What's Cropping Up?

A NEWSLETTER FOR NEW YORK FIELD CROPS & SOILS VOLUME 16, NUMBER 6, NOV-DEC, 2006

Recommended Corn Silage Hybrids

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Cornell University evaluates 95-115 day corn silage hybrids at two locations in central/western NY and 75-100 day corn silage hybrids at two locations in Northern New York. We arrange the hybrids in the field into 5-day relative maturity (RM) groups (i.e. 95-100, 101-105 day hybrids, etc.) and harvest one or more RM groups at a particular site when the hybrids are in the 60-70% moisture range. We also take a 2000-gram sample at harvest to determine moisture and to run silage quality analyses on all four replications of each hybrid at each site.

MILK2006, the updated MILK2000 spreadsheet from the University of Wisconsin, calculates milk/ton, a silage quality index, derived from neutral detergent fiber (NDF), NDF digestibility, crude protein, ash, and starch concentrations in the quality analyses. MILK2006 also calculates milk yield/acre of each hybrid by combining silage yield and milk/ton values. We recommend hybrids that have comparative milk yields of greater than 100 (the average milk yield of each hybrid RM group is adjusted to 100 and hybrids within the RM group with above-average milk yields have values above 100). We have listed the comparative milk yields as well as comparative silage yields and milk/ton values for hybrids that have performed above-average in our trials (Tables 1 and 2). **Hybrids should only be compared within RM groups. Hybrids that have been tested more than 1 year should be given more weight because they have performed above-average in more environments.**

Central/Western NY

New hybrid releases, TMF2T497 from Mycogen, 8688RR from Garst and 470RR from Doebler's yielded exceptionally well in the 95-100-day RM group in 2006 (Table 1). Hybrids 37K84 from Pioneer, 4955XRR from FS Seeds, HL S047 from Hyland and 964L from LICA performed very well in the 95-100 day RM group as they had in previous years. New hybrid releases that had high milk/ton values in this maturity group in 2006 include TMF2N422 from Mycogen and 946LRR from LICA.

New hybrid releases in the 101-105 RM group that performed exceptionally well in both yield and quality in 2006 include 8693CB/LL from Garst, DKC55-12 from DEKALB, and N48-R3 from Northrup King. The hybrid TA557-00F performed exceptionally well in both yield and quality for the fourth consecutive year as did Pioneer 3530 for the second consecutive year in the 101-105 day RM group. New hybrid releases that also performed well in this maturity group in 2005 include 307 from LICA and 537RB from Doebler's.

The hybrids 34A86 from Pioneer and 620 from Doebler's had outstanding yields in the 106-100 day RM group in 2006. The hybrids Pioneer 34B23 from Pioneer and HLS 067 from Hyland continued to have high milk yields, despite being in the test for 7 and 6 years, respectively. New hybrid releases that performed well in the 106-110 day RM group in 2006 include 34A16 from Pioneer because of its high milk/ton value and 8313CB/LL from Garst and RX655RR2 from Asgrow because of high yields.

The hybrid 34B39 from Pioneer had its second consecutive outstanding year in both yield and quality in the 111-115 day RM group in 2006 (Table 1). Four new hybrid releases in the 111-115 day RM group, including 33H26 from Pioneer, 8380IT from Garst, TA689-12F from T.A. Seeds, 34B24 from Pioneer, and 57P12 from Dyna-Gro also had outstanding milk yields in 2006. The hybrid L-9H93BT from Golden Harvest also had excellent yield and quality in 2006.

Northern New York

The 75-day hybrid HL S011 had excellent yield and the 80-day hybrid HL SR21 from Hyland had excellent milk/ton values in the 75-85 day RM group in 2006 (Table 2). The 85-day hybrid 377BWR from Doebler's yielded the highest in the 75-85-day RM group in 2006.

A new hybrid release, TMF2L412 from Mycogen, had exceptional milk yields in the 86-90-day RM group in 2006 (Table 2). Hybrids HT7220 BT/RR2 from Hytest and HL S034 from Hyland continued to have high milk yields in the 86-90 day RM group for the fourth and fifth consecutive years, respectively. Also, N29-A2, from Northrup King had exceptionally high milk/ton values in 2006 for the second consecutive year in the 86-90 day RM group. A new NK release, N31-P2, had high milk yields in 2006 as did 8922YG1/RR from Garst.

