What's Cropping Up?

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Selecting your Corn Rootworm Control for 2010

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The decision to control rootworm is based on the willingness of the producer to take risk and the availability of scouting information. In fields where adult beetle counts were taken in accordance with scouting protocol, the decision about spending the money for rootworm control is an easy one. Without scouting information, producers have only the following guidelines to make the rootworm control decisions. When producers are trying to effectively manage their pest management dollar, an investment in scouting, allows the producer to match his pest management expenditure to actual pest problems on the farm and target fields with the highest risk of economic losses from insect injury.

Northern corn rootworm adult on the left and western corn rootworm on the right.

First Year Corn: In New York, first year corn does not need any corn rootworm control measures. With the vast majority of the seed treated with the low rate of seed applied insecticide for secondary insect pests (seed corn maggot, wireworm), planting first year corn is a "pour & go" decision.

Second Year Corn: In New York, second year corn has between a 25-35% risk of suffering economic damage from rootworm larval feeding. Depending on the producer's risk threshold, many fields can escape economic damage without a rootworm control measure. Second year corn fields are a good place to target scouting effort because two out of three fields typically will not have an economic problem with rootworm in year three.

Third and Fourth Year Corn: In New York, third year corn has between a 50-70% risk of suffering economic damage from rootworm and the risk rises to between 80-100% for fourth year corn. At these levels of risk, most producers deploy rootworm control measures to reduce the economic impact of rootworm larval feeding.

Control choices fall into two different categories. The chemical option is either the application of a soil insecticide at planting (Force) or having the seeds coated with an insecticide (Cruiser or Poncho at 1.25 mg/K). Under NY conditions, both of these insecticide tools continue to work effectively. The second control option is the planting of one of the corn varieties with rootworm control incorporated into the plant tissue (GM varieties). When planting GM varieties, producers are required to plant a non-GM refuge with an acreage equal to 20% of the GM planting. The location of the refuge is required to be either within or immediately adjacent to the GM field. It is highly recommended that producers plant the required refuge. From a scientific perspective, refuges are a necessary tool to reduce the risk of resistance development to the plant incorporated toxin by corn rootworm. In addition, it is a legal requirement. Most GM corn varieties sold for the 2010 growing season will be "stacked" with both the corn borer toxin and the corn rootworm toxin. Refuges are required for both GM toxins. However, the rootworm refuge requirements are the more restrictive and if the refuge is placed to satisfy the rootworm requirements, the refuge requirements for the corn borer toxin will be also satisfied.

Normal roots on the left, severe root feeding injury from corn rootworm on the right.

Rootworm control within the refuge is also recommended to prevent economic losses from larval feeding within the refuge. The use of insecticide within the refuge is the only viable option to control rootworm. Usually producers select

Pest Management

the insecticide seed coating over the granular insecticide applied in the furrow. Either selection gives excellent rootworm control in the refuge.

With all rootworm control options equally effective, the selection by the producer should be based on availability, price and personal preference. Under NY conditions, the GM option is not recommended for first and second year corn. The light to moderate rootworm pressure does not justify is use in these situations. In addition, the deployment of a variety of rootworm control measures across a farm further reduces the risk of resistance development by rootworm. For example, under the lower rootworm risk situations of second and third year corn, producers should seriously consider using one of the insecticide options like the seed coating technology (Cruiser, Poncho @ 1.25 mg/K) and then utilize the GM technology on the fourth and fifth year corn fields. This deployment strategy gives the producer excellent rootworm control while significantly reducing the selection pressure on rootworm to develop resistance to either the insecticide or the plant incorporated toxins (primarily BT).

Lodging at harvest from corn rootworm larval root feeding

What about refuge in a bag?

The concept of a "Refuge in a Bag" is currently being revisited and evaluated by seed companies. Under this concept, susceptible non-GM seeds are factory mixed through the bag of GM seeds prior to sale to the producer. From an EPA compliance stand point, the concept of a "Refuge in a Bag" is attractive because compliance is 100%. From an insect resistance stand point, the "Refuge in a Bag" concept is better than no refuge but less desirable than a separate structured refuge.

The real debate between the seed companies and the public research entomologists is the percent of susceptible seeds within the bag mix. The seed companies would like to reduce the mix of susceptible seeds to 5% where the research entomologists feel that a 5% level would not adequately serve as a refuge to delay or prevent resistance development by corn rootworm. The research community believes the level of susceptible seeds needs to remain around the 20% level. One of the sticking points of the discussion is the treatment of the susceptible seeds in the bag mix. At the 5% level, adjacent plant compensation makes up for any yield loss suffered by the susceptible plants from rootworm feeding. However, at the 20% susceptible seed level, adjacent plant compensation is variable and may not completely compensate for sustained yield losses by the susceptible plants from rootworm feeding.

Do I need a GM variety for corn borer control?

Corn Borer populations and damage to field corn continues to be variable in occurrence throughout the state with some fields suffering damage every year. In NY, we are observing a reduction of corn borer populations with the increased acreage of GM-corn borer varieties. Similar corn borer population trends have been reported across the Midwestern corn belt as the acreage of GM-corn borer corn varieties are planted in increasing acreage. However, if a farm or specific field is having chronic problems with corn borer damage, then the producer may want to consider planting one of the BT-corn borer corn varieties.

Two recent occurrences will make this discussion obsolete in future years. Corn varieties without GM-corn borer toxin incorporated into the plant tissue are being displaced in the market place with a number of new GM varieties, many of which have multiple GM traits "stacked" with the plant genetics. As this trend continues, the availability of corn borer susceptible corn varieties will diminish.

