What's Cropping Up?

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Certified Crop Advisor (CCA) Program for New York

Bill Cox
Soil, Crop and Atmospheric Sciences

The Certified Crop Adviser (CCA) program is a voluntary certification program for agricultural professionals, including dealers, applicators, consultants, and state/federal agency personnel, who make recommendations to crop producers. The American Society of Agronomy through close consultation with the public and private agricultural sector developed the CCA program to ensure that crop producers receive high-quality information for management of their crops. About 20 states began participation in 1993, the inaugural year for the CCA program. Agricultural professionals in New York have the opportunity to begin participation in 1994.

The CCA applicant must have either 1) a minimum of 2 years of crop advisory experience with a B.S. in agriculture or 2) a minimum of 4 years of crop advisory experience to be eligible for the program. The CCA applicant must then pass a national and state CCA exam and sign a code of ethics to receive certification. The CCA member must then participate in 30 hours of continuing education credits annually to maintain certification.

The national CCA exam, which was developed by agricultural professionals with the aid of the Educational Testing Service (ETS), has 200 multiple choice questions that focus on general principles in four competency areas: 1) soil fertility, 2) soil and water management, 3) pest management, and 4) crop management. The four competency areas receive equal representation on the test. Although each competency area is graded separately, the CCA applicant must receive a passing grade on the total exam to become certified. The American Society of Agronomy has developed performance objectives in each competency area to help CCA applicants prepare for the exam.

The New York State exam, which was developed by agricultural professionals in New York, will have 100 multiple choice questions that focus on the same four competency areas as the national exam. The New York State exam, however, will emphasize specific features of soil fertility, soil and water management, pest management, and crop management that are important to New York. The New York State CCA Board has developed performance objectives to help CCA applicants prepare for the State exam.

The National CCA exam will be offered in the morning and the NY State exam in the afternoon of August 5 at a site to be determined. In 1995 and thereafter, the exams will be offered on the first Friday in February and August. The Crop and Soil Management Statewide Program Committee at Cornell will offer a training session from March 22-24 in Emerson Hall at Cornell. Most of you should have received a personal invitation outlining the specifics of the training session. If you wish to attend the entire training session or specific days of the training session, please call Bill Cox or Pam Kline at 607-255-2177.

SOIL FERTILITY

Animal Density Guidelines

Stu Klausner
Soil, Crop and Atmospheric Sciences

The goal of a good nutrient management program is to ensure that nutrients are managed for the economic production of milk, meat, and feed and for the protection of water quality. This is achieved by a) eliminating excess purchases of feed and fertilizer, b) controlling the rate, timing and placement of fertilizer and manure and c) using good soil conservation practices.

Farmers need to look at nutrient management in an integrated way. Simply put, dairymen should analyze their feeds and balance rations profitably, and all growers should soil test to determine nutrient requirements. The bottom line; don't over feed or over fertilize, and implement good soil and water control practices to reduce loss.

The potential to successfully manage nutrients on dairy farms depends on the amount of cropland available relative to the size of the herd. There must be a corresponding increase in crop acres as herd size increases. Farms with a low animal density (small number of animals relative to the number of crop acres) have a greater potential to utilize nutrients efficiently than farms with a very high animal density. To help evaluate animal density, guidelines are given in the Table outlining three nutrient management categories - low, high, and very high, and corresponding animal densities. The guidelines are based on nitrogen recycling for three major cropping systems.

The guidelines are exactly that - suggestions on animal numbers for a given land base. They are not intended to serve as the basis for regulatory action nor do they guarantee the success or failure of a particular nutrient management category. Most important are the management skills of the farmer. A well managed farm with a high animal density may do a better job of nutrient recycling than a poorly managed farm with a low density.

ANIMAL DENSITY: LOW

Crop rotation	Animal units* per tillable acre
corn-legume	<1
corn-grass	<1.5
grass	<2.25

Nutrient status: Probable nitrogen (N) deficit
1. adequate land base for spreading.
2. nutrients available in manure may be less than crop requirements.
3. supplemental fertilizer is necessary.
4. relative nutrient loss potential is low.

Management considerations:
1. not necessary to apply manure to legumes.
2. ammonia conservation may be important to conserve N.
3. a nutrient management plan would be helpful.

