

# What's Cropping Up?

A NEWSLETTER FOR NEW YORK FIELD CROPS & SOILS

VOLUME 24, NUMBER 2 April 2014

## Acetochlor Herbicide Stewardship - New York State



Acetochlor herbicide products received registration approval in New York in February 2013 providing New York growers with a valuable new tool and an expanded array of options for weed control. A chloroacetamide herbicide, acetochlor is already widely used across the United States for weed control in corn and is consistently effective for control of grasses and small-seeded broadleaf weeds. It has been shown that acetochlor is very effective on velvetleaf, pigweed species, common ragweed, common lambsquarters, smartweed, and eastern black nightshade as compared to other chloroacetamide herbicides. Acetochlor premixes now available in New York provide broad spectrum weed control and can play an important role in herbicide resistance management.

Integral to the New York State registration, the Acetochlor Registration Partnership (ARP) members Monsanto and Dow AgroSciences agreed to implement a product stewardship program to promote the responsible use of acetochlor products in New York State for protection of water resources. Developed in coordination with Cornell University and the New York State Department of Environmental Conservation, the educational outreach reinforces the general responsibility that users have for proper handling and application of pesticide products and for acetochlor products specifically. It is expected that this initiative will contribute to the long-term sustainability of weed control options needed for production agriculture in New York.

The foundation of the Acetochlor Stewardship Program for New York is the development and communication of information which will reinforce the knowledge of farmers, dealers, distributors, and custom applicators for responsible use of acetochlor products. Key elements include: (1) Water Quality Best Management Practices for Acetochlor; (2) Acetochlor Stewardship Slide Deck; (3) Quick Reference Card for Label Requirements; and (4) Use of multiple methods and channels for communicating the

information including the opportunity for obtaining continuing education credits.

### Label Use Restrictions:

While the Water Quality Best Management Practices for Acetochlor are a set of voluntary Best Management Practices (BMPs) to reduce the likelihood that acetochlor will impact water resources, an understanding of label use restrictions is important and is a point of emphasis with the program. Label use restrictions are mandatory requirements and they summarized below.

### Use restrictions common to all acetochlor-containing products:

- Not for Sale, Sale into, Distribution and/or Use In Nassau and Suffolk Counties of New York State
- New York State "Restricted Use" pesticide product is restricted in its purchase, distribution, sale, use and possession, and each product may only be purchased and used by a certified applicator. In addition, any person that distributes, sells, offers for sale, purchases for the purpose of resale, or possess for the purpose of resale is required to have been issued a commercial permit. Atrazine-containing premixes are also Federal Restricted Use Products.
- Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark.
- Do not flood irrigate to apply or incorporate.
- Do not apply this product through any type of irrigation system, unless otherwise directed by approved supplemental labeling in possession of the user at the time of application.
- Do not apply this product using aerial application equipment.
- Product must be used in a manner which will prevent back-siphoning into wells, spills or improper disposal of excess pesticide, spray mixtures or rinsates.

## Weed Management

### Water Quality BMPs for Acetochlor

Water Quality Best Management Practices for Acetochlor work in conjunction with the “Core BMPS for All Agricultural Herbicides” currently available on Cornell’s Pesticide Safety Education Program (PSEP) website. They are provided as a series of voluntary options. Producers, crop consultants, and extension specialists should select options most appropriate for a given farming operation, soil types and geography, tillage and cultivation practices, and irrigation and runoff management.

The BMP document lists each practice, describes its use along with the benefits of adopting that practice. The BMPs are summarized here:

1. Adopt the “Core BMPs for All Agricultural Herbicides” when applying acetochlor.
2. Limit acetochlor applications to the lowest effective labeled rate.
3. Maintain application setbacks from surface water, tile inlets, wells, and sinkholes as directed by product labeling.
4. Maintain vegetative filter strips between areas where