The second occurrence is the discovery of Western Bean Cutworm entering the western portions of the state in 2009. Western bean cutworm feeds on the leaves and ears of corn, causing economic damage with its ear feeding. This insect is difficult to control using methods other than plant incorporated toxins (GM varieties). To date, the only successful control of western bean cutworm has been fields planted with the Herculex-corn borer plant incorporated toxin. As producers begin noticing economic damage from this insect as it moves across the state from west to east, their only management strategy at this point is to plant a corn variety with the Herculex-corn borer toxin incorporated into its tissue.

Recommended Corn Silage Hybrids for New York

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Crop Management

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 NY. 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 an initial 10,000-gram sample from each plot and then sub-sample to 700 grams to determine moisture and to run silage quality analyses on all four replications of each hybrid at each site.

MILK2006, a spreadsheet from the University of Wisconsin, calculates milk/ton, a silage quality index, derived from neutral detergent fiber (NDF), NDF digestibility (30 hr), crude protein, ash, and starch concentrations from 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 across the two sites (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 list the comparative milk yields as well as comparative silage yields and milk/ton values for recommended hybrids in central/western (Table 1) and Northern NY (Table 2). **Hybrids within each table 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 (TABLE 1)

95-100 day RM

The new 100-day hybrid, 55R10, from Dyna-Gro had exceptionally high silage yields, and a new hybrid, HID.F.-3195-Q from Dairyland Seed, had above-average silage yields and milk/ton values in 2009. As in 2008, 5057VT3 from GROWMARK FS and HiD.F.-3000-6 from Dairyland Seed had much-above average silage yields in 2009. A new hybrid, HL CVR64, also had above-average silage yields in 2009.

101-105 day RM

Three new hybrid releases, N53W-3000GT from NK, 86T82-3000GT from Garst, and V4592VTNS from Dyna-Gro, had much-above average silage yields and above-average milk/ton values in 2009 as did 553GRB from Doebler's. The hybrid, N53W-3000GT, in particular, had exceptionally high silage yields in both Cayuga and Livingston Co.; and HID.F.-3195Q, a new hybrid from Dairyland Seed, had exceptionally high silage yield in Livingston Co. Also, HL B337 and HL SR59 from Hyland had much above-average silage yields; and the new hybrid, 5595VT3 from GROWMARK FS, had an above-average silage yield and milk/ton value in 2009.

New hybrid releases, MC 530 from King's Agriseeds and TMF2R521 from Mycogen, had above-average silage yields and 36V53 from Pioneer had an above-average milk/ton value in 2009. The hybrids, TA557-00F from T.A. Seeds and 1056 SRR from LICA, had average performances in 2009 but are still recommended because of superior performances in previous years.

106-110 day RM

The hybrid, 34A89 from Pioneer, which had a much-above average silage yield and above average milk/ton value, and 1084 LHX, a new high-yielding hybrid from LICA, had the highest milk yields in 2009. A new brown midrib hybrid from Mycogen, F2F622, showed good agronomic characteristics, including average yield and harvest moisture within this maturity group, and the expected much-above average milk/ton value in 2009. The hybrid, DKC59-64 from DEKALB, had a much above-average silage yield and TA607-20 from T.A. Seeds had above-average milk/ton value in 2009.

111-115 day RM

New hybrids, 6296VT3 from GROWMARK FS, which had much above-average silage yield, and TA689-12F from T.A. Seeds, which had much-above average silage yield and an above average milk/ton value, had the highest milk yields in 2009. The DEKALB hybrids, DKC67-87, which had much-above silage yield, and DKC61-69, which had above-average milk/ton values, performed well for the second year in a row as did 33F88 from Pioneer, which had an above-average milk/ton value.

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. (Sparta Farms, formally Southview Farms).

Brand/Co.	Hybrid	Comparative Silage Yield	Comparative Milk/Ton	Comp. Milk Yield	Years in Test
		----------%----------			no.
		95-100 day Relative Maturity			
Dyna-Gro	55R10	111	100	112	1
Dairyland Seed	HiD.F.-3000-6	108	99	106	2
GROWMARK FS	5057VT3	107	99	106	2
Dairyland Seed	HiD.F.-3195-Q	102	102	104	1
Hyland	HL CVR64	102	99	101	1
		101-105 day Relative Maturity			
NK	N53W-3000GT	114	102	116	1
Garst	86T82-3000GT	106	101	108	1
Dyna-Gro	V4592VTNS	105	103	108	1
T.A. Seeds	TA557-00F	107	101	108	6
Doebler's	552GR	104	102	107	2
Dairyland Seed	HID.F.-3105-Q	111	95	106	1
Hyland	HL B337	108	99	106	2
GROWMARK FS	5595VT3	104	101	105	1
LICA	1056 SRR	105	98	104	2
King's Agriseeds	MC 530	104	100	103	1
Hyland	HL SR59	104	98	101	2
Mycogen	TMF2R521	101	100	101	1
Pioneer	36V53	100	101	101	1
		106-110 day Relative Maturity			
Pioneer	34A89	107	101	108	5
LICA	1084 LHX	108	99	107	1
Mycogen	F2F622	97	109	105	1
DEKALB	DKC59-64	105	99	104	1
T.A. Seeds	TA607-20	103	100	103	2
		111-115 day Relative Maturity			
GROWMARK FS	6296VT3	109	99	108	1
T.A. Seeds	TA689-12F	105	101	106	1
DEKALB	DKC67-87	106	98	104	2
DEKALB	DKC61-69	103	102	103	2
Pioneer	33F88	101	101	102	2

NORTHERN NY (TABLE 2).