Some new hybrid releases as well as older hybrids had exceptional milk yields in the 91-95 day RM group in 2006 (Table 2). The new hybrids, 946LRR from LICA, 468RB from Doebler's, and N39-Q1 from NK, had very high milk yields in 2006. The hybrids TNT-92CRW/RR2 from Hytest, and 4453XRR from FS Seeds had exceptional milk yields for the second consecutive year in 2006. New hybrid releases, 5434RR from Chemgro and TA450-11 from T.A. Seeds, also had high milk yields in the 91-95 day RM group in 2006.

Crop Management

Table 1. Recommended 95-115-day corn silage hybrids in New York based on tests in Cayuga Co. (Aurora Research Farm) and Livingston Co. (Southview Farms).

Brand	Hybrid	Comparative Silage Yield	Comparative Milk/Ton	Comparative Milk Yield	Years in Test
		----------%----------			no.
		95-100 day Relative Maturity			
Mycogen	TMF2T497	110	100	109	1
Garst	8688RR	108	101	109	1
Pioneer	37K84	106	101	106	3
Doebler's	470RR	108	98	106	1
FS Seeds	4955XRR	105	101	105	2
Mycogen	TMF2N422	102	102	104	1
Hyland	HL S047	101	102	103	4
LICA	946LRR	100	102	102	1
LICA	964L	101	101	101	2
		101-105 day Relative Maturity			
Garst	8693CB/LL	109	103	113	1
T.A. Seeds	TA557-00F	109	101	110	4
DEKALB	DKC55-12	107	102	109	1
NK	N48-R3	106	102	108	1
Pioneer	35A30	103	102	104	2
NK	N48-L4	102	101	104	3
LICA	307	103	101	104	1
Hyland	HL S058	105	97	102	4
Doebler's	537RB	101	100	101	1
		106-110 day Relative Maturity			
Pioneer	34A86	110	101	111	2
Pioneer	34B23	105	103	107	7
Hyland	HL S067	107	100	106	6
Doebler's	620	107	100	106	2
Garst	8313CB/LL	102	101	103	1
Pioneer	34A16	99	104	103	1
Asgrow	RX655RR2	102	99	101	1
		111-115 day Relative Maturity			
Pioneer	34B39	105	102	108	2
Pioneer	33H26	108	101	108	1
Garst	8380IT	103	103	106	1
T.A. Seeds	TA689-12F	106	100	106	1
Laser	L-9H93Bt	103	101	104	2
Pioneer	34B24	104	100	104	1
Dyna-Gro	57P12	104	101	103	1

Table 2. Recommended 75-100-day corn silage hybrids in Northern NY based on tests in St. Lawrence Co. (Greenwood Farms) and Clinton Co. (Miner Institute).

Brand	Hybrid	Comparative Silage Yield	Comparative Milk/Ton	Comparative Milk Yield	Years in Test
		----------%----------			
		75-85 day Relative Maturity			
Doebler's	377BWR	106	100	106	1
Hyland	HL S011	105	99	103	4
Hyland	HL SR21	98	103	101	1
		86-90 day Relative Maturity			
Mycogen	TMF2L412	110	101	111	1
Hytest	HT7220BT/RR2	109	100	109	4
Hyland	HL S034	107	100	106	5
NK	N29-A2	100	104	104	2
NK	N31-P2	104	99	102	1
Garst	8922YG1/RR	99	102	101	2
		91-95 day Relative Maturity			
LICA	946LRR	109	102	111	1
Doebler's	468RB	112	98	110	1
NK	N39-Q1	108	100	107	1
Hytest	TNT-92CRW/RR2	102	103	105	2
FS Seeds	4453XRR	106	99	104	2
Chemgro	5434RR	105	100	104	1
NK	N33-H6	106	98	103	4
T.A. Seeds	TA450-11	102	100	102	1
		96-100 day Relative Maturity			
LICA	964L	104	101	104	1
Hytest	7435BT/RR2	101	100	101	1

The new hybrid releases, 964L from LICA and 7435BT/RR2 from Hytest, had high milk yields in the 96-100 day RM group in Northern New York in 2006. Both hybrids had above-average yields and 964L also had above-average milk/ton values.

