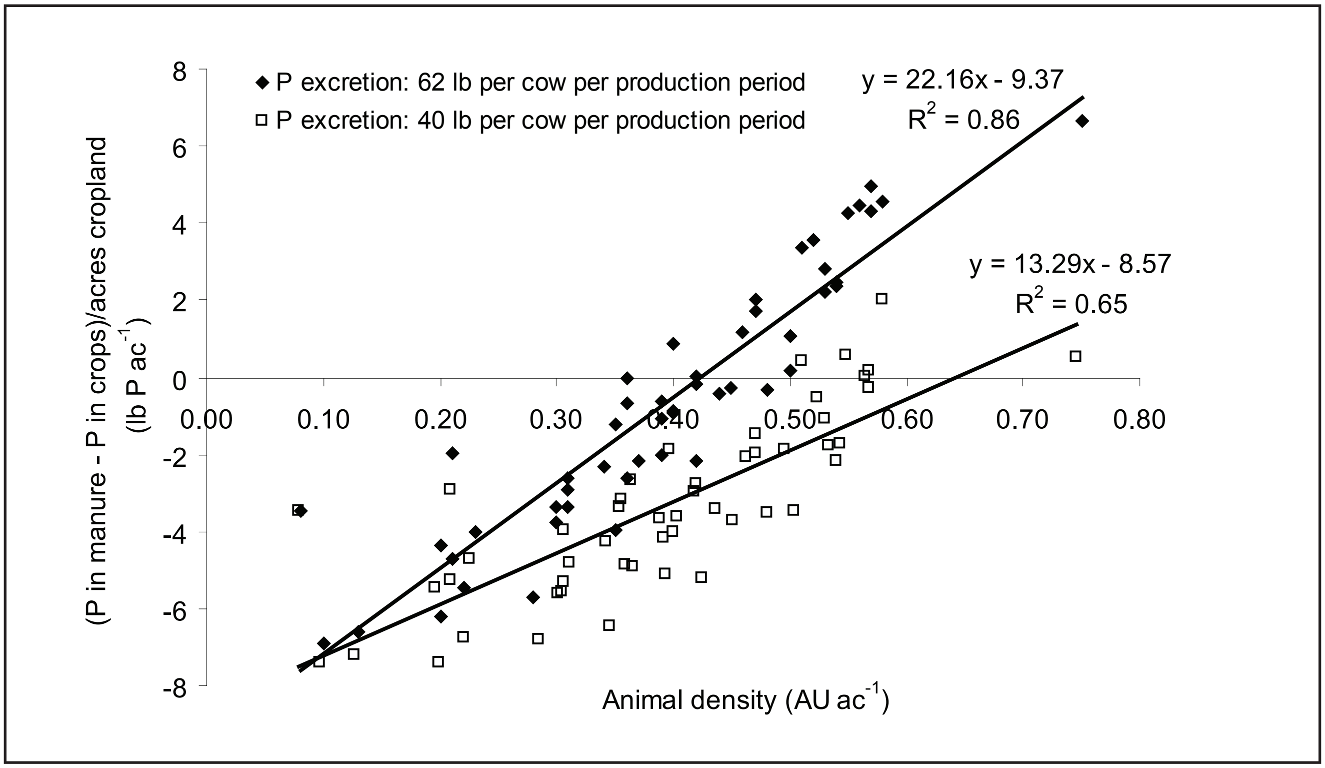

Figure 3: Animal density (animal units per acre) and manure P applied in excess of crop removal for 51 New York State counties (2002 data) with (1) an excretion of 62 lb P per cow per production period as applied in the assessment of the Mid-Atlantic Regional Water Program (2005), and (2) reduced dairy cow manure P excretion (40 lb per cow per production period) reflecting adherence to the NRC (2001) guidelines for nutrient requirements for dairy cattle.

Acknowledgements and For More Information

We thank William Nastyn, Assistant Director, Division of Plant Industry, New York State Department of Agriculture and Markets and David L. Terry, Coordinator of the Fertilizer Regulatory Program, University of Kentucky, Lexington, KY, for assistance with fertilizer sales data. This study was funded by a USDA Conservation Innovation Grant. For further information contact Quirine M. Ketterings at (607) 255 3061 or qmk2@cornell.edu, and/or visit the Nutrient Management Spear Program website at: http://nmsp.css.cornell.edu/.