80-85 day RM

The hybrid, TA290-11 from T.A. Seeds, which had exceptionally high silage yields and an above-average milk/ton value in St. Lawrence Co., had a much-above average milk yield in 2009 as it did in 2008. Also, HL B29R from Hyland Seeds, which had exceptionally high silage yields in Clinton Co, also had above-average milk yield in 2009.

86-90 day RM

The hybrid, HL SR35 from Hyland, continued to have high milk yields, mainly because of its exceptional silage yields in both St. Lawrence and Clinton Co. Also, a new hybrid from LICA, 1890 F, had much-above average milk yields at both locations, mainly because of its exceptional silage yields.

91-95 day RM

The hybrids, 946 LRR from LICA and HL S047 from Hyland Seeds, had the highest milk yields in 2009 because of much-above average silage yields and above-average milk/ton values. Both hybrids have been above-average performers at both locations in previous years. New hybrid releases, 478SL from Doebler's, which had

Table 2. Recommended 80-100-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	Comp. Milk Yield	Years in Test
		----------%----------			no.
		80-85 day Relative Maturity			
T.A.Seeds	TA290-11	109	103	111	2
Hyland	HL B29R	107	97	104	1
		86-90 day Relative Maturity			
Hyland	HL SR35	108	100	107	3
LICA	1890 F	105	102	107	1
		91-95 day Relative Maturity			
LICA	946 LRR	109	101	110	4
Hyland	HL S047	105	102	107	2
Doebler's	478SL	109	98	107	1
Dyna-Gro	V3593VT3	105	102	107	1
RPM	515HXR	109	98	107	1
Mycogen	TMF2L418	102	101	103	3
Garst	89B87CB/LL	102	102	103	1
Hyland	HL BSR40	98	103	101	1
		96-100 day Relative Maturity			
T.A. Seeds	TA489-00F	106	100	106	2
T.A. Seeds	TA510-11	102	101	103	2
DEKALB	DKC50-44	102	101	103	2
T.A. Seeds	TA476-11	103	99	102	2
Mycogen	F2F485	93	110	102	1

much-above average silage yields and above-average milk/ton values, and V3593VT3 from Dyna-Gro and 515HXR from RPM, which had much-above average silage yields, also had much-above average milk yields in 2009. New hybrid releases, 89B87CB/LL from Garst, and HL BSR40, had above-average milk/ton values and 89B87CB/LL also had above-average silage yields in 2009. The hybrid, TMF2L418, had an average performance in 2009 but continues to be recommended because of superior performances in previous years.

96-100 day RM

Proven performers and a new brown midrib hybrid are the recommended hybrids in the 96-100 day RM group. In 2009, the hybrids from T.A. Seeds, TA489-00F, which had much-above average silage yield and above-average milk/ton value; TA510-11, which had above-average silage and milk yield, and TA476-11, which had above-average silage yield; continued to perform well, as did DKC-50-44 from DEKALB. The new brown midrib hybrid, F2F485 from Mycogen, had a silage yield about 9% below average but similar harvest moistures to other hybrids in this group, and the much-above average milk/ton value resulted in the third highest milk yield for this hybrid in this RM group.

Conclusion

Hybrid selection is one of the most important management practices that affect corn silage yield and quality. With high grain corn prices, hybrid selection for corn silage has increased in importance. In addition, dairy producers must select the best adapted hybrid for their region because the relatively low milk price that they have received over the last year makes each management decision crucial. We urge seed companies to enter their hybrids in our corn silage hybrid testing program so New York dairy producers can make informed decisions, based on tests under NY environmental conditions. You can access the detailed 2009 Corn Silage Hybrid Report at our Web site, www.fieldcrops.org.

Weed Management

Yellow Nutsedge Control in Glyphosate-Resistant Corn

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Guidelines for yellow nutsedge control in glyphosate-resistant (GR) corn were first included in the 2009 Cornell Guide for Integrated Field Crop Management based largely on research with conventional (non-GMO) corn hybrids in 1996 and 1997. Full rates of 1 oz/A of Permit plus 1 qt/A of AAtrex 4L with 1% (v/v) of COC (crop oil concentrate) were compared with two-thirds and one-third rates of this combination when nutsedge averaged 2 inches tall. Nutsedge control for the 2 years averaged 92, 84, and 72% with the full, two-thirds, and one-third rates respectively. There were no differences in corn silage yields among these treatments, however their average yield of 28.2 T/A was higher than that from the untreated check (22.1 T/A). Since glyphosate provides some nutsedge control, it seemed that tank-mixes with 0.66 oz/A of Permit or 4 oz/A of Yukon, a premix of halosulfuron (Permit) and dicamba (Banvel, Clarity, etc.), would provide excellent nutsedge control. With light infestations, it seemed likely that 0.33 oz/A of Permit or 2 oz/A of Yukon with glyphosate would provide good nutsedge control.

Postemergence control of yellow nutsedge can be effective.

