# What's Cropping Up?

A NEWSLETTER FOR NEW YORK FIELD CROPS & SOILS VOLUME 5, NUMBER 5, 1995

## Fall Season Pest Management Opportunities

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Dairy & Field Crops
IPM Program

Harvest time is well underway and soon this season will be but a memory. While this season is still fresh in mind, why not take advantage of this year's successes and "educational moments" by pausing for a few moments to see that your field crop records are up to date. Doing so now may help enhance crop performance and pay dividends *next* season.

It's been said that "A long pencil beats a short memory". Record information on varieties, hybrids, planting dates, population counts, fertility, pest problems, timing of different activities, pesticide usage, yields, special situations or concerns, effectiveness of different practices, maintenance needs of specific farm machinery and equipment. Make some notes on what practices worked well?, which did not?, and what you would do differently next time? Keeping track of this type of information and referring to it will help optimize future management decisions.

From a pest management perspective, fall is also a great time to gather some last minute field information to help improve alfalfa and field corn production next year. Here are a few suggestions:

Alfalfa stand counts: Estimating alfalfa populations in the fall and spring provides an indication of potential field productivity. Common causes of thinning alfalfa include: age of stand, harvest management, diseases, insects, weed competition, fertility and soil pH. To check alfalfa populations, select 10 locations throughout the field that are representative of the stand. In each of these locations, select an area at random, and count the number of alfalfa crowns observed per square foot.

Alfalfa Population Guidelines: New Seeding and Established Stands

| | Crowns per square foot | |
|---|---|---|
| Harvest Year | Optimum Stand | Adequate Stand |
| New Spring Seeding | 25-40 | 12-20 |
| 1st hay year | 12-20 | 6-10 |
| 2nd hay year | 8-12 | 4-6 |
| 3rd and older | 4-8 | 2-5 |

For more detailed information see Cornell Recommendations for Integrated Field Crops Management.

Alfalfa fields should also be assessed for disease, insect, and weed problems prior to a hard freeze. Yellow to brown plants may indicate disease problems. Check leaves and stems for discolored areas indicating possible fungal diseases. If no above ground symptoms are obvious, dig plants up to examine their root system. Yellow, reddish-brown to black discolored or damaged roots may indicate disease problems such as Phytopthora Root Rot or Verticillium Wilt. If significant amounts of a field are affected, correct disease diagnosis is critical. Disease resistant alfalfa varieties are available for many common diseases.

Root feeding by certain insects may also affect alfalfa health. Alfalfa snout beetle (ASB) has been found in Oswego, Cayuga, Jefferson, Wayne, Lewis, St. Lawrence, Clinton and Essex counties. In areas where ASB is known or suspected to occur, visiting alfalfa fields now may help identify ASB infestation. Alfalfa plants stressed by ASB turn yellow in late August,die and turn brown during September. To check for ASB, dig suspect plants and 10-12 inches of their root systems. If ASB are present, the large grubs (about 1/2" long) or adult ASB beetles can usually be discovered. If ASB are observed, the field is at risk for overwintering damage and reduced productivity next season.

### Weeds:

Drought conditions complicated weed control effectiveness in many

(See RESIDUE, Page 7)

CROP MANAGEMENT

# 1995 Cornell Wheat Variety Tests

**Bill Pardee and Mark Sorrells**
**Dept. of Plant Breeding**

What is the best wheat variety? That depends! Varieties are like people. They have personalities, each with its own strengths and weaknesses. This gives farmers choices, opportunities to pick the qualities they want most.

These personalities showed up in our 1995 Cornell wheat trials, run by Mark Sorrells. He tested over 40 varieties, but only the best are shown in the accompanying table.

Batavia, new on the market this year, showed its ability to produce high yields with high test weight and practically no lodging. Improved tolerance to pre-harvest sprouting is Batavia's main feature, and it showed this again in 1995. Batavia had the lowest sprout score among available varieties. Batavia found strong demand by New York farmers this fall, and seed sold out early.

Geneva and Harus, the main varieties of the past five years, continued to yield and stand well, along with Pioneer brand 2737W. As usual, Geneva showed slightly better standability than Harus. All three are fine varieties, and good choices for farmers.

Cayuga, a new release just out, showed exciting traits. Cayuga has the highest test weight grain of any variety we've ever tested. It also has stronger sprout resistance than any white wheat, including Batavia. In fact Cayuga is equal to most red wheats in sprouting tolerance. Cayuga has been slightly lower than the best varieties in yield. Still, many growers will be interested in its twin strengths, sprout resistance and high test weight. These qualities should bring improved prices in years when other varieties sprout.