Table 1: Restrictions for atrazine-containing acetochlor products

Label Use Restriction	For acetochlor products containing atrazine	For acetochlor products NOT containing atrazine
Use within 50 feet of any well, including abandoned wells, drainage wells, and sink holes.	Not allowed	On the following soil types, do not apply this product within 50 feet of any well where the depth to groundwater is 30 feet or less: sands with less than 3% organic matter; loamy sands with less than 2% organic matter; or sandy loams with less than 1% organic matter.
Mixing, loading, rinsing, or washing of this product into or from pesticide handling or application equipment or containers within 50 feet of any wells, including abandoned wells, drainage wells, and sink holes <b>without</b> impervious containment.	Not Allowed	Not Allowed
Mixing or loading within 50 feet of perennial or intermittent streams, rivers, natural or impounded reservoirs.	Not Allowed	Not Allowed
66 foot application setback from points where field surface water enters perennial or intermittent streams or rivers. If applied to highly-erodible land, the 66 foot buffer from runoff entry points must be planted to crop, seeded with grass, or other suitable crop.	Required	Not Required
200 foot application setback from all natural or impounded lakes and reservoirs.	Required	Not Required
Use restrictions in tile-outletted fields and terraced fields containing standpipes.	Required. See product labels for specifics.	Not Required

## Weed Management

acetochlor is applied and points where field runoff enters surface water, tile inlets, and sinkholes.

5. Adopt conservation tillage practices appropriate for your farm's topography and in karst areas.
6. Use precision application methods.

The Water Quality BMPs for Acetochlor are available at [<http://psep.cce.cornell.edu/facts-slides-self/facts/waterquality.aspx>]. **Always read the product label. Label use requirements are legally enforceable.**

**Acetochlor Products Registered in New York State** (as of October 15, 2013):

Degree® Xtra, Harness®, Harness® Xtra, Harness® Xtra 5.6L, TripleFLEX® and Warrant® are registered trademarks of Monsanto Company

FulTime® NXT, Keystone®, Keystone® LA, Keystone® LA NXT, Keystone® NXT, SureStart®, Surpass® EC, Surpass® NXT are trademarks of The Dow Chemical Company ("Dow") or an affiliated company of Dow

### **Additional Information**

Additional information regarding the Acetochlor Stewardship Program is available on-line [<http://psep.cce.cornell.edu/facts-slides-self/facts/waterquality.aspx>], at [arpinfo.com](http://arpinfo.com), or by contacting the Monsanto or Dow AgroSciences representative in your area.

Acetochlor products which also contain atrazine have label use restrictions driven by atrazine requirements. Users must follow the most restrictive requirements on the product labels for applications. Table 1 summarizes restrictions for atrazine-containing acetochlor products and compares them with acetochlor products not containing atrazine.

## Crop Management

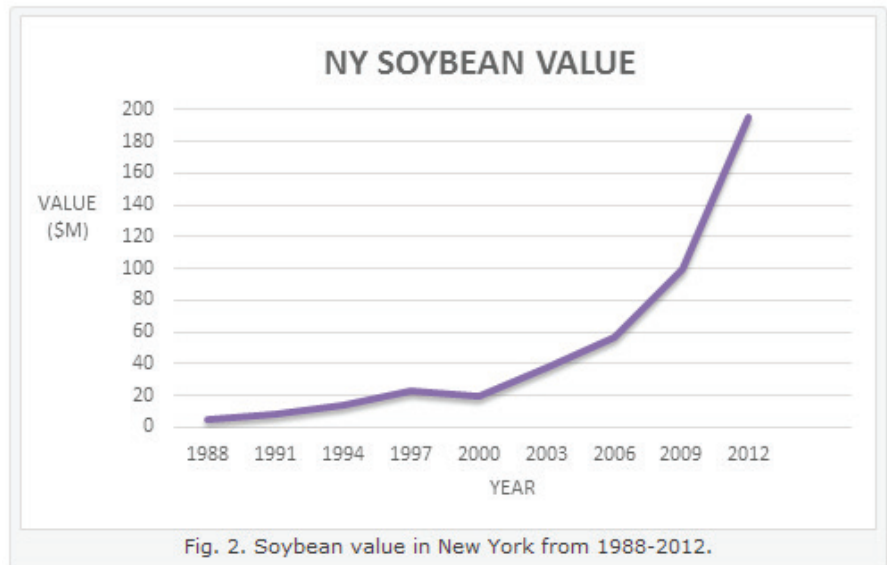
# Transformation of Soybean from a Minor to a Major NY Crop

Bill Cox, Department of Crop and Soil Sciences, Cornell University

Most politicians and urbanites in New York are familiar with the dramatic rise of the wine industry in upstate New York, especially in the Finger Lakes region, over the last 25 years. Indeed, nary a week passes without a press release on the growth of the booming wine industry. Likewise, politicians and urbanites are familiar with the increase in organic agriculture over the last 10 years, the dramatic increase in Greek yoghurt production and consumption in New York over the last 5 years, and the potential growth of hops and barley production in support of the developing micro-brewery industry in New York in the next 5 years. What most, if not all of these individuals are unaware of, **is that soybean is the agricultural commodity in New York that has increased the most in both acreage and value over the last 25 years. The \$195M value of soybean in 2012 ranked the crop as the 6th leading agricultural commodity in New York. Based on acreage and value, soybean is no longer a minor crop but clearly a major NY agricultural commodity.**