2009 Research Results

Field experiments at Cobleskill and Ithaca in 2009 provided data to support these nutsedge control guidelines for GR corn. Postemergence (POST) applications of glyphosate plus Yukon were made when nutsedge was 3.5 and 13 inches tall at Cobleskill and Ithaca respectively. Although the nutsedge was taller at Ithaca than at Cobleskill, control ratings for glyphosate alone and for glyphosate plus Yukon were similar between the two locations (Table 1). Nutsedge control averaged 63% 4 to 5 weeks after treatment (WAT) with 22 fl oz/A of Roundup PowerMax alone. Tank mixing 2, 4, or 6 oz/A of Yukon (equivalent to 0.33, 0.66, or 1 oz/A of Permit) improved nutsedge control to an average of 91, 93, and 95% respectively. These results suggest that there is little, if any, advantage to using more than 2 oz/A of Yukon or 0.33 oz/A of Permit with glyphosate for nutsedge control in GR corn. As a result, the 2010 Cornell Guide for Integrated Field Crop Management includes these reduced rates.

Another treatment of interest in these trials involved Resolve Q. When Resolve Q was applied at 1.25 oz/A with 22 fl oz/A of Roundup PowerMax, nutsedge control 4 to 5 WAT was 89 and 65% on the 3.5 and 13-inch nutsedge respectively (Table 1). Clearly, this combination worked better on the small nutsedge at Cobleskill than on the large nutsedge near Ithaca.

Although the tank-mix combinations of Roundup PowerMax plus Yukon or Resolve Q resulted in better nutsedge control than Roundup PowerMax alone, the average corn silage yield from these tank-mix combinations was not higher than from Roundup PowerMax alone. They did however produce an average of 5.3 T/A more silage than the untreated checks.

Table 1. Yellow nutsedge control following mid- and late postemergence herbicide applications at Cobleskill and Ithaca respectively in 2009.

Herbicides	Rate Amt/A	% Nutsedge Control		
		Cobleskill	Ithaca	Average
Roundup PowerMax	22 fl oz	65	60	63
+ Yukon*	2 oz	94	89	91
+ Yukon*	4 oz	96	89	93
+ Yukon*	6 oz	99	91	95
+ Resolve Q	1.25 oz	89	65	77
LSD (0.05)		8	17	

*Applied with 0.125% (v/v) Induce NIS.

Integrated Management of Fusarium Head Blight in Wheat: Introduction of Scab Smart

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Disease Management

Fusarium head blight (FHB), caused by the fungus *Fusarium graminearum,* and associated grain contamination by the mycotoxin deoxynivalenol (DON), is second only to pre-harvest sprouting as a limiting factor for the wheat industry in New York. To prevent contamination of wheat food products with toxin, regional flour mills generally test every truckload of wheat for DON and will usually reject loads of grain averaging more than 2 parts per million of DON. Since airborne spores of the causal fungus are common in New York, there is a risk of wheat heads becoming infected whenever moisture persists on the heads during flowering and early grain development in June. No single control method including cultural practice, choice of wheat variety, or application of fungicide has resulted in complete control of FHB. Rather suppression of FHB and reduction of DON to acceptable levels relies on an integrated approach. Cereal pathologists across the U.S., including New York, recently have joined forces to develop an educational website called *Scab Smart* that brings together for growers the latest information on integrated management of FHB for each market class of cereal and each region of the country (Fig. 1).

Table 1. Fusarium head blight (scab) ratings of wheat varieties available in New York[1, 2]

Rating for New York conditions, based on data from multiple-year, university field trials in NY, MI, ON, and/or OH

MR = moderately resistant; MS = moderately susceptible; S = susceptible

Soft White Winter Wheat Variety	Scab Rating	Soft Red Winter Wheat Variety	Scab Rating
Ava	MR	Freedom	MR
Jensen	MR	Genesis R085	MR
Pioneer Brand 25W43	MR	Pioneer Brand 25R62	MR
Saranac	MR	Roane	MR
Ashley	MS	Truman	MR
Cayuga	MS	Emmit	MS
Caledonia	S	Genesis R055	MS
Pioneer Brand 25W36	S	Genesis R065	MS
Richland	S	Pioneer Brand 25R47	MS
		Red Ruby	MS

[1] Additional information on attributes and performance of wheat varieties in New York can be found in the Cornell Field Crops Guide:

http://ipmguidelines.org/FieldCrops/content/CH05/CH05-2.asp

[2] There are several commercial varieties not represented on this list because we lack replicated university field trial data for those