How Does Hybrid Relative Maturity Affect Corn Silage Yields and Moisture Levels in Central/Western New York?

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Crop Management

Corn silage hybrids, typically grown in central/western NY, range in relative maturity (RM) from about 95 to 115 days. Topographical differences and proximity to the Finger Lakes and Great Lakes greatly influence growing degree days and first fall frost, which subsequently influence the hybrid RM that dairy producers should select for their farm. Many dairy producers will select their corn silage hybrids for the 2009 growing season by early November of 2008 so they can receive the early purchase discount from their seed companies. This article will discuss the relative yield, the differences in harvest moisture, and the number of growing degree days (GDD) from planting to corn silage harvest for hybrids from 95 to 115 day RM. The data from the Cornell Corn Silage Hybrid Trials, in which 10-20 hybrids are entered in each RM group, will be the source of data for this discussion.

Table 1. Average corn silage yields of the 95-100, 101-105, 106-110, and 111-115 hybrids in the different relative maturity groups entered in the Cornell Corn Silage Hybrid Trials at Southview Farms in Livingston Co in 2004, 2005, 2006, 2007, and 2008.

Hybrid Maturity Group	2004	2005	2006	2007	2008	Avg.
	Tons/acre (65 % moisture)					
	Central NY					
95 -100	23.9	20.9	27.6	22.6	25.0	24.0
101-105	24.1	20.7	28.4	22.7	26.5	24.6
106-110	26.2	22.3	29.4	22.5	27.2	25.5
111-115	26.4	23.3	29.1	23.6	26.9	25.9
	Western NY*					
95 -100	23.1	24.7	28.3	26.9	29.0	26.3
101-105	23.6	24.6	28.7	27.5	30.1	26.8
106-110	25.4	22.9	29.2	28.4	30.6	27.3
111-115	26.1	23.5	30.8	28.9	30.4	27.8

* The Western NY site was harvested on the early side in 2005 to avoid wind damage from remnants of Hurricane Katrina.

As the RM of each hybrid increases by 5 days in length, silage yields, adjusted to 65% moisture, increase by about 0.5 tons/acre (Table 1). Consequently, a 115 day hybrid would be expected to yield about 2 tons/acre more than a 95 day hybrid. Despite the remarkable consistency in the average 0.5 ton/acre yield increase across the western and central NY experimental sites, the year to year variability among RM groups is much more pronounced (Table 1). For example, dry conditions occurred during the second half of August in 2008. Consequently, the 111-115 day hybrids, which were 3-5 days behind in development compared to the 106-110 day hybrids, probably suffered more stress during late grain-filling and didn't quite realize their full yield potential at either site this year. In other years, when dry conditions occur in July and August but are relieved during late August and early September, as in central NY in 2004, the longer season hybrids will yield higher than expected when compared to the earlier hybrids. This is because stress was relieved during their late grain-filling period in the later but not in the earlier hybrids (Table 1).

Despite the higher yield potential of longer-season hybrids, dairy producers should not plant all their hybrids to the longest possible hybrids because in years with an earlier than normal frost the later-planted hybrids would probably be frosted before attaining 70% moisture, thus reducing their yield potential. Also, in cool years, the long-season hybrids will not attain 70% moisture until late September or early October when soil moisture conditions become wetter and drying conditions slow down considerably, which impede harvest. In general, as the RM of a hybrid increases by 5 days in length, whole plant moisture will be about 1.5 percentage points wetter on a particular date (Table 2). If it is a warm growing season and silage harvest commences in early September, there will only be about a 3-day delay for a 110 day hybrid to attain comparable moisture as a 105 day hybrid because silage dries at about 0.5 percentage points per day under the warm conditions. In late September and early October, however, conditions are cooler and cloudier and the days are shorter so silage in the field is now drying at 0.25 to 0.33 percentage points per day. Consequently, a 110 compared with a 105 day hybrid will now be at the same moisture about a week later.