Conclusion

Hybrid selection is one of the most important management practices that affect corn silage yield and quality. Dairy producers should make an informed management decision, based on actual silage yield and quality data from New York, before selecting hybrids for the coming year. We urge seed companies to enter their hybrids in our corn silage hybrid testing program so New York dairy producers can make informed decisions in selecting their hybrids.

Poncho-Cruiser Seed Treatments for Corn Rootworm

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Insect Management

The new technology of gluing an insecticide effective against soil insects to the seed coat, is very convenient, quite effective and has rapidly gained acceptance by NY corn growers. With the insecticide applied to the seed by the seed supplier, adjusting the planter to the correct seeding rate is the only calibration needed before planting begins. The two insecticides sold for this application in the corn market are Poncho™ and Cruiser™, two very similar compounds. With both of these insecticides, the low rate of 0.25 mg per seed gives excellent protection for secondary insect pests like seed corn maggot. When the rate is increased to 1.25 mg per seed, excellent control is achieved for corn rootworm (CRW) in NY. According to industry sources, the vast majority of corn seed sold in NYS during 2007 will be treated with a minimum of the low rate of either Poncho™ or Cruiser™ for secondary pest before sale. In addition, about 15%-20% of the seed will be treated with one of these materials at the CRW rate (1.25 mg/kernel). While the CRW rate has been shown to be very effective against very high CRW larval populations in research plots for the past five years regardless of weather conditions, the seed suppliers recommend that the CRW seed treatment should only be used against low to moderate CRW larval populations in commercial fields.

Effective insect control with this new seed treatment technology is dependent on both the chemical properties of the insecticide and the release properties of the polymer used to glue the insecticide to the seed surface. Both Poncho™ and Cruiser™ are closely related and water-soluble. The polymer seed coating slowly releases the water-soluble insecticide and the insecticide diffuses into the soil solution surrounding the roots of the corn plant. Some of the insecticide is absorbed by the roots and moved throughout the roots systemically. The impact of the insecticide on CRW is thought to be from both the direct contact of the insecticide-laced soil solution and the ingestion of the insecticide with the consumption of root tissue. Since soil water must be present to allow the water-soluble insecticide to diffuse from the polymer seed coating into the soil solution to be available for root uptake or direct contact with the insect, frequent precipitation events are thought to be required for good efficacy. However, heavy precipitation events are believed to flush the insecticide out of the root zone before the insecticide can be absorbed by the plant roots. Dryer soil conditions caused by infrequent rains reduce insecticide effectiveness by inhibiting release from the polymer. Consistent performance in NY over the past 5 years is believed to be related to our rainfall patterns that are significantly different to other portions of the corn belt where Cruiser™ and Poncho™ have been reported to show a highly variable performance across sites and years.

Reports of Poncho/Cruiser failures against CRW in 2006, using the CRW rate, have been reported in NYS during a year of above average rainfall and soil moisture. The exact nature and the accuracies of these failures is not known but several failures were identified by knowledgeable individuals during August, when the larval damage on the roots is very obvious. The above average rainfall is believed to have contributed to the increased frequency of lodged plants in Poncho™/Cruiser™ treated fields by reducing early root development during the first part of the growing season as well as possibly flushing the insecticide out of the root zone before the insecticide could be absorbed by the reduced root system or kill the insect by direct contact. By contrast, Poncho™ and Cruiser™ continued to perform very well at Aurora in 2006 research plots with extremely high CRW larval pressure and similar rain fall conditions.

Potential for CRW resistance to Poncho™ and Cruiser™

Corn Rootworm has the demonstrated ability to develop resistance to an insecticide when large portions of the population are exposed to a single insecticide. With the plans of the industry to replace the current seed treatments for secondary insects with the low rate of either Poncho™ or Cruiser™ starting in 2007, most of the NYS population of CRW larvae will be exposed to a sub-lethal dose of these insecticides across the state, a first step in encouraging resistance development in an insect. If corn producers continue to increase the usage of the CRW rate of Poncho™/Cruiser™ to the point where this technology is utilized on the majority of continuous corn acreage, then the potential for CRW to develop resistance to this new insecticide technology is greatly increased and this useful technology may well be lost to the NYS corn producer. While the seed treatment technology is very user friendly and effective in most situations, this technology **should not** be viewed as the single CRW control option for the entire farm.