Soybean acreage in New York approximated 40,000 in the late 1980s and increased to ~300,000 acres in 2012 (Fig.1). **This 7.5 fold increase in acreage is only exceeded by its 20-fold increase in value since the late 1980s.** The annual soybean value approximated 5\$M in the late 1980s, soaring to almost

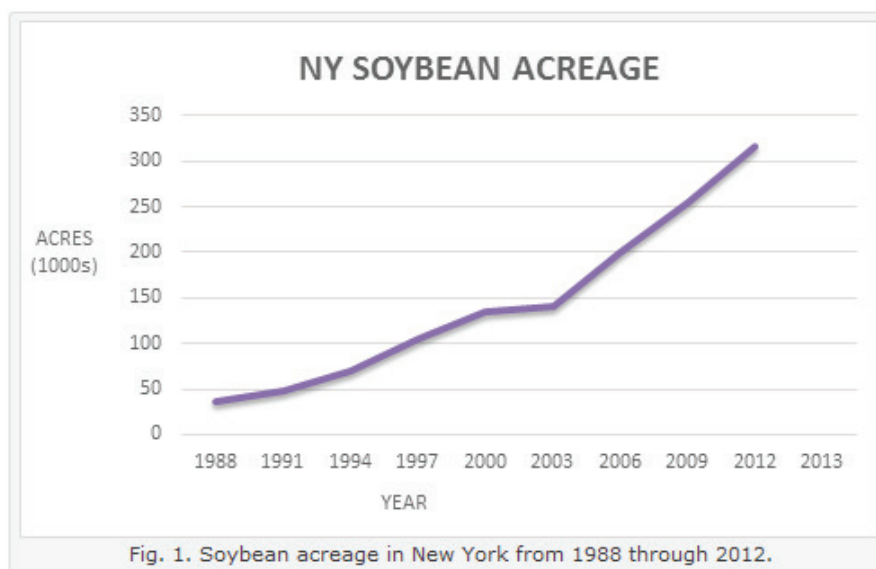
\$200M in 2012 (Fig.2). Preliminary estimates indicate that soybean value in New York approximated \$170M in 2013 (probably will be revised upward because USDA-NASS estimated the market price of the 2013 NY soybean crop at \$12.50, much lower than the price that some NY growers have sold their old 2013 crop at over the last two



months). To place the value of soybean in perspective, Fig. 3 compares the value of soybean with the value of all fresh market and all fruits produced in New York since 1988. Soybean value averaged less than 4% of the entire fresh market vegetable industry in the late 1980s and early 1990s. **Incredibly, the average value of the NY soybean crop approximated 40% of the entire fresh market vegetable value in 2012 and 2013!** Obviously, soybean is no longer a minor crop but a major New York agricultural commodity.