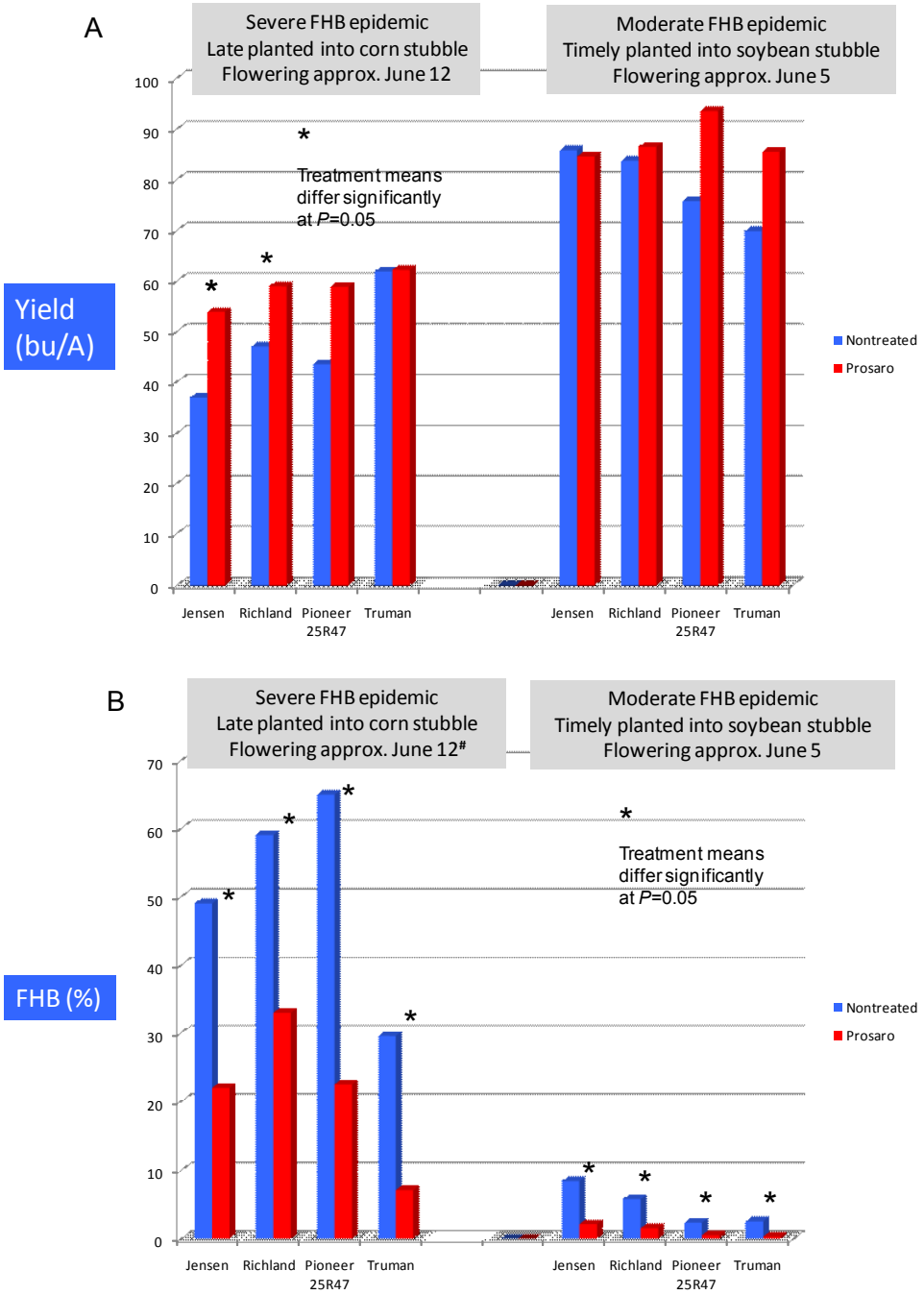
Figure 1. Home page of Scab Smart website.

Best management methods available today

Selection of a wheat variety with a moderate level of resistance to FHB is the foundation of integrated management of FHB in New York. This is a wise investment whether or not you also apply a fungicide at flowering. Table 1 lists the FHB reaction of New York-adapted white and red winter wheat varieties for which replicated university field trial data were available. The application of labeled and efficacious triazole fungicides at the onset of wheat flowering is a relatively new option

Disease Management

for New York wheat growers who wish to suppress FHB and reduce contamination levels of DON. Tilt 3.6 EC and PropiMax 3.6 EC fungicides (both are formulations of propiconazole) are labeled in New York for suppression of FHB; university investigators have characterized the level of suppression as 'poor to fair'. Proline 480 SC (prothioconazole) fungicide was recently labeled in New York for suppression of FHB; several investigators have characterized the level of suppression as 'good'. Some labeled scab fungicides registered in other states have not yet been labeled for use in New York and they may become available in New York in 2010 or later; these materials include Prosaro (a combination of prothioconazole and tebuconazole) and Caramba (metconazole). There is as yet no consistently reliable decision tool for determining whether a scab fungicide spray on an individual field will result in an economic yield increase and a reduction in DON to below the 2 ppm standard of trade. An internet-based regional model (http://www.wheatscab.psu.edu/riskTool.html) is available that predicts the risk of a FHB epidemic based on weather variables prior to and at the time of flowering. One management method that every producer can follow is to set the combine fan to 'high' to blow out shriveled kernels that contain the highest amounts of DON toxin.



Progress and remaining challenge

There are several high yielding wheat varieties on the market today that are considerably less susceptible to FHB than varieties commonly grown a decade ago. The availability of new triazole fungicides should also help growers to manage their DON risk. These advances are welcome, but we have a long way to go before FHB and DON are no longer threats to wheat production in New York. This was underscored in a late-flowering wheat plot in Aurora, NY in 2009 that experienced a severe FHB epidemic. DON was not reduced sufficiently even when Prosaro fungicide was applied to the most resistant variety, Truman (Figure 2). Fortunately, wheat fields in New York only occasionally