Strategies to prevent resistance

The use of the Corn Rootworm rate of Poncho™/Cruiser™ should not be the only CRW management tool used on the entire farm. It is suggested that no more than 50% of the corn acreage on a farm should be exposed to the CRW rate of Poncho™/Cruiser™ to prevent the entire CRW population from being exposed to lethal doses of these materials and to accelerate insecticide resistance development. The following strategy is suggested to meet this 50% requirement. Since first year corn is not at risk to CRW damage in NY, no CRW insecticide treatments are necessary. CRW injury risk increases with each year of continuous corn starting with second year corn. The logical place for the CRW rate of Poncho™/Cruiser™ on the seed would be in second and third year corn fields. CRW injury risk increases in fourth and longer continuous fields to merit crop rotation, the use of either a granular soil insecticide (Force™, Lorsban™) or one of the new GM-Rootworm resistant corn varieties (Yieldgard-RW™, Herculex-RW™, Yieldgard-VT™). If corn producers choose to plant one of the GM-rootworm corn varieties, the 20% refuge requirement needs to be considered and satisfied. Good stewardship and smart IPM practices early in the life of an insecticide reduces the probability of resistance development and the premature loss of the insecticide from the market place.

Crop Management

Recommended Roundup Ready Soybean Varieties in Central/Western New York

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New York farmers planted almost 200,000 acres to soybeans in 2006 and averaged 45 bu/acre in yield, a new state record. Soybean prices have skyrocketed to over $6.00/bu locally so soybean growers can realize some profit this year. Varieties have shown yield differences of 10 bu/acre in our variety trials so variety selection is a management practice that strongly determines how much profit that growers realize. The varieties in Table 1 are our recommended varieties for central/western NY, based on our tests in Cayuga and Livingston Co. The varieties in Table 2 are our recommended varieties for Northern NY, based on our tests in Jefferson and Clinton Co. We only recommend varieties that have average relative yields of more than 100% (100% relative yield equals the mean yield of the test). Varieties that have been tested more than one year have performed well over different growing seasons in NY so more consideration should be given to those varieties. When looking at the relative yields in Tables 1 and 2, only compare the relative yields of varieties within the same maturity group.

Central/Western NY

Averaged across all varieties entered in our central/western NY tests, Group I varieties yielded 2 bu/acre less than Group II varieties at Cayuga Co. and 4 bu/acre less at Livingston Co. in 2006. Late Group I varieties, AG1903 from Asgrow, SG1919 from Seedway, 199RR from FS Seeds, and S19-R5 from Northrup King, continued to yield well in New York in 2006 (Table 1). New Group I varieties that did very well in NY in 2006 include EXP1727 from Seedway, TS1880R from T.A. Seeds, and EX1906 from FS Seeds.

New Group II varieties, AG2802, AG2106, and AG2204 from Asgrow, S21-N6 from Northrup King, and DKB24-52 from Dekalb yielded exceptionally well in New York in 2006 (Table 1). Group II varieties, TS2560R from T.A. Seeds, 217RR from FS Seeds and SG2205 from Seedway, yielded well for the second consecutive year in 2006. Also, an old variety, S24-K4 from Northrup King, yielded well for the sixth consecutive year in NY, especially at Cayuga Co. where it yielded the highest (along with AG2802).

Table 1. Relative yields of recommended Group I and Group II Roundup Ready soybean varieties for Central/Western New York, based on tests in Cayuga and Livingston Co.

VARIETY	BRAND	RELATIVE YIELD (%)	YEARS IN TEST
		GROUP I VARIETIES	
AG1903	Asgrow	113	3
EXP 1727	Seedway	111	1
SG1919	Seedway	111	4
FS199RR	FS Seeds	109	3
TS1880R	T.A.Seeds	106	1
EX1906	FS Seeds	105	1
S19-R5	NK	104	3
		GROUP II VARIETIES	
AG2802	Asgrow	108	1
AG2106	Asgrow	107	1
TS2560R	T.A. Seeds	106	2
AG2204	Asgrow	105	1
FS217RR	FS Seeds	104	2
S21-N6	NK	104	1
S24-K4	NK	103	6
SG2205	Seedway	102	2
DKB24-52	DeKalb	102	1
DKB27-53	NK	101	1
EXP2506	FS Seeds	101	1

Northern NY

Group I varieties that continue to yield well in Northern NY include S19-R5 from Northrup King, Razor from Hyland, 199RR from FS Seeds, SG1919 from Seedway, AG1903 from Asgrow, and Respond from Hyland (Table 2). A new variety, TS1880R from T.A. Seeds, yielded exceptionally well at both locations in Northern NY in 2006.