A new Cornell experimental (called CU Exp in the table) was also interesting. This topped all varieties in yield, and was among the best in test weight and lodging resistance. Sprouting tolerance was similar to current varieties. We've planted an increase block of this variety this fall. We'll probably release this line, if it continues its high performance.

Straw color is an important quality, as buyers seek light colored straw. All of the new varieties have a white or light colored straw, including Batavia, Pioneer brand 2737W, Cayuga and the new experimental.

The sprouting tolerance of Batavia and Cayuga is no accident. Sorrells has focused on this as a major problem for NY white wheat growers. He collected and examined a world assembly of white wheats, looking for potential parents with sprouting tolerance. He found several slow sprouting lines, but these were poorly adapted to New York. Sorrells crossed these to NY types, and screened the progeny for sprouting tolerance and high performance. Batavia and Cayuga came out of this, and both show strong potential for NY wheat growers.

Note that even sprouting tolerant varieties will sprout if heads stay wet long enough. Farmers should still harvest quickly to get Batavia and Cayuga out of the field. This means starting harvest when grain moisture drops below 20%, and blowing air through the stored grain until it's dry. Sprouting tolerant varieties can delay the start of sprouting if showers occur. But they can't prevent it altogether, if wet weather persists.

Tests like these from Cornell are designed to check variety personalities and their performance potential for NY farmers. Our goal is to provide top varieties and test information to help NY farmers compete with other regions of the country and world.

1995 Cornell Wheat Tests, Top Varieties

| | Bu/Acre 3 year | Bu/Acre 2 year | Test Weight | Lodging 2 yr 0-9 | Sprout Score 0-9 |
|---|---|---|---|---|---|
| Batavia | 63 | 70 | 58.4 | 0.5 | 3.8 |
| Geneva | 63 | 71 | 58.7 | 0.5 | 5.3 |
| Harus | 62 | 69 | 59.0 | 1.5 | 4.4 |
| Houser | 59 | 67 | 58.8 | 2.3 | 4.7 |
| Cayuga | - | 67 | 60.7 | 0.5 | 1.9 |
| Pio2737W | 66 | 72 | 57.9 | 2.0 | 4.8 |
| CU Exp | 67 | 74 | 58.8 | 0.8 | 4.9 |

# The 1995 Growing Season Weather in New York State

AGRICULTURAL METEOROLOGY

**Keith L. Eggelston**
**Northeast Regional Climate Center**

Hot and dry were the two words that summed up the 1995 growing season in New York. The state has never seen a spring and early summer as dry as it was this year. A lack of snowfall last winter combined with a very dry spring allowed farmers early access to their fields. Unfortunately, this dry weather pattern was extremely persistent and remained in place, almost without interruption, throughout the summer. The six months March through August were the driest such period on record in New York state. Rainfall deficits of 4 to over 10 inches accumulated during this period. Locations that were fortunate enough to catch more than their share of the summer's scattered thunderstorms, benefited from the warm temperatures which helped to speed crop development along. The majority of the state, however, experienced the "miss" side of the "hit-and-miss" rainfall events, and were further stressed by the persistent summer heat.

1995 Monthly Temperature Departures from Normal

| Month | Albany | Canton | Cooperstown | Ithaca | State |
|---|---|---|---|---|---|
| March | 5.7 | 3.9 | 3.5 | 2.9 | 3.5 |
| April | -2.5 | -3.8 | -2.7 | -3.6 | -3.4 |
| May | -0.7 | 0.2 | -0.7 | -0.9 | -0.9 |
| June | 0.0 | 3.4 | 3.0 | 3.0 | 3.1 |
| July | 2.2 | 2.1 | 2.8 | 3.3 | 2.0 |
| August (prelim) | 1.2 | -0.9 | 2.7 | 3.3 | 2.4 |
| Average | 1.0 | 0.8 | 1.4 | 1.3 | 1.1 |

**Spring** ... A statewide lack of precipitation was the dominant feature of this spring's climate in New York. The state received just 60% of the normal precipitation for the months of March through May to rank as the 3rd driest spring in the last 101 years. The dry weather was very persistent right through the season, with each month significantly drier than normal. March ranked as the 5th driest, April the 17th driest, and May the 16th driest on record. As a result, soil moisture, which is usually near field capacity during the spring, already was at a deficit as the growing season got underway. Spring temperatures averaged close to normal, as the statewide departure was just 0.3 degrees Fahrenheit cooler than normal. The season was marked by extremes, though. March was very warm, ranking as the 15th warmest on record. This was balanced by a very cold April–the state's 13th coldest on record. May temperatures averaged quite close to normal (0.9 degrees cooler than normal).