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Table 2. Average whole plant moisture of hybrids in the 95-100, 101- 105, 106-110, and 111-115 relative maturity groups at Southview Farms in Livingston Co. on the same day of harvest in 2004, 2005, 2006, 2007, and 2008. About 10-20 hybrids represented each maturity group in each year of the study.

Hybrid Maturity Group	2004	2005*	2006	2007	2008*	Avg.
days			% moisture			
95-99	65.7	69.1	65.8	66.4	66.0	66.6
101-105	66.9	70.7	67.4	68.1	67.4	68.1
106-110	68.2	72.2	69.2	68.9	69.0	69.5
111-115	69.5	73.3	70.2	70.2	70.0	70.6

* The Western NY site was harvested on the early side in 2005, to avoid wind damage from remnants of Hurricane Katrina.

In general, 95-100 day hybrids require 2000-2100 GDD, 101-105 day hybrids require 2050-2150 GDD, 106-110 day hybrids require 2100-2200 GDD, and 111-115 day hybrids require 2150-2250 GDD from planting to less than 70% moisture, almost ready for corn silage harvest and safe storage in bunker silos (Table 3). Dairy producers should use the accumulated GDD from early May to late September on their farm as a guide in selecting hybrid RM. For example, the average number of GDD at Geneva NY, from May 1, a typical date to begin planting corn in that area, to October 5, a typical date for the first fall frost in that area, is about 2300 GDD. Despite the relatively long growing season for this area, growers in the Geneva area should not choose all 111-115 day hybrids. Instead, growers should spread their hybrid maturity groups out to avoid the risk of drought when all hybrids are silking, to avoid the risk of an early frost on the later-planted hybrids, and to avoid the risk that all hybrids would be ready for harvest at about the same date. For example, dairy producers in the Geneva region may wish to plant 30% of their acreage to 111-115 day hybrids, 50%.of their acreage to 106-110 day hybrids and 20% of their acreage to 101-105 day hybrids. Dairy producers in cooler regions, such as around the Ithaca area where about 2200 GDD accumulate from May 1 until October 1, the first average fall frost, should scale back in hybrid length and go with maybe 30% of their acreage to 106-110 day hybrids, 50% of their acreage to 101-105 day hybrids, and 20% of their acreage to 95-100 day hybrids. Because of the randomness of the growing season, a mixture of hybrid maturities will not be best for each growing season. Over time, however, spreading out the hybrid maturity length is the safest and best management practice.

Table 3. Tasseling/silking and silage harvest dates (67-70% moisture), and number of growing degree days (GDD) from planting to silking , between silking and harvest, and total number from planting to harvest for 95-100, 101-105, 106-110, and 111-115 day hybrids planted in late April of 2003, 2004, and 2005 at the Aurora Research Farm.

Hybrid Maturity Group	Tassel/ Silk	GDD	Silage Harvest	GDD from Silking	Total GDD
Relative Maturity		°F	Date	°F	°F
			2003		
95-100	7/24	~1250	8/28	~775	~2025
101-105	7/27	~1300	9/5	~850	~2150
106-110	7/29	~1340	9/9	~850	~2190
111-115	7/31	~1380	9/11	~850	~2230
			2004		
95-100	7/20	~1250	8/31	~725	~1975
101-105	7/22	~1300	9/3	~750	~2050
106-110	7/23	~1330	9/5	~775	~2105
111-115	7/24	~1350	9/7	~800	~2150
			2005		
95-100	7/17	~1285	8/21	795	2080
101-105	7/19	~1330	8/22	815	2115
106-110	7/21	~1370	8/25	810	2180
111-115	7/22	~1405	8/26	810	2215

New Bulletin: Manure Use for Alfalfa-Grass Production

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From a nutrient use efficiency standpoint, corn and forage grass fields tend to be the preferred fields for manure application on dairy farms. Alfalfa typically meets its nitrogen (N) requirement through biological N fixation so N from other sources is unnecessary if conditions for N fixation are satisfactory. However, nutrient management plans require that manure application to corn and forage grasses be limited to crop N needs, increasing the likelihood that manure will need to be applied to alfalfa fields. In addition, alfalfa fields may at some times be the only fields accessible for manure application. In this extension bulletin we summarize scientific literature on the impacts of manure application to alfalfa and mixed alfalfa-grass stands in the establishment year and beyond, describe current Cornell University fertility guidelines for alfalfa and alfalfa-grass mixtures, and give guidelines for manure management of such stands in situations where manure application to alfalfa is necessary.