Averaged across all varieties, the Group I varieties at Sackets Harbor in Jefferson Co. yielded 55 bu/acre compared with 63 bu/acre for the Group II varieties in 2006. Group II varieties that yielded above-average at Sackets Harbor in Jefferson Co. include S24-K6, S24-K4, and S21-N6 from Northrup King and TS2560R from T.A. Seeds (Table 2). We recommend these varieties only in western Jefferson Co, if planted in mid-May, because of the shorter growing season in Northern NY. We do not recommend Group II varieties in other regions of Northern NY.

Conclusion

Variety selection strongly influences yield and subsequent profit. Commercial varieties do not have soybean rust or soybean aphid resistance yet so Maturity Group and yield continues to be the most important factors in variety selection. Correct soybean variety selection can result in huge profit differences so growers should consider all sources of information when selecting varieties.

Table 2. Relative yields of recommended Group I and Group II (only close to Lake Ontario) Roundup Ready soybean varieties for Northern New York, based on tests in Jefferson and Clinton Co.

VARIETY	BRAND	RELATIVE YIELD (%)	YEARS IN TEST
		GROUP I VARIETIES	
TS1880R	T.A. Seeds	111	1
Razor	Hyland	107	3
S19-R5	NK	107	3
FS199RR	FS Seeds	107	3
AG1903	Asgrow	105	3
SG1919	Seedway	105	3
Respond	Hyland	101	2
122RR	FS Seeds	101	3
		GROUP II VARIETIES	
S24-K6	NK	113	1
S24-K4	NK	106	1
S21-N6	NK	106	1
TS2560R	T..A. Seeds	102	1

Weed Management

Role of Residual Herbicides in Roundup Ready® Corn Programs

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There are several potential roles for residual herbicides in Roundup Ready corn weed control programs. In the short run, residual herbicides may provide a wider window for application, better weed control, and higher yields than Roundup or other glyphosate products applied alone. In the medium to long run, residual herbicides should delay or prevent the development of glyphosate-resistant weed populations.

Regional Results

A multi-state effort with 34 experiments throughout the Northeast in 2000 and 2001 provided data on the importance of timely herbicide application with total postemergence weed control programs in corn. This research also provided information on the role residual herbicides might play in Roundup Ready corn weed control programs. Grain corn yields were obtained at 33 of 34 locations. The untreated checks and the weed free checks averaged 92 and 152 bu/A respectively. These experiments included a preemergence (PRE) standard along with early, mid-, and late postemergence (EPO, MPO, and LPO) applications. Yields of 140 bu/A from the PRE standard and of about 145 bu/A from the EPO (1 to 3-inch weeds) and LPO (>6-inch weeds) Roundup only treatments were less than from the weed free check. The MPO (2- to 6-inch weeds) Roundup only treatment was similar to the weed free check. Yields from other treatments seemed to make a case for including residual herbicides in Roundup Ready weed control programs, especially with EPO applications where there was a yield penalty with Roundup applied alone (144 bu/A) compared with the EPO Roundup plus 2/3 of the full (X) rate of residual herbicides (153 bu/A). At the MPO timing, there was no difference in yield between Roundup alone and Roundup plus 2/3 X rate of residual herbicide. Although these results point out the potential value of residual herbicides in Roundup Ready corn weed control programs, they may not tell whether these regional results hold true for NY State, and if so, how much residual herbicide is needed.

NY Data Review

In an effort to determine if research results in NY State mirror these regional results, we examined all Roundup Ready corn experiments conducted since 1997 to see if glyphosate (Roundup or other glyphosate products) treatments with residual herbicides had a yield advantage over those with glyphosate only. To qualify, experiments had to have the following treatments:

1) Untreated check
2) PRE standard at the full (X) rate
3) The same PRE standard at full *or* reduced rate followed by a MPO or LPO glyphosate application
4) The same rate of the PRE standard as in number 3 above but tank mixed with glyphosate and applied EPO
5) Glyphosate applied alone EPO

There were nine experiments that had this sub-set of treatments. When analyzed over these location-years, the untreated checks had an average yield of 87 bu/A and the PRE standards had an average yield of 146 bu/A. The PRE standard, at the full or reduced rate, followed by a MPO or LPO glyphosate application produced 152 bu/A. A tank mix of the same rate of the PRE standards plus glyphosate applied EPO produced 153 bu/A. These two treatments, the split application and the tank mix application of the same herbicides and rates, were not different from one another and did not produce a significantly higher yield than the 150 bu/A from the EPO glyphosate only treatments. There was no short-term advantage, in the form of increased yields, when residual herbicides were included in Roundup Ready corn programs in NY. This did not match the results of the regional study and may have been due to variation in application timing in these NY experiments over many years.