**June** ... Dry weather continued as the summer season got underway and it was accompanied by unseasonably warm temperatures. New York received less than half of its normal June precipitation quota with a statewide average of 1.75 inches. It was the 5th driest June on record. All portions of the state measured less than 55% of the normal rainfall. The north was the driest part of the state with the Mohawk Valley, Champlain Valley and Adirondacks all reporting less than 40% of normal for the month. The month averaged 3.1 degrees warmer than normal for the 10th warmest June in the last 101 years. The northern valleys were the warmest part of the state, with respect to normal, averaging just over 4 degrees warmer than the thirty-year average. The Coastal Division (New York City/Long Island) was the only part of the state that was slightly cooler than normal. The month was quite amazing in the Champlain Valley–ranking as the driest June ever and the second warmest June ever in that part of the state.

**July** ... The month of July was highlighted by an intense heat wave. Temperatures around the middle of the month soared into at least the 90's everywhere and into the triple digits in some locations. Monthly average temperatures were 2 degrees warmer than normal and ranked as the 15th warmest July on record. Scattered "hit-and-miss" thunderstorms brought welcome rain to some locations, but left others bone dry. The Western Plateau missed many of these thunderstorms completely and averaged only 61% of their normal precipitation for the month. The Northern Plateau, meanwhile, reported 142% of their July normal. The state overall was just slightly on the damper side of normal as it measured 104% of the thirty-year normal for the month.

**August** ... More dry weather was witnessed during August and it was exacerbated by more hot temperatures. It was the state's 15th warmest August on record and the 3rd warmest for the Coastal Division. It was also the state's 15th driest August, averaging just 66% of the normal precipitation. The Coastal Division was also the most extreme in terms of precipitation. Its monthly average of less than an inch ranked as the driest August ever. The Western Plateau and Central Lakes also measured less than half their monthly precipitation normal. Many locations did not record any precipitation for about a two-week stretch ending on the last day of the month. The summer season (June-August) wound up as the 6th hottest and 7th driest on record.

1995 Monthly Precipitation Departures from Normal

| Month | Albany | Canton | Coopers-town | Ithaca | State |
|---|---|---|---|---|---|
| March | -0.73 | -0.94 | -1.36 | -1.17 | -1.30 |
| April | -1.05 | -0.54 | -0.52 | -0.73 | -1.05 |
| May | -2.06 | -0.79 | -1.44 | -0.67 | -1.51 |
| June | -1.35 | -1.91 | -2.29 | -1.68 | -2.10 |
| July | -0.95 | 0.80 | -0.37 | -0.83 | 0.14 |
| August (prelim) | 0.16 | -0.79 | -1.64 | -2.39 | -1.34 |
| Average | -5.98 | -4.17 | -7.62 | -7.47 | -7.16 |

SOIL MANAGEMENT

# N Management Key to Cropping Benefits From Compost Applications

John H. Peverly
Soil, Crop and Atmospheric Sciences

Many cropped soils in New York State benefit from organic matter additions. Such treatments can decrease soil bulk density, allowing increased aeration, drainage and root growth, and increase water and nutrient-holding capacity. These benefits particularly apply to the high clay and high sand content topsoils which tend to have water excesses or deficiencies, respectively, under similar rainfall patterns.

Recent reports on field plot trials using municipal solid waste (MSW) and sewage sludge composts on corn have focused on yield and stover and grain quality, while noting potential risk from metal accumulation in the soils (see Vol. 5, no. 3, 1995 in this series). Further attention to N management was indicated by the three year field trial for corn response on Schoharie soil, a silt loam, lake-laid soil with a silty clay subsoil.

## N Release from Compost

On the same compost treatments, large differences in corn yield were observed between the 1993 and 1994 seasons, apparently as a result of the compost quality and N release characteristics. This information is summarized in Table 1, showing '94 yields to be half those in '93 for the same compost treatments. The lack of differences in control yields indicated that environmental factors were not the cause.