Executive Summary[1]:

1. Nutrient management plans require manure application to corn and forage grasses to be limited to crop N needs possibly resulting in manure having to be applied to other cropland such as alfalfa fields.
2. The deeper rooting system of established alfalfa as compared to grasses and/or corn, its relatively high P and K demands, and its ability to reduce N fixation upon availability of a readily available N form, make alfalfa a more appropriate alternative (assuming odor is controlled) for manure application than corn or grass fields for which N needs have already been met.
3. Established stands with non-fixing alfalfa varieties or mixed alfalfa-grass stands with more than 50% grass are better alternatives for manure application than newly established monocultures of N-fixing alfalfa cultivars or fields that still need to be seeded to alfalfa or alfalfa-grass mixes.
4. It is recommended to test soils for P and K (and other nutrients) at least once in three years to determine P and K needs. Phosphorus needs in the seeding year (for soils with a Cornell Morgan P test <80 lb/acre P) can be met with spring-applied manure but rates should be limited to 3,000-4,000 gallon/acre and manure should be incorporated to reduce N loss in the seeding year as very little N uptake occurs in the first 4-6 weeks after germination. If soil test P levels are ≥80 lb/acre, manure applications in either fall or spring prior to seeding of a new alfalfa-grass stand should be avoided to reduce N loss and enable P drawdown.
5. When soil nitrate levels are above 15 ppm, soil pH is 6.8 or higher, soil temperature is 60^{o}F or higher within 3-4 weeks after germination, soil P and S fertility is optimal, and healthy populations of N-fixing bacteria are present, applying pre-plant N (either with manure or fertilizer) to a new alfalfa or alfalfa-grass seeding will not increase yield and may negatively impact N-fixation. Thus, N application to a new alfalfa or alfalfa-grass seeding is typically discouraged.
6. Seedings with companion crops harvested for silage or grain (e.g. oats, spring barley, triticale) will require N for optimal establishment and growth of the companion crop. Fertilizer N applications should be limited to 60-80 lb fertilizer N/acre for agronomic returns. Manure can be applied to meet the N needs of the companion crop. However, spring manure application rates in excess of 6,000-8,000 gallon/acre can lead to lodging of the companion crop and increase N loss to the environment.
7. For established stands (topdressing), smothering and/or salt injury to the stand increases with manure application rates in excess of 4,000 gallon/cut, especially when applications are delayed beyond 3-4 days after cutting.
8. Alfalfa-grass harvest typically removes about 13 lb of P_2O_5 and 56 lb of K_2O per ton dry matter (DM) and, assuming an average crude protein (CP) content of 15% of DM (grass dominated grass-alfalfa mixture), an alfalfa-grass crop contains about 40 lb of N/ton DM whereas a 20% CP crop (pure alfalfa) contains 55 lb N/ton DM.
9. Recognizing that crop nutrient removal is a management concept rather than a goal or requirement, given a typical P and K content of manure, it would on average require less than 2,000 gallon of liquid manure to apply the equivalent of P removal and slightly more than 4,000 gallon to equate to K removal of a 2 ton DM/acre yield. For N, established stands could receive 6,000-8,000 gallon/acre for each 2 ton

[1] *Average crop and manure analyses were used to derive estimates of crop removal and manure N, P, and K application rates. More accurate estimates will be obtained from farm-specific manure and forage quality analyses.*

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of forage removal assuming N fixation is reduced to 20% of the total N uptake and taking into account soil N uptake as for corn.

10. In cases where maintaining (not increasing) P levels is part of the management strategy, manure application rates should be limited to 4,000 gallon/acre for the year (across all years of the stand). Manure application in the seeding and early production years is not recommended, a practical approach to maintaining P levels could be to apply manure at 4,000 gallon/acre after cuttings (where field conditions allow) in the final years in the stand, rebuilding P (and K) levels after drawdown in years 1-3. Manured fields should be checked for forage K content when the forage is being considered for feeding to nonlactating cows.