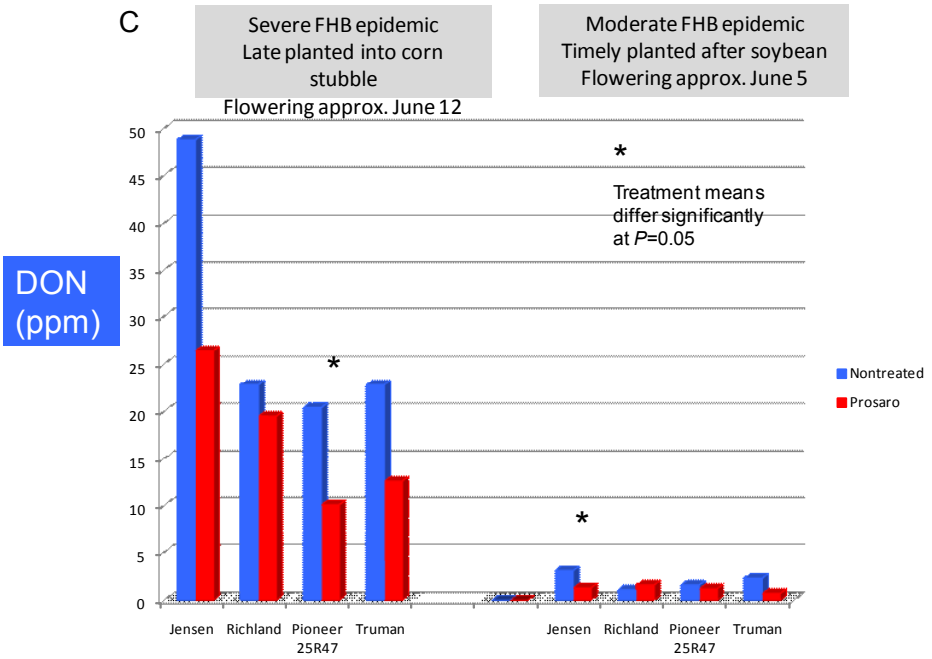


Figure 2. Effect of flowering stage application of Prosaro fungicide on yield (A), FHB incidence (B), and DON contamination (C) of four wheat varieties in Aurora, NY in 2009. * denotes treatment means that differ significantly at P=0.05.

encounter conditions that favorable for disease and toxin. Another management challenge is that DON contamination of plump (high yielding) grain can also occur from post-flowering infections past the time when fungicides may be applied. Greater research emphasis is needed on management methods that reduce DON. We encourage growers to check periodically for new management information on *Scab Smart*.

Crop Management

Recommended Roundup Ready Soybean Varieties for New York

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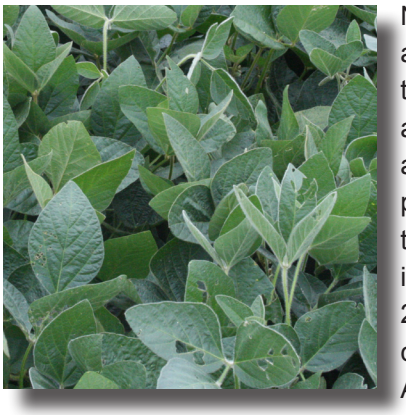

New York farmers planted about 260,000 acres to soybeans in 2009 and averaged 43 bu/acre. Currently, soybean prices hover just above the $10.00 bushel range in early December of 2009 but winter weather conditions in South America, crude oil prices over the next year, export demand, and weather conditions in the Midwest in 2010 will determine 2010 prices. Selection of soybean varieties is one of the most important management practices determining soybean yields so growers should gather as much information as possible on variety selection to optimize yields and profits, regardless of the 2010 selling price of soybeans.

The varieties in Table 1 are recommended varieties for central/western NY, based on tests in Cayuga (Aurora Research Farm) and Livingston Co. (Henry Everman Farm in Dansville). The varieties in Table 2 are recommended varieties for Northern NY, based on tests in Jefferson (Ron Robbins's farm in Sackets Harbor) and Clinton Co. (Minor Institute in Chazy). We recommend varieties that have average relative yields of more than 100% across the two sites in central/western or Northern NY (100% relative yield equals the mean yield of the test). Recommended varieties, which 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 relative yields in Tables 1 and 2, only compare relative yields of varieties within a Maturity Group.**

CENTRAL/WESTERN NY (Table 1)

The GROWMARK FS varieties, HS 199RR and122aRR, and SG1727 from Seedway yielded exceptionally well at Dansville in 2009 (63, 57, and 60 bu/acre, respectively, compared with the average of 55 bu/acre), and close to average to much-above average at Aurora (40, 39, and 47 bu/acre, respectively, compared with the average of 41 bu/acre), so they continue to be highly recommended Group I varieties. An NK brand variety, S19-A6, and TS1440R from T.A. Seeds yielded above average at Dansville (59 bu/acre) and at Aurora (42 and 43 bu/acre, respectively). A new variety, TS1780R from T.A. Seeds, also had above-average yield at Aurora (42 bu/acre) and average yield at Dansville in 2009.

The GROWMARK FS varieties, HS2766 and HS 20R80; the Asgrow brand varieties, AG2002 and AG2606 ; and the NK brand varieties, S24-J1 and S21-N6, continued to yield exceptionally well in 2009. The early Group II variety, AG2002,

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 over the last few years.