The most apparent difference in compost quality was the carbon to nitrogen content ratio (C/N), also noted in Table 1. Values for 1994 were larger than for 1993, especially for the MSW product (DE2). As a result, yield was decreased by low soil nitrate levels during the 1994 growing season (see Vol. 5, no. 3). The larger C/N values in 1994 resulted in N tieup in the organic matter decomposition process and unavailability to the plant roots. In the case of MSW compost, with a C/N ratio of 21, adding fertilizer N up to 180 lbs/acre on top of the compost did not overcome the season-long immobilization (data not shown).

The estimated available N part of Table 1 shows the potential problems in calculating organic matter additions based on N requirements of the crop. The calculated values were based on 10% organic N release, and indicated generous N availability at these compost application rates for both years. However, laboratory-determined N availability was very different between the two years for the compost treated plots, as indicated in the next row of Table 1. As the C/N ratio increased between the two years, the potential laboratory determined

Table 1. Available N estimates (kg/ha) compared to yield and incubation studies for years '93 and '94. DE and MA refer to treatments of about 40 dry tons/acre with MSW co-compost and sludge-plus-sawdust compost, respectively. C=control, CV=conventionally fertilized control (100 lbs N/acre).

| | C | | CV | | DE2 | | MA2 | |
|---|---|---|---|---|---|---|---|---|
| | 93 | 94 | 93 | 94 | 93 | 94 | 93 | 94 |
| C/N ratio | - | - | - | - | 9.4 | 21 | 9.2 | 14 |
| Estimated Avail. N | | | | | | | | |
| Calcul. N | 26 | 23 | 114 | 111 | 276 | 194 | 314 | 460 |
| Incub. N* | 84 | 38 | 172 | 134 | 121 | 26 | 310 | 60 |
| Yield Indicated N | | | | | | | | |
| Yield bu/a. | 57 | 49 | 91 | 116 | 117 | 53 | 150 | 67 |
| Yield Indicat. N | 26 | 23 | 114 | 111 | >225 | 25 | >225 | 45 |

*Lab-determined potential available N (organic and fertilizer sources).

available N decreased. That these numbers were a true indication of N availability was borne out by the yields. The calculated N numbers were not good indicators in 1994, and even in 1993 with a C/N ratio of 9.4, the 10% calculation for MSW compost gave an erroneously high available N value. It should also be noted that the yield indicated available N (last row in Table 1) compares well with both the calculated and laboratory values in 1993 for compost-treated plots, but only with the laboratory incubation values in 1994.

### Nitrate in Shallow Groundwater

The anticipated N release from organic matter in 1993 was realized in the yield numbers, but the soil nitrate levels carried over into spring 1994 as indicated by soil pore water values in Table 2. These values represent a high potential for nitrate leaching to groundwater. Conversely, the low rate of release in summer 1994 seemingly continued throughout the fall and winter, with pore water values in spring 1995 being close to control values and much lower than the previous year. It is interesting to note the strong correlation between the laboratory incubation available N values and the pore water nitrate concentrations the next spring.

Another possible explanation for the lower pore water nitrate concentration values in 1995 is greater denitrification of soil nitrate in late winter than in the same period in 1994. Soil column work measuring nitrate formation and movement in compost-amended soils under different temperature regimes indicated little or no denitrification of organically-derived nitrate at temperatures below 5°C. Another difference between spring 1994 and 1995 was appreciably higher soil temperatures in March, 1995 (2.5°C March '94 vs 9°C March '95). It is possible that whatever N mineralized and nitrified in the fall and winter of '94 was denitrified in March, 1995, as the temperature of the saturated soil approached 10°C.

### Recommendations:

When applying organic matter as a substantial source of crop nutrients, carryover effects can be substantial on succeeding crops and leaching potential. Overapplication to compensate for slow organic N mineralization may create conditions for excessive nitrate leaching, while underapplication will produce reduced yields. Either management outcome is to be avoided. Therefore:

1. Compost or sludge quality criteria should meet Department of Environmental Conservation's regulations and guidelines.

2. The C/N ratio should be less than 15.

3. When calculating application rates based on crop N needs, use 10% organic N release for sludge compost and 5% organic N release for MSW composts.

4. Or use a combination of fertilizer and compost N additions to more closely control yield response and decrease potential leaching (See Vol. 5, no. 3).