11. If manure is being applied in the last production year to address P and K levels that have been reduced over the life of the alfalfa-grass stand, it is recommended to apply the manure while the crop is still actively growing to enhance N uptake (during summer or early fall) and to kill the alfalfa-grass in the following spring (rather than the previous fall) to prevent large N fluxes prior to establishment of the following corn crop.

12. Wheel traffic damage can be minimized by planting traffic tolerant varieties, using small tractors if possible, avoiding unnecessary trips across the field, using larger harvesting equipment, and driving on fields as soon after cutting as possible.

13. Application of manure from animals infected with pathogens, particularly Johne's disease is a potential method of spreading these infections. In the case of Johne's disease, exposure of young animals (<1 year old) to contaminated pastures or to feed coming from these fields should be prevented.

14. Plant breeding and/or genetic engineering for selection/development of germplasms should focus on ways to effectively reduce N fixation in high N situations without compromising yield and/or quality.

15. The management guidelines in this bulletin are based on our current knowledge of N use and N dynamics in alfalfa-grass systems, derived from the studies referred to in section 2 of this bulletin. Additional (local) research is ongoing and these guidelines will be updated once additional research findings with relevance to New York State become available.

Acknowledgment:
Parts of this document (sections on manure application to established alfalfa-grass stands) were published in Forage and Grazinglands, a journal of the Plant Management Network (http://www.plantmanagementnetwork.org). Those sections were printed with permission from the Plant Management Network (Miles Wimer, Director, Plant Management Network).

Department of Animal Science Mimeo 231.
Department of Crop and Soil Sciences Extension Series E08-3. Cornell University. 43 pages.

http://nmsp.css.cornell.edu/publications/articles/extension/Manureandalfalfa.pdf

Common Lambsquarters Control in Glyphosate-Resistant Crops

Weed Management

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Reports of poor common lambsquarters control continue to surface in situations where "normal" rates of glyphosate have been applied alone in glyphosate-resistant crops. This problem is most often seen in soybeans because the surviving weeds are more obvious than in corn, and because glyphosate is less likely to be tank-mixed with other herbicides in soybeans than in corn. Although the results discussed here are from a corn experiment, the glyphosate only treatments are relevant to soybeans as well.

Trial Information

Grower/cooperators near Moravia, NY planted Pioneer Hybrid 38M60 April 24, 2008 following pre-plant incorporation of 1qt/A of AAtrex 4L. Mid-postemergence (MPO) herbicide treatments were applied June 21 when lambsquarters averaged 7 inches tall and corn was in the V7 stage of development (~16 inches tall). Herbicides were applied in 20 gallons/A of spray solution and all glyphosate treatments included 1.7 lb/A of ammonium sulfate (AMS). Lambsquarters control ratings were made 3 and 6 weeks after treatment (WAT).

Results for Glyphosate-Resistant Hybrids

Perhaps of greatest interest are control ratings with MPO applications of glyphosate alone. Roundup PowerMAX at the "normal" rate of 22 fl oz/A controlled 78 and 83% of the lambsquarters 3 and 6 WAT respectively (Table 1). Simply increasing the application rate of Roundup to 33 fl oz/A resulted in 91 and 96% lambsquarters control 3 and 6 WAT respectively. These results are somewhat similar to those of a 2007 soybean experiment where late postemergence (14-inch lambsquarters) applications of 22 and 44 fl oz/A of Roundup WeatherMAX controlled 75 and 97% of the lambsquarters respectively. In both cases, increasing rates improved control.

Table 1. Common lambsquarters control ratings 3 and 6 weeks after treatment (WAT) with glyphosate alone or tank-mixed with other herbicides near Moravia, NY in 2008.