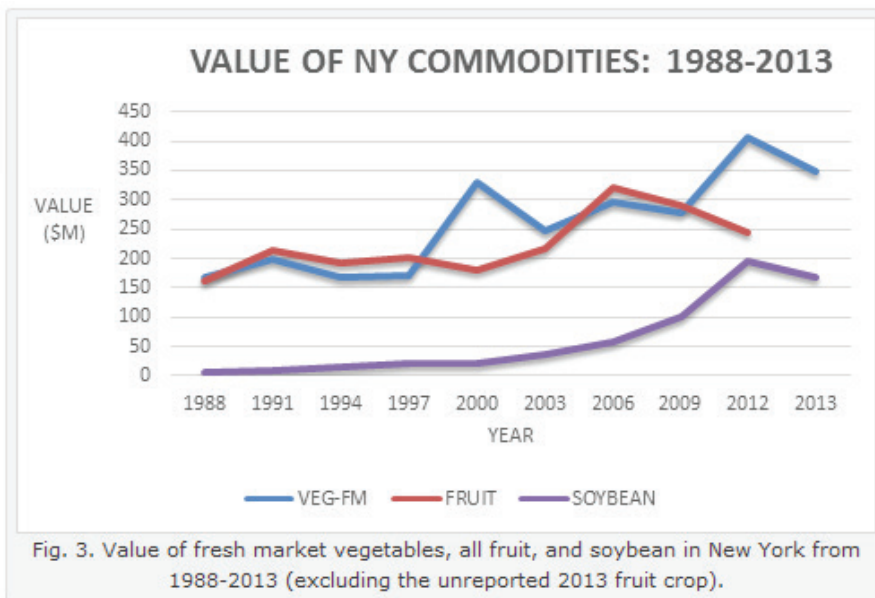
### Conclusion

**March planting intentions indicate that New York growers will plant 330,000 acres in 2014. If planting intentions are realized, New York growers will plant record acreage in 2013. New York soybeans averaged 48 bushels/acre in 2013, tied for the highest State average yield on record.** Clearly, the crop is thriving in New York. It is time for politicians, administrators at agricultural colleges, and urbanites to recognize



## Crop Management

and welcome the fact that soybean is a major New York agricultural commodity.



Soybeans prior to harvest. Photo Credit: Bill Cox

### References

National Agricultural Statistics Service. 2013. 2013 New York Annual Statistics Bulletin. ([http://www.nass.usda.gov/Statistics\\_by\\_State/New\\_York/Publications/Annual\\_Statistical\\_Bulletin/2012/2012%20page12-19%20Field%20Crops.pdf](http://www.nass.usda.gov/Statistics_by_State/New_York/Publications/Annual_Statistical_Bulletin/2012/2012%20page12-19%20Field%20Crops.pdf))

## Crop Management

# Wheat Value Almost Triples in New York Over the Last 25 Years While Oat and Dry Bean Values Stagnate Because of Plummeting Acreage

Bill Cox, Department of Crop and Soil Sciences, Cornell University

Wheat has been a major crop in NY since the late 18th century. In fact, NY along with Pennsylvania and Ohio were the major wheat producing states in the USA in 1850. The acreage of wheat in NY declined steadily in the late 1800s and early 1900s while increasing in the Plains States. By 1915, Kansas, North Dakota, Minnesota, Nebraska, and South Dakota were the leading wheat producing states. Wheat acreage in these states and the USA, however, has decreased by almost 25% over the last 20 years. In contrast, wheat acreage in NY has remained relatively stable over the same period. Let's examine the acreage and value of wheat and two other small grains, oats and barley, along with dry beans in NY over the last 25 years to see why the acreage of NY wheat has remained relatively stable.

Annual wheat acreage in NY over 5-year periods during the last 25 years has hovered between ~110,000 and ~135,000 (Fig.1). In contrast, annual oat acreage has plummeted from ~125,000 during the 1989-1993 period to ~40,000 in the 2009-2013 period. Likewise, annual dry bean acreage in NY has plummeted from ~35,000 to ~10,000 during the past 25 years. Certainly, a major reason for the ~70% decrease in both oat and dry bean acreage over the last 25 years has been the adoption of soybean by NY crop producers. All three crops are summer annuals so oat and dry beans along with other summer annuals, including potatoes, processed vegetables, and some fresh market vegetables, have ceded acreage to soybean. Wheat on the other hand, is a winter annual and can fit into the rotation after soybean harvest, if fall conditions are conducive for soybean harvest by October 25th.



The value of wheat exceeded \$50M in NY in 2013, in part because of a record 68 bushel/acre State average yield.

Another reason for the stability of wheat acreage over the last 25 years is that wheat yields have continued to increase, whereas oat, dry bean, and barley yields have stagnated during this period (Fig.2). The average annual wheat yield has increased from 49 bushels/acre during 1989-1993 to 64 bushels/acre during 2009-2013. In contrast, annual oat yield has fluctuated between 61 and 65 bushels/acre and barley yield has remained stagnant at ~50 bushels/acre during the last 25 years. Wheat yield has increased by 30% over the last 25 years because leading growers on high-yielding soils continue to grow the crop, these growers have adopted more intensive

management systems, and Cornell still has an active wheat breeding program. In contrast, leading growers on high-yielding soils have abandoned oats, barley, and dry beans for soybean, growers manage the three crops similarly in 2014 to how they managed them in 1989, and Cornell no longer has an active oat and barley breeding program. Barley yields, however, may increase in the next 10-year period, given the mandate by NY State for the use of 90% locally-sourced