Reduced Residual Experiments

To obtain additional information on the role of residual herbicides in Roundup Ready corn weed control programs and to determine the rate of residual herbicides needed in EPO glyphosate tank-mixes to provide season-long annual weed control, experiments were conducted at Aurora and Valatie in 2005 and 2006. Five premix/tank mix combinations at 2/3, 1/2, and 1/3 of the full PRE rate (X) for each soil type were applied EPO with Roundup Original. The full PRE rates for each premix/tank mix combination were:

Herbicides	Aurora	Valatie
Bullet	3 qt	2.5 qt
Guardsman Max	4 pt	3 pt
Bicep II Magnum	1.6 qt	1.3 qt
Lexar	3 qt	3 qt
Prowl H20 + AAtrex	3 pt + 1 qt	3 pt + 1 qt

Experiments also included PRE Lexar at the X rate followed by MPO Roundup application and an EPO Roundup only application.

Foxtails and common ragweed were the dominant annual grass and broadleaf weed in three of the four experiments. Large crabgrass was the dominant grass in the fourth experiment and one experiment had no dominant broadleaf weed. When ragweed control was compared among the three reduced rates of a single residual combination plus Roundup (Table 1), only Bullet provided similar ragweed control at 2/3, 1/2, and 1/3 X of the full PRE rate. With Guardsman Max, Bicep II Magnum, and Lexar there were no differences in ragweed control between the 2/3 and 1/2 X rates of each, however ragweed control at the 1/3 X rate was less than at the 2/3 X rate for each. With Prowl H20 + AAtrex, ragweed control was better with 2/3 X than with 1/2 or 1/3X rates.

The rate of residual herbicide had no effect on annual grass (one crabgrass and three foxtail locations) control with Bullet, Guardsman Max, or Lexar. With Bicep II Magnum and

Prowl H20 + AAtrex, there was no difference in annual grass control between the 2/3 X and 1/2 X rates but in each case, grass control was better with 2/3 X rate than with 1/3 X rate of the residual program. Finally, herbicide rate within each of these residual programs had no impact on grain corn yields.

Table 1. Percent common ragweed and annual grass control, and corn yields when 2/3, 1/2, and 1/3 X rates of residual herbicide programs were tank mixed with EPO Roundup Original applications in 2005 and 2006.

Herbicides	Ragweed Control[1] (%)	Grass Control[1] (%)	Corn Yield[1] (bu/A)
Bullet 2/3 X	97 fg	90 cde	159 abcd
Bullet 1/2 X	98 defg	87 efg	160 abcd
Bullet 1/3 X	96 gh	87 defg	156 abcde
Guardsman Max 2/3 X	98 cdef	92 bcde	159 abcd
Guardsman Max 1/2 X	99 bcd	89 cdef	154 bcde
Guardsman Max 1/3 X	96 ghi	87 efg	151 de
Bicep II Magnum 2/3 X	97 efg	91 bcde	168 ab
Bicep II Magnum 1/2 X	96 gh	88 defg	157 abcde
Bicep II Magnum 1/3 X	94 hij	82 g	156 abcde
Lexar 2/3 X	99 ab	97 a	161 abc
Lexar 1/2 X	99 abc	93 abc	165 a
Lexar 1/3 X	98 cdef	93 abc	158 abcd
Prowl H20 + AAtrex 2/3 X	96 gh	93 bcd	158 abcd
Prowl H20 + AAtrex 1/2 X	93 ij	91 bcde	158 abcd
Prowl H20 + AAtrex 1/3 X	91 jk	88 efg	162 ab

[1] Means followed by the same letter within columns are not significantly different at (0.05)

When the residual herbicide pre-mix/tank mix herbicide programs were compared with each other at each of the three reduced rates (Table 2), Lexar provided better ragweed control than the other residual programs except at the 1/2 X rate where ragweed control with Lexar and Guardsman Max were similar. A comparison of annual grass control among these residual programs at each of the reduced rates provided similar results as with ragweed. Lexar provided better residual annual grass control than the other programs except at the 1/2 X rate where annual grass control with Lexar, Guardsman Max, and Prowl H20 + AAtrex was similar. There were no differences in yields among these residual programs at the 2/3 X rate. At the 1/2 X rate, only Lexar (165 bu/A) and Guardsman Max (154 bu/A) had different yields. Finally, at the 1/3 X rate, it was Prowl H20 + AAtrex (162 bu/A) and Guardsman Max (156 bu/A) that had different yields.