Herbicides*	Rate Amt/A	% Lambsquarters Control 3 WAT	% Lambsquarters Control 6 WAT
Roundup PowerMAX	33 fl oz	91	96
Roundup PowerMAX	22 fl oz	78	83
+ Clarity	4 fl oz	89	98
+ Status	2.5 oz	94	100
+ Require Q	4 oz	97	100
+ Resolve Q	1.25 oz	90	95
+ Hornet WDG	2 oz	83	93
+ Callisto	2 fl oz	88	96
+ Impact	0.5 fl oz	78	86
Halex GT	3.6 pt	96	100
LSD (0.05)		7	6

*All applied with 1.7 lb/A of AMS (ammonium sulfate).

Tank mixes of several herbicides with 22 fl oz/A of Roundup also provided excellent lambsquarters control in 2008. Among tank-mix partners that improved control compared to the "normal" rate of Roundup alone were 4 fl oz/A of Clarity and 2.5 oz/A of Status. Control when Clarity or Status was tank-mixed with Roundup was 98 and 100% respectively 6 WAT (Table 1). The active ingredient in these tank-mix partners is dicamba. Require Q, a pre-mix of rimsulfuron and dicamba, also provided 100% control 6 WAT. Other herbicides that provided very good control when applied with 22 fl oz/A of Roundup were 1.25 oz/A of Resolve Q and 2 oz/A of Hornet WDG with an average control rating of 94% 6 WAT.

Halex GT, the new pre-mix of glyphosate with metolachlor (Dual II Magnum) and mesotrione (Callisto) at 3.6 pt/A and the tank-mix of 2 fl oz/A of Callisto with 22 fl oz/A of Roundup provided 96 and 100% control 6 WAT respectively (Table 1). Finally, the addition of 0.5 fl oz/A of Impact with Roundup controlled only 86% of the lambsquarters 6 WAT. This was no better than control with Roundup alone.

Results for Conventional Hybrids

Some treatments included in the 2008 experiment could be used for postemergence lambsquarters control with conventional or glyphosate-resistant corn

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Table 2. Common lambsquarters control ratings 3 and 6 weeks after treatment (WAT) with postemergence herbicides that could be used with conventional or glyphosate-resistant corn hybrids near Moravia, NY in 2008.

Herbicides	Rate Amt/A	% Lambsquarters Control	
		3 WAT	6 WAT
Clarity + NIS	8 fl oz	90	100
Status + COC*	5 oz	95	100
Callisto + COC	3 fl oz	96	100
+ AAtrex 4L**	1 pt		
Impact + MSO	0.73 fl oz	86	83
+ AAtrex 4L**	1 pt		
LSD (0.05)		7	6

* Included 1.25% (v/v) of 28% UAN (urea ammonium nitrate).

** Included 2.5% (v/v) of 28% UAN (urea ammonium nitrate).

hybrids. When applied MPO, 8 fl oz/A of Clarity or 5 oz/A of Status controlled 100% of the lambsquarters 6 WAT (Table 2). A summary of four previous experiments indicated that Status might provide slightly better (99%) lambsquarters control than Clarity (92%). Two herbicides that inhibit pigment formation in sensitive weeds, Callisto and Impact, were each applied with 1 pt/A of AAtrex 4L plus appropriate spray additives. The addition of AAtrex to these treatments would not affect results since the lambsquarters in this field is dominated by triazine-resistant biotypes of this weed. The postemergence rate of 3 fl oz/A of Callisto controlled 100% of the lambsquarters while 0.73 fl oz/A of Impact controlled only 83%.

Summary

These results show that 33 fl oz/A of Roundup PowerMAX provided better control of 7-inch lambsquarters (96%) than the 22 fl oz/A rate (83%). This information is useful in both glyphosate-resistant corn and soybeans. The high rate of glyphosate seems to control lambsquarters that is more than a few inches tall. Tank-mixing herbicides that have different modes-of-action with 22 fl oz/A of Roundup or using pre-mixes such as Halex GT provide equally good lambsquarters control and may play an important role in preventing the development of glyphosate-resistant weed populations.

Cornell Guides Integrated Field-Crop Management

Resource Spotlight

Eleanor Jacobs

For 58 years the Cornell Guide for Integrated Field Crop Management, formerly Cornell Recommends, has provided crop management information to help farmers, input suppliers and farm consultants to grow better crops.