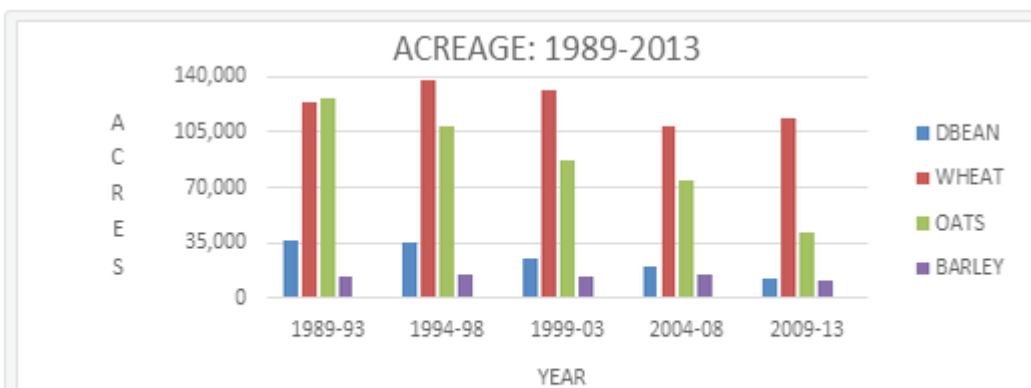


Fig.1. 5-year averages of annual dry bean, wheat, oat, and barley acres planted in NY over the last 25 years.

## Crop Management

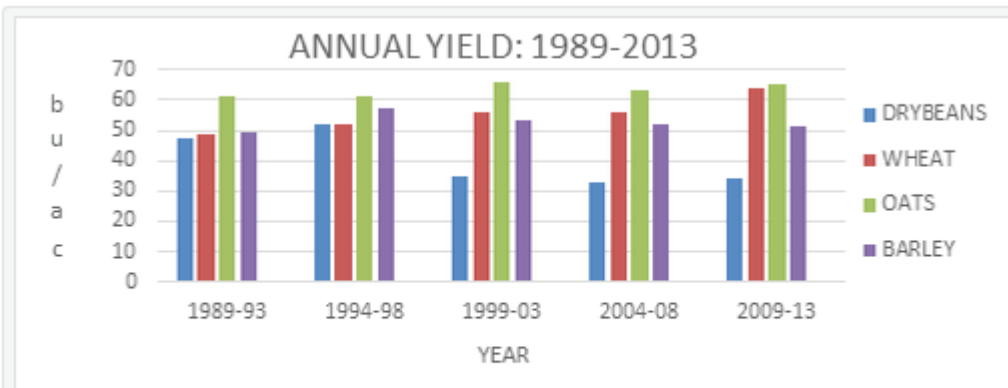


Fig.2. 5-year averages of annual dry bean, wheat, oat, and barley yields in NY over the last 25 years (all units are in bushels/acre except for dry beans, which are reported in 1,000 weights/10).

ingredients by 2024, if growers wish to receive a Farm Brewery License.

The stable wheat acreage, coupled with the 30% yield increase and the more than doubling of wheat market prices over the last 25 years (~\$3.10 during 1989-1993 to ~\$6.60/bushel during 2009-2013), has increased the annual value of wheat from ~\$15M during 1989-1993 to over \$40M during 2009-2013 (Fig.3). In fact, the value of wheat in NY exceeded \$50M in 2013, making its annual value similar to some high-value fresh market vegetables, such as onions and tomatoes.

Furthermore, only estimating the value of the grain

ton in NY over the last 5 years, adding an additional \$20M in value to the crop. Consequently, another reason why wheat acreage has remained stable in NY, whereas acreage has decreased by 25% in the USA, is the demand of wheat straw by the dairy industry. Wheat is no longer the leading crop in NY as it was in the 1800s, but wheat continues to play an important role in the NY agricultural economy as a cash crop, a rotation crop, and supplier of coveted straw to the dairy industry.