VARIETY	COMPANY/BRAND	RELATIVE YIELD (%)	YEARS IN TEST
		GROUP I VARIETIES	
HS 199RR	GROWMARK FS	109	6
HS 122aRR	GROWMARK FS	105	3
S19-A6	NK	104	1
TS1440R	T.A. Seeds	104	3
SG1727	Seedway	103	4
TS1780R	T.A. Seeds	101	1
		GROUP II VARIETIES	
HS 2766	GROWMARK FS	108	2
AG2002	Asgrow	107	3
HS 20R80	GROWMARK FS	106	2
V25N9RR	Dyna-Gro	106	1
S24-J1	NK	105	3
HS 217RR	GROWMARK FS	103	5
S21-N6	NK	103	4
S20-P3	NK	103	1
TS2490R	T.A. Seeds	102	2
AG2406	Asgrow	101	2
AG2606	Asgrow	101	3
SG2205	Seedway	101	5

had much above average yields at Dansville (67 bu/acre, compared with the 60 bu/acre average) and at Aurora (56 bu/acre, compared with the average 50 bu/acre). The later Group II varieties, HS 2766 and AG2606, had much-above average yields at Dansville (70 and 69 bu/acre, respectively); whereas HS 20R80 and S24-J1 had much-above average yields at Aurora (57 bu/acre) and close to average yields at Dansville. New varieties, V25N9RR from Dyna-Gro, which had much-above average yield at Dansville (66 bu/acre) and above-average at Aurora (51 bu/acre), and S20-P3, an NK brand, which had above-average yields at both locations (61 and 52 bu/acre, respectively), performed well in 2009. Also, TS2490R from T.A. Seeds yielded above-average at Dansville (64 bu/acre) and average at Aurora (50 bu/acre).

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.over the last 4 years.

VARIETY	COMPANY/BRAND	RELATIVE YIELD (%)	YEARS IN TEST
		GROUP I VARIETIES	
TS1209R	T.A. Seeds	105	1
AG0808	Asgrow	104	2
TS1440R	T.A. Seeds	102	4
TS1780R	T.A. Seeds	102	1
HS 199RR	GROWMARK FS	101	4
HS 122aRR	GROWMARK FS	101	4
SG1405	Seedway	101	4
SG1727	Seedway	101	3
		GROUP II VARIETIES	
AG2002	Asgrow	103	3
HS 217RR	GROWMARK FS	102	4

NORTHERN NY (Table 2).

The new variety, TS1209R from T.A. Seeds, had above-average yield at Sackets Harbor (47 bu/acre, compared with the 44 bu/acre average) and at Chazy (60 bu/acre, compared with the 57 bu/acre average). The Group 0 variety, AG0808, which also yielded well in 2008, had much-above average yield at Chazy (62 bu/acre) and close to average yield at Sackets Harbor (42 bu/acre); whereas a new T.A. Seeds variety, TS1780R, had much-above average yield at Sackets Harbor (48 bu/acre) and close to average yield at Chazy (55 bu/acre). The GROWMARK FS varieties, HS 199RR and 122aRR; Seedway varieties, SG1405 and SG1727; and TS1440R from T.A. Seeds continue to be recommended Group 1 varieties in NNY. In 2009, SG1405 had much-above average yield at Sackets Harbor (49 bu/acre)) and average yield at Chazy (57 bu/acre); whereas SG1727 had above-average yield at Sackets Harbor (45 bu/acre) and much-above average yield at Chazy (61 bu/acre). The early Group I variety, HS122aRR, had above-average yield at both Sackets Harbor (45 bu/acre) and at Chazy (58 bu/acre). Also, TS1440R had above-average yield at Sackets Harbor (47 bu/acre) and close to average yield at Chazy (56 bu/acre).

Recommended Group II varieties, which are grown only in areas of NNY near the Lakes with warmer nights and later fall frosts, include Ag2002 and HS 217RR. AG2002 had average yields at both sites in 2009.

CONCLUSION

Variety selection strongly influences yield and subsequent profit. Commercial varieties in the same maturity group have significant yield differences, lodging resistances, and harvest moistures. Consequently, soybean variety selection greatly impacts harvesting efficiency and profit so growers should consider all sources of information when selecting varieties. More detail of the 2009 New York State Soybean Variety Tests are posted on our Web site, www.fieldcrops.org.

Science & Technology

Research Restrictions on Public Scientists with GM crops: A Problem for the Agricultural Community

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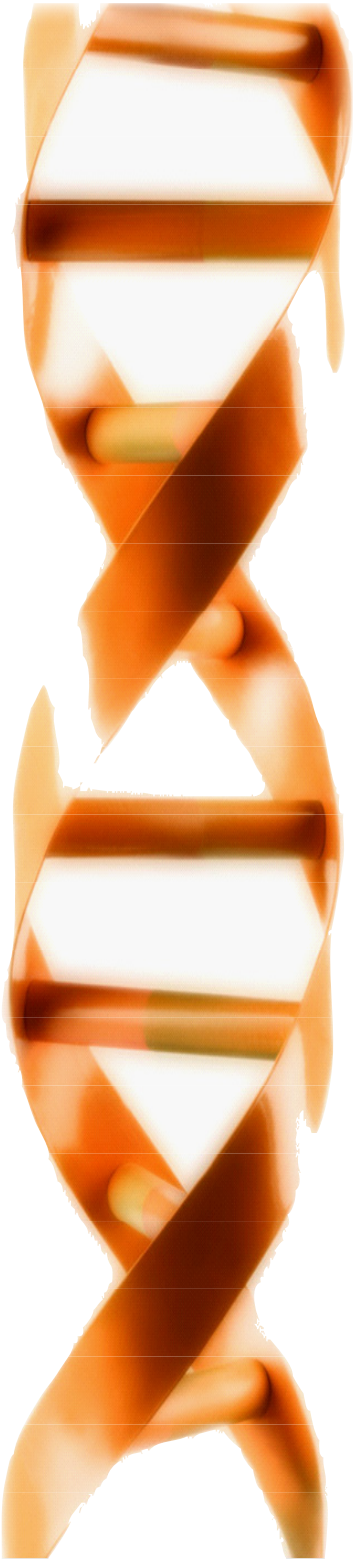

Since the introduction and sale of GM crops to US agriculture in the 1990s, farmers have been required to sign a Technology Transfer agreement at the time of seed purchase. Within the fine print of the Technology Transfer agreement, there is a prohibition of all research by the purchaser of the seed without company approval. This statement prohibits public scientists from purchasing commercially available seed and conducting research without the company's approval. For example, the field crop entomologist at Cornell cannot evaluate the commercially available corn rootworm resistant varieties without the expressed approval of the company. In addition, comparative studies cannot be conducted without the approval of all the companies involved in the studies.