What the authors wrote in the first Guide in 1950 to explain its purpose holds true today for Cornell University's field crops researchers and educators who prepare the Guide: "This handbook lists the best information we have to date from research and contacts with the trade on choice of variety, seed, fertilizer, planting and management recommendations for New York field crops."

"Our Guide is useful for farmers," says Russ Hahn, a Professor in the Department of Crop and Soil Sciences who prepares the weed management section of the Guide. "The original concept was to get information into the hands of farmers."

Users confirm the Guide's practicality and usefulness. Willard DeGolyer can't remember when he has not had copies of the Cornell Guide on his Castile, N.Y., dairy where he grows more than 1,500 acres of corn, hay and peas. "It's an absolutely wonderful resource. We make sure it's in the hands of employees," he says about giving two copies to his crop managers.

DeGolyer's crop consultants also use the guide. "All members of the association's cropping staff have the Guide on hand whether in the office or their vehicles," says Chad Stoeckl, DeGolyer's crop adviser with Western New York Crop Management Association based in Perry, N.Y.

Updates and upgrades

The Cornell Guide is updated annually to keep the reference current with changes in the availability and use of pesticides, herbicides and fungicides. As research and field experiences add to the crop production knowledge base – and as society's expectations of farmers change – the Cornell Guide incorporates new information.

"The annual update is extremely valuable; labels change and information changes," says Larry Eckhardt, president of Capital Area Ag Consulting Inc., Stephentown, N.Y. "I use the Guide for looking at crop protectant rates and use."

Bob DeWaine, a Monsanto technology development representative, Sherrill, N.Y., shares that sentiment: "The Guide is a quick reference to see what pest management products are registered for use in New York and their rates, and I know the information is current."

Tom Kilcer, regional crop and soils specialist with Cornell Cooperative Extension based in Troy, N.Y., also relies on the annual updates. They ensure the information is correct, he says. Kilcer uses the Guide for information on varieties and herbicide and insecticide recommendations, and as a reference for fertilizer recommendations when a farm doesn't have a soil test.

The Guide's "emphasis on IPM reflects both farmers' and society's concerns about the environmental and economic aspects of protecting crops from pests," says Keith Waldron, Livestock and Field Crops IPM Coordinator.

As more emphasis has been placed on nutrient management practices, the Cornell Guide has added such information as a section on bio-solids. More recently, it included information on environmental risk indicators and updated guidance for fertilizer and manure management.

Because of the Guide's land-grant university origin, it's a trusted source of information. "Being third-party based makes it particularly valuable and reliable," DeGolyer says.

In 2005 the Cornell Guide for Integrated Field Crop Management was made available on-line for people who find that delivery system easier or quicker to use. (See www.fieldcrops.org/)

The 2009 Cornell Guide will be available for purchase at the upcoming Field Crop Dealer Meetings, scheduled for Oct. 28 to 31 in Albany, New Hartford, Batavia and Auburn, N.Y. For information on the meetings, contact Larissa Smith at 607-255-2177 or e-mail her at lls14@cornell.edu.

Calendar of Events

Oct. 28, 2008	**Field Crop Dealer Meeting, Best Western Albany Airport Inn, 200 Wolf Rd, Albany, NY**
Oct. 29, 2008	**Field Crop Dealer Meeting, Holiday Inn, 1777 Burrstone Rd, New Hartford, NY**
Oct. 30, 2008	**Field Crop Dealer Meeting, Batavia Party House, 5762 East Main Rd, Batavia, NY**
Oct. 31, 2008	**Field Crop Dealer Meeting, Auburn Holiday Inn, 75 North St, Auburn, NY**
Nov. 11-13, 2008	**In-Service Training, Ramada Inn, 2310 North Triphammer Road, Ithaca, NY**
Dec. 2-4, 2008	**National Fusarium Head Blight Forum, Indianapolis, IN**
Dec. 9-11, 2008	**Northeast Region Certified Crop Adviser Training, 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 Larissa Smith, 237 Emerson Hall, Cornell University, Ithaca, NY 14853 or lls14@cornell.edu.**

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