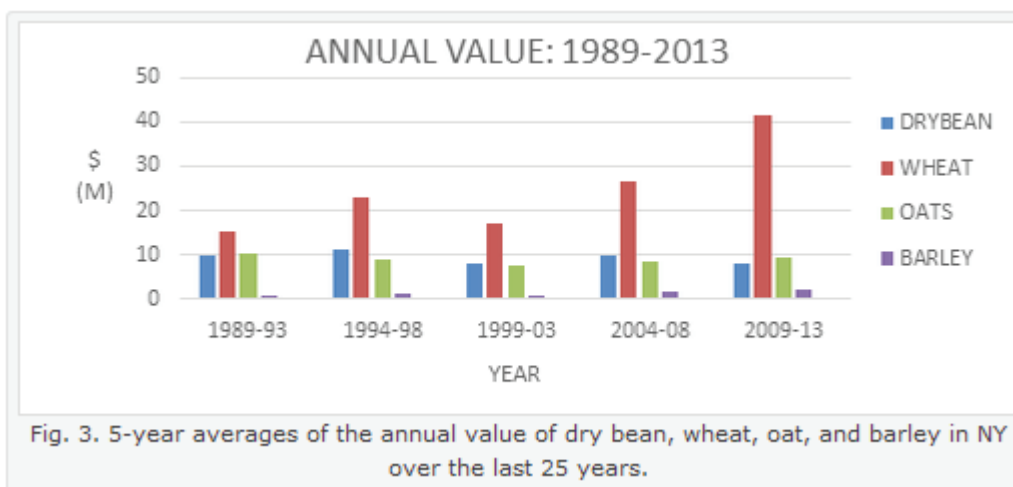


Fig. 3. 5-year averages of the annual value of dry bean, wheat, oat, and barley in NY over the last 25 years.

significantly under-estimates the value of wheat in NY because most growers also bale and market wheat straw. Indeed, the value of straw has averaged over \$150/

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# New York Corn Production During the Last 25 Years

Bill Cox, Department of Crop and Soil Sciences

Corn is by far the most important crop produced in the USA in both acreage and value. NY growers typically plant ~1,150,000 acres annually, making NY the 17th leading state in the USA in corn acres. NY is unique,



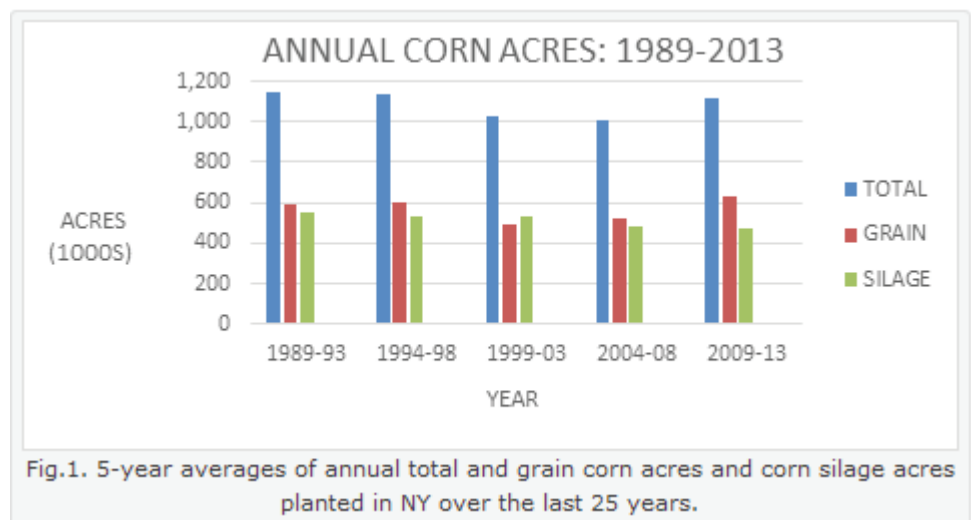
Grain corn in NY from 2009-2013 had an average annual value of \$440M, greater than the entire annual value of all fresh market vegetables or the total fruit crop in NY during this same period.

however, in that planted corn acreage fluctuates between an approximate 50:50 ratio of grain corn and corn silage. Consequently, NY has historically been a leading corn silage producing state. Indeed, NY dairy producers planted approximately 500,000 acres in 2012 and 2013, making NY the 2nd leading state in the USA in corn silage acres. The NY Crop Reporting Service typically focuses on how NY agricultural commodities rank nationally so the importance of corn silage is highlighted but the importance of corn grain is often overlooked. This article will focus on the acreage and value of corn produced for grain and for silage over the last 25 years to emphasize the importance of both to the NY agricultural economy.