While commercial agriculture and the public scientists nationwide have been trying to work within these research restrictions for over a decade, the rapid replacement of non-GM varieties with GM varieties carrying 2-6 traits, the increasing lack of availability of non-GM varieties and the extension of the GM type of Technology Transfer agreement to conventional varieties brings this issue to the discussion forefront.

In the past, the discipline most affected by these research restrictions has been entomology and corn the crop most impacted. The reason appears to be that insect control in corn has the most competing traits, the largest acreage and the largest number of companies vying for a portion of the market. However, research on all crops is impacted by these research restrictions. The breadth of affected research ranges widely, varying from efficacy studies to off-target studies. Corn entomologists at Land Grant Universities and the USDA are having the most difficulty obtaining permission to conduct comparative efficacy studies of all the different GM events, development of resistant laboratory colonies to all of the commercially incorporated GM events, as well as research on mechanisms of insect resistance to the GM events, off-target impact studies of commercially available GM events planted over large areas, and impact of GM events on the decomposer and aquatic communities within and surrounding corn fields.

In the weed science area, there has been little emphasis on conducting direct comparisons of herbicide incorporated resistance from different GM events for the same herbicide (Company A glyphosate resistance vs. Company B glyphosate resistance). Should a weed scientist decide to conduct this type of study, permission would need to be granted by both companies to allow the research to be conducted legally.

There are emerging areas of concern within plant pathology. Currently, most effort has been placed in high value crops on limited acreage. However, as GM traits against plant pathogens are incorporated into the high acreage and lower value crops such as wheat and corn, the potential for tension between the public scientist and industry increases dramatically.

Public agronomists conducting variety and fertility trials have suggested that the research restrictions imposed on the other disciplines do not impact their research. However, a study comparing the fertility requirements of GM trait A corn to GM trait B corn would require company(s) approval under the existing Technology Transfer Agreements. In addition, the appearance of GM type of Technology Transfer agreements to conventional varieties changes the legalities of conducting trials without company permission.

This climate of research restrictions on the public scientist raises the question of who loses, the scientific community or the agricultural community?

Restricting the ability of the public scientist

to pursue research questions unfettered by outside interest allows private industry, with profit motives, to overstate the benefits of a product and suppress the negative impacts of the product. Over the past hundred years of public agricultural research, the public scientist has frequently provided producers and the general public a source of unbiased research results, acted as quality control in their role of questioning industry claims of product performance, and operated as a type of consumer protection for the agricultural producers across the US. The drastic erosion of the ability of the public scientist to conduct research independent of industry oversight threatens the longstanding role of the public scientist in the area of unbiased agricultural research.

Over the past year, there have been numerous articles in the popular press, agricultural trade journals and the scientific literature, triggered by an initial article in the New York Times (Pollack, A, 2/20/09). In addition, this topic has been discussed by a committee in the National Academy of Science and various groups within the University communities and USDA. All groups involved have expressed concern about the research restrictions and are interested in possible solutions.

Companies with GM products have responded to the public exposure about research restrictions with surprise, in spite of a 3 –year effort by the national public sector corn entomologists to have the companies address the research restriction issue. The American Seed Trade Association (ASTA) has been designated by the seed companies with GM products as the organization to take the lead in resolving this issue. Suggestions by the public sector scientists that the issue can be resolved by changing the language on the Technology Transfer agreement has been deemed unacceptable and rejected. ASTA is pursuing an agreement with all companies with GM products to relax research restrictions on public scientists, however the ASTA agreement will be non-binding on member companies. Each company with GM products will still require a legal agreement with each university/researcher to allow research to be conducted. It appears that each company with GM products is still intent on controlling research by public scientists.

Additional reading:

New York Times article (http://msl1.mit.edu/furdlog/docs/nytimes/2009-02-19_nytimes_gmos_patents_research.pdf)

Scientific American article (http://www.scientificamerican.com/article.cfm?id=do-seed-companies-control-gm-crop-research)

Nature Biotechnology article (http://www.nature.com/nbt/journal/v27/n10/full/nbt1009-880.html)

Calendar of Events

Jan. 13, 2010	**WNY Corn Congress, Holiday Inn, Batavia, NY**
Jan. 14, 2010	**Finger Lakes Corn Congress, Holiday Inn, Waterloo, NY**
Jan. 25-27, 2010	**Empire State Fruit and Vegetable Expo, Oncenter Convention Center, Syracuse, NY**
Jan. 28, 2010	**New York Corn Growers Corn Expo, Holiday Inn, Liverpool, NY**
Feb. 3, 2010	**WNY Soybean/ Small Grains Congress, Holiday Inn, Batavia, NY**
Feb. 4, 2010	**Finger Lakes Soybean/ Small Grains Congress, 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, Entomology, and Animal Science. **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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