Table 2. Average residual nitrate in soil pore water from the two to four foot zone during April, 1994 and 1995 after compost application of 80 dry tons/a in May, 1993 and 1994 respectively. Note the apparent effect of C/N ratio on carryover.

| | C | | CV | | DE3 | | MA3 | |
|---|---|---|---|---|---|---|---|---|
| | 94 | 95 | 94 | 95 | 94 | 95 | 94 | 95 |
| C/N ratio | -- | -- | -- | -- | 9.4 | 21 | 9.2 | 14 |
| Nitrate-N mg/l | 7.6 | 1.3 | 25 | 1.8 | 14 | 1.1 | 62 | 14 |

CROP MANAGEMENT

# Managing Rye as a Cover Crop: Allelopathic Effects

**Jane Mt. Pleasant and Beverly McIntyre**
**Soil, Crop & Atmospheric Sciences**

Cereal rye has long been used by New York farmers as a reliable and effective cover crop in corn. When seeded before October 1, it provides substantial soil cover in the fall and can accumulate moderate to large amounts of biomass before corn planting the next spring.

Many researchers and farmers have also found that rye cover crops reduce weed pressure, particularly in no-till systems. In addition to the physical barrier to weed emergence provided by the rye mulch, decomposition of rye residues releases chemicals which reduce weed seed germination and growth. Unfortunately, rye residues have also been shown to negatively effect corn growth and development as well. This phenomena is referred to as allelopathy.

For example, researchers in both Illinois and Ontario have reported that rye cover crops reduced corn yields in some situations (Tables 1 & 2). In research at Cornell, we have also observed that rye cover crops, particularly in no-till systems, can reduce corn growth and development early in the season. In some years the corn recovers and no differences are detectable in corn yields, but effects from year to year are inconsistent (Table 3).

Researchers have identified the phytotoxic compounds which are released from rye residues and have also described the release patterns of the compounds as rye residues degrade. Degradation initially results in the formation of an hydroxamic acid, called DIBOA which is quite toxic to both weeds and corn. Further degradation of DIBOA results in compounds which are less toxic. Researchers in North Carolina report that weed suppression by rye cover crops declines as DIBOA disappears.

The timing of release of DIBOA also has important implications for rye effects on corn growth. Initial decomposition of rye residue is dependant on temperature and moisture. After degradation begins, significant precipitation may leach the DIBOA out of the root zone or favorable temperature and moisture conditions can further degrade DIBOA to its less toxic by-products.

Table 1. Effects of rye cover crop on corn yields in Illinois*

| | bu/A** |
|---|---|
| + Rye | 88 |
| No Rye | 110 |

* Bollero G.A. and Bullock, D.G. 1994. Cover cropping systems for the central corn belt. J. Prod. Agri. 7:55-58

** Yields are mean of no-till and disk-till treatments averaged over five site/years.

The impact of environment on rye decomposition largely explains why we see such variability, both in terms of corn recovery in any particular year, and the magnitude of effects from year to year. Precipitation and temperature drive the reactions which determine the concentration of DIBOA in the root zone and the length of time that these allelochemicals remain in contact with the developing corn plant. Until we can accurately predict the weather, it will be difficult to predict when rye cover crops will negatively impact corn.

At this time, we can say that in most years plowdown of rye residues greatly reduces chance of an allelopathic effect on the corn. Tillage operations mix and dilute the DIBOA sufficiently so that conventional tillage corn infrequently shows allelopathic effects from a rye cover crop. Using a rye cover crop with no-till corn entails some risk. Effects can range from absolutely no impact, to reduced growth early in the season, but recovery in time so that yields are not effected, to substantial reductions in corn yields. Growers need to weigh the relative advantages of a rye cover crop, particularly in no-till corn.

Some management practices which may help minimize negative effects include waiting two weeks after chemically killing the rye before planting corn in order to allow some time for decomposition to begin. Other researchers have reported that removing corn residue from the row with disk furrowers reduces allelopathic effects of rye in no-till corn. Growers may also want to consider other species of cover crops in no-till systems. Ryegrass and red clover can be effective cover crops in corn, but they require earlier seeding.

Table 2. Effect of tillage and rye cover crop on corn yields in Ontario*

| | Elora | | Woodstock | |
|---|---|---|---|---|
| | No Till | Plow | No Till | Plow |
| | lbs/A DM** | | | |
| + Rye | 9968 | 11036 | 10235 | 11837 |
| No Rye | 11926 | 12282 | 13083 | 13795 |

* Raimbault, B.A., T.J. Vyn and M. Tollenaar. 1990. Corn response to rye cover crop management and spring tillage systems. Agron. J. 82:1088-1093.