Total annual NY corn acreage averaged ~1,150,000 during the 1989-1993 and 1994-1998 time periods (Fig.1). Total NY corn acreage, however, dipped ~1% during the 1999-2003 and 2004-

2008 time periods, averaging ~1,050,000 annually. The lower total corn acreage from 1999-2008 can be attributed mostly to the marked decline in corn grain acres during that 10-year period. Annual corn grain acreage averaged ~600,000 from 1989-1998 but dipped to ~510,000 from 1999-2008. The decrease in corn acres from 1994-1998 to 1999-2003 corresponded, as expected, with the decreased market price for grain corn (~\$3.00/bushel to ~\$2.55/bushel, respectively in NY). Annual NY corn silage acreage, however, remained steady from 1989-2003 averaging ~540,000 during this period. In fact, annual corn silage acreage actually exceeded corn grain acres during the 1999-2003 period (~535,000 vs.495,000 acres, respectively). Milk prices remained similar during the 1994-1998 and 1999-2003 periods (~\$14/ and ~\$13.85/ cwt, respectively), which probably contributed to stable corn silage acreage during this period. Annual corn grain acreage (~525,000), however, once again exceeded corn silage acreage (~480,000) during the 2004-2008 time period. Corn grain prices rebounded during this period (~\$3.50/bushel), especially in 2007, prompting more growers, even dairy producers, to plant corn for grain, which partially explains the ~10% decrease in annual NY corn silage acres during 2004-2008. The decrease in corn silage acres during the 2004-2008 period, however, is somewhat surprising because milk prices increased to \$17/ cwt during this 5-year period.

The annual value of corn silage produced in NY was consistently greater than that of grain corn from 1989 through 2008 (Fig.2). Annual corn silage value in NY showed a strong linear increase during this period, an average increased value of ~\$20M during each 5-year

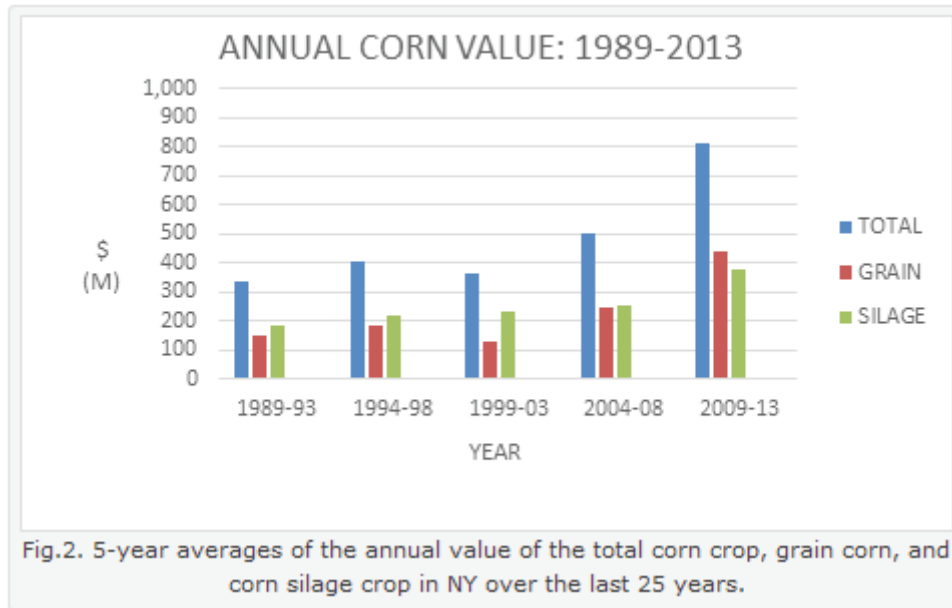




## Crop Management

period (~\$185M during 1989-1993 to ~\$260M during 2004-2008). In contrast, the annual value of grain corn in NY fluctuated during this 20-year period (an average value

by the increase in grain corn and subsequently corn silage prices, increased the annual value of corn silage to ~\$375M during the most recent 5-year period.