The other interesting comparisons are of these EPO reduced residual plus Roundup combinations with Roundup alone. At the 2/3 X rate, all of these residual programs yielded better than the EPO Roundup alone (148 bu/A). At the 1/2 X rate, Bullet, Lexar, and Prowl H20 + AAtrex yielded better than Roundup alone and at the 1/3 X rate, only Lexar and Prowl H20 + AAtrex yielded better than Roundup alone. Yields from all EPO reduced rate residual plus Roundup tank mixes were equal to or higher than the PRE Lexar followed by MPO Roundup treatment (152 bu/A).

Table 2. Percent common ragweed and annual grass control, and corn yields when residual programs were compared with each other at 2/3, 1/2, and 1/3 X rates in tank mixes with EPO Roundup Original applications in 2005 and 2006.

Herbicide	Ragweed Control[1] (%)	Grass Control[1] (%)	Corn Yield[1] (bu/A)
2/3 X Rate			
Bullet	97 fg	90 cde	159 abcd
Guardsman Max	98 cdef	92 bcde	159 abcd
Bicep II Magnum	97 efg	91 bcde	163 ab
Lexar	99 ab	97 a	161 abc
Prowl H20 + AAtrex	96 gh	93 bcd	158 abcd
1/2 X Rate			
Bullet	98 defg	87 efg	160 abcd
Guardsman Max	99 bcd	89 cdef	154 bcde
Bicep II Magnum	96 gh	88 defg	157 abcde
Lexar	99 abc	93 abc	165 a
Prowl H20 + AAtrex	93 ij	91 bcde	158 abcd
1/3 X Rate			
Bullet	96 gh	87 defg	156 abcde
Guardsman Max	96 ghi	87 efg	151 de
Bicep II Magnum	94 hij	82 g	156 abcde
Lexar	98 cdef	93 abc	158 abcd
Prowl H20 + AAtrex	91 jk	88 efg	162 ab

[1] Means followed by the same letter within columns are not significantly different at (0.05).

Conclusions

1) Use of residual herbicides in Roundup Ready corn weed control should increase the window of application by allowing some acreage to be sprayed EPO when there is an advantage to tank mixing residual herbicides with Roundup.

2) Tank mixing even a reduced rate of residual herbicide with Roundup often improves weed control compared with Roundup alone.

3) As with the regional data, tank-mixing a residual herbicide with EPO Roundup applications did increase grain corn yields compared with EPO Roundup alone.

4) With Bullet, Lexar, and Prowl H20 + AAtrex the 1/2 X rate produced higher yields than Roundup alone.

5) Addition of residual herbicides with different site-of-action classification than glyphosate should delay or prevent development of glyphosate-resistant weed populations.

Calendar of Events

Jan. 2,-5,2007	Northeastern Weed Science Society Annnual Meeting, Baltimore, MD
Jan. 9-10, 2007	New York State Agribusiness Association Annual Meeting, Auburn
Jan. 17, 2007	Western NY Corn Congress, Batavia
Jan. 18, 2007	Finger Lakes Corn Congress, Waterloo
Jan. 24, 2007	Madison County Crop Congress, Cazenovia
Jan. 31, 2007	Winter Crop Meeting, Clarion Inn, Ithaca
Feb. 5-8, 2007	Weed Science Society of America, San Antonio, TX
Feb. 7, 2007	Western NY Soybean and Small Grains Congress, Batavia
Feb. 8, 2007	Finger Lakes Soybean and Small Grains Congress, Waterloo
Feb. 13, 2007	Corn Conference, Cooperstown
Feb. 14-15, 2007	Empire State Fruit and Vegetable Expo, Syracuse
Feb. 28, 2007	Corn Congress, Miner Institute, Chazy

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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