** Yields are mean of three years.

(See RESIDUE, Page 7)

## RESIDUE

(From FALL SEASON, Page 1)

areas this season. Consider taking a fall weed inventory to identify and record significant weed types, such as annual grasses or perennial broadleaves. This information can help you plan next season's weed control program. Fall weed inventories can be collected from alfalfa and corn fields. In alfalfa, thick weed infestations may indicate diseases or other problems, and can affect feed value. Solid stands of common lambsquarters, common ragweed, or smooth pigweed, in corn fields receiving triazine herbicides such as atrazine, Bladex, or Princep, may indicate presence of triazine resistant populations of these weeds.

In addition to direct competition for crop seedlings next season, weeds may also provide potential overwintering sites for several corn insect pests including common stalk borer, hop-vine borer, and potato stem borer. Black cutworm, another corn insect pest, does not overwinter in the egg stage, but lays it's eggs in weedy fields in early spring. Larvae of all these insect species will move from weed species to feed on crop hosts, such as young corn, in the spring. Some weeds preferred by these insects include:

| Insects | Weeds |
|---|---|
| common stalk borer | ragweed and other large stemmed broadleaf weeds |
| potato stem borer | quackgrass, green foxtail, barnyard grass, and dock |
| hop vine borer | quackgrass and other grasses |
| black cutworm | grasses, annual broadleaves such as common chickweed |

While harvesting corn keep a record of fields where yields were reduced and large areas of broken stalks, lodged plants, or foliar diseases were observed. Correct identification of the cause is necessary for taking appropriate action to avoid or manage the problem in next seasons crop. Determine if crop damage is associated with soil compaction, stalk rot, corn rootworm, herbicide damage, or other problems.

If European corn borer or stalk rots were a problem this season check hybrid standability ratings when selecting hybrids for next season. If lodging and root pruning due to feeding by corn rootworm larvae (CRW) was observed, consider crop rotation or use of a soil insecticide in fields affected.

Foliar diseases affecting large areas of fields can significantly reduce yields. Correct diagnosis often requires professional assistance. A corn foliar disease of particular interest is gray leaf spot (GLS). The long, rectangular, grayish colored symptoms of GLS on corn leaves are very distinctive and will remain evident even after corn is harvested. This disease caused significant losses in the midwest this season. In previous years, GLS has been found in isolated fields in the Delaware, Hudson, and Susquehanna River Valleys. If you find symptoms suggestive of GLS, please contact your Cornell Cooperative Extension field crop agent for positive identification and further information.

Each year presents it's own challenges and opportunities. Building on successes and learning from experience helps improve our crop and pest management efforts. Taking a few minutes now to collect some last minute field information will be quite helpful in developing next seasons crop production plans and optimizing next years profits. If you have questions regarding any topics presented in this article, please contact your Cornell Cooperative Extension field crop agent for further information.

(From MANAGING RYE, Page 6)

Table 3. Effects of tillage and rye cover crop on corn grain yields. Aurora, NY.

| | 1993 | | 1994 | |
|---|---|---|---|---|
| | No Till | Plow | No Till | Plow |
| | bu/A | | | |
| + Rye | 93 | 111 | 106 | 138 |
| No Rye | 94 | 114 | 117 | 139 |

## Calendar of Events

| | |
|---|---|
| Oct 18-20 | American Phytophathological Society, Northeastern Div. Meetings. Quebec City. |
| Oct. 24,25,26 | Field Crop Dealer Meetings, Albany, Waterloo, and Batavia |
| Oct. 29 - Nov.3 | American Society of Agronomy Meetings. St. Louis, MO |
| Dec 5-7 | CCA Training. Ithaca Ramada Inn-Airport |
| Jan 8-9 | Annual NY Agricultural Business Assoc. (ABA) Meeting. Holiday Inn. Auburn, NY. |
| Feb. 2, 1996 | CCA Exam |
| July 14-17, 1996 | Northeastern American Society of Agronomy Meeting, Cornell |
| Aug. 6, 1996 | CCA Exam. |

*What's Cropping Up?* is a bimonthly newsletter distributed by the Department of Soil, Crop and Atmospheric Sciences 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: Soil, Crop and Atmospheric Sciences, Plant Breeding, Plant Pathology, and Entomology. **To subscribe, send a check for $8.00 along with the form at the right.**

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