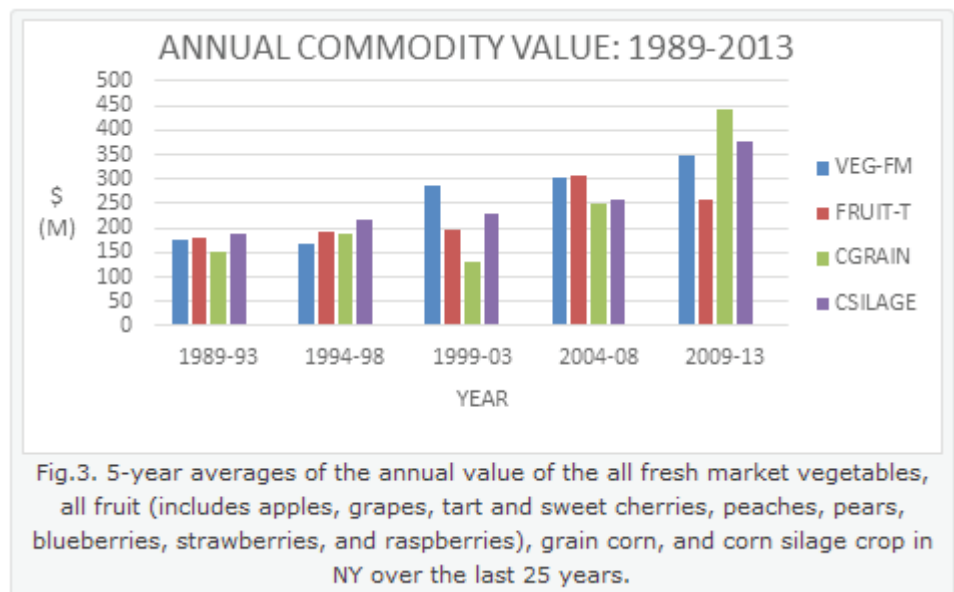


of ~\$150M from 1989-1993, to ~\$190M from 1994-1998, decreased to only ~\$130M from 1999-2003, but rebounded to ~\$250M from 2004-2008).

The ratio of acreage and value of both crops, however, have changed dramatically in the last 5 years (Fig. 1 and 2). Annual corn grain acres increased greatly in NY (and in the USA) to an average of ~635,000 during 2009-2013. Obviously, the market price for corn (~\$5.75/bushel) was the overwhelming factor in increased NY corn grain acreage during this period. The increase in acres and prices, coupled with relatively high yields, resulted in a dramatic increase in the annual grain corn value in this recent 5-year period (~\$440M from 2009-2013). Corn silage acreage remained steady (~475,000) during the 2009-2013 period, despite the increase in average milk prices from ~\$17 to ~\$18.50/cwt. Nevertheless, the annual value of corn silage, driven

storage industries) and stimulated other upstate NY industries (trucking, increased sales of seed and other agricultural inputs, increased sales of agricultural equipment including the purchase of hundreds of new planters and corn combines, etc.). Obviously,

Milk prices are close to record highs (but will probably fluctuate over the next 5 years); whereas corn prices are at their lowest since 2009. So it will be interesting to see how the ratio of corn silage to grain corn acreage will play out over the next 5 years in NY. **In the meantime, let us celebrate the positive impact that grain corn has had on the NY agricultural economy in the last 5 years. Indeed, the average value of grain corn exceeded the average value of the entire fresh market vegetable industry or the total fruit industry from 2009-2013 (Fig.3).** Not only has the crop value increased dramatically, but the increased acreage and value has spurred new industries (ethanol and grain



## Crop Management

**the grain corn industry has had a tremendous, yet unacknowledged, value-added effect on the upstate NY economy.** In conclusion, isn't it time to report the value of our crops on a NY state basis instead of on a national



Planting grain corn with a new 20" corn planter in 2013, one of the many new planters purchased in the last few years by corn growers, greatly stimulating the agricultural equipment industry in upstate NY.

basis? Instead of highlighting that NY is the 5th leading tart cherry state (\$2.85M value), 4th leading pear state (\$2.35M value), 8th leading strawberry state (\$6.88M value), 4th leading sweet corn state (\$68.4M), 4th leading fresh market snap bean state (\$33.4M) but 21st corn grain state (\$688M) in 2012, wouldn't it be far more informative to say that NY grain corn was the 2nd leading agricultural commodity in NY in 2012?



## Calendar of Events

May 8, 2014	Invasive Weed Seedling Identification, Ithaca, NY <i>More info and registration @ <a href="https://reg.cce.cornell.edu/weed_seedling_workshop_104">https://reg.cce.cornell.edu/weed_seedling_workshop_104</a></i>
Jun 5, 2014	Small Grains Management Field Day, Musgrave Research Farm, Aurora, NY
June 24, 2014	Seed Growers Field Day, NYSIP Foundation Seed Barn, Ithaca, NY
July 16, 2014	Weed Science Field Day, H.C. Thompson Research Farm, Freeville, NY & Musgrave Research Farm
July 17, 2014	Aurora Farm Field Day, Musgrave Research Farm, Aurora, NY

**What's Cropping Up?** is a bimonthly electronic 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 email list, send your name and address to Jenn Thomas-Murphy, 237 Emerson Hall, Cornell University, Ithaca, NY 14853 or [jnt3@cornell.edu](mailto:jnt3@cornell.edu).**

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What's Cropping Up? Preview



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