ANIMAL DENSITY: HIGH

Crop rotation	Animal units per tillable acre
crop-legume	1 - 1.5
corn-grass	1.5 - 2.25
grass	2.25 - 2.5

Nutrient status: Approximate nitrogen balance
1. N in manure approximates crop requirements.
2. usually an adequate land base for spreading.
3. must maximize manure management practices to prevent loss.
4. need for supplemental fertilizer is minimal.
5. relative nutrient loss potential is moderate to high.

Management considerations:
1. necessary to apply manure to legumes in a corn-legume rotation.
2. ammonia conservation may not be important to conserve N.
3. a detailed nutrient management plan is important.

ANIMAL DENSITY: VERY HIGH

Crop rotation	Animal units per tillable acre
corn-legume	>1.5
corn-grass	>2.25
grass	>2.5

Nutrient status: Nitrogen surplus
1. nutrients in manure exceed crop requirements.
2. inadequate land base for spreading.
3. good management may not prevent nutrient loss.
4. relative nutrient loss potential is high to very high.

Management considerations:
1. a nutrient management plan may not be effective.
2. consider transporting excess nutrients off the farm, purchasing additional land for spreading, and/or reducing animal density.

*Animal unit = 1,000 lb. animal

Newdak Top Oat for '94

CROP MANAGEMENT

Bill Pardee & Mark Sorrells
Department of Plant Breeding

Newdak tops Cornell oat tests in yield, feed value.

Newdak was the highest yielding variety in New York trials in 1993. This was its 5th year at the top. Over the past two years Newdak has averaged 113 bushels per acre over 4 locations in central and western New York (see Table). Porter was second at 103, and Ogle at 102 bushels per acre.

Newdak has also done well on New York farms. Reports of yields above 100 bushels per acre were frequent in 1993. Certified seed supplies are plentiful for planting in 1994.

Newdak grains contain more groat and less hull than most varieties. This means more energy per ton of grain, since oat feed value is in the groat, not the hull. This means Newdak packs more energy per ton of grain than varieties like Porter and Ogle, and therefore higher feed value.

Newdak produces high test weight grain, heavier than Ogle, but averaging a pound or so below Porter. But Newdak's higher groat percentage can overcome the test weight factor in boosting feed value for livestock.

Newdak has white hulls, lighter colored than those of Porter, Newdak stands well, and has strong resistance to most races of oat rust. Newdak has tolerance to barley yellow dwarf virus, another disease of oats.

Newdak was released jointly by Cornell and the North Dakota Experiment Station. The high feed value of Newdak is becoming known in the Mid-West, where its popularity is growing.

Ogle was second to Newdak in yield, with Porter and Hercules falling behind. Porter continues in use, since some folks like its higher test weight, averaging 1-2 lbs heavier than Newdak. But Porter has averaged 13 bushels below Newdak in Cornell tests over the past four years.

Pennuda, a hulless variety, continues to attract interest, because of its heavy test weight, 40 lbs per bushel or better, and its high energy value. Pennuda yields fall below that of normal, hulled varieties, since its hulls thresh off during harvest. This concentrates the feed value, since hulls are gone. But the per acre yield is reduced by the lost hulls. Farmers considering Pennuda should seek a specialty market that will pay a premium for its high quality, hulless grain.

Certified seed supplies are sufficient for the above varieties. The midwest oat seed crop was hurt by floods, so some seed is moving west. This may tighten seed supplies as planting time approaches. Look for the blue tag certified seed, to be sure you're getting high quality seed of the variety you want.

Oat Variety Comparisons, Cornell Tests

	1992-3 Yield Bu/Acre	Average Test Weight Lbs/Bu	% Groat	Hull Color
Newdak	113	33.3	75	white
Porter	103	34.6	72	near-white
Ogle	102	32.7	74	yellow
Hercules	98	34.3	73	yellow
Pennuda	79	40.0	99	hulless

PEST MANAGEMENT

Corn Rootworm Management Impact on Silage/Grain Production and Efficacy of Soil Insecticides

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Department of Entomology

Widespread damage and lodging of the 1993 corn crop has been reported around New York State. The lodging and yield losses in a large number of these fields has been attributed to feeding by the larvae of corn rootworm (CRW). Two different species of corn rootworm can cause economic loss in commercial corn acreage. Northern corn rootworm adult beetles are bright lime green and have been inhabitants of our corn fields for many years. The western corn rootworm which is yellowish with dark stripes has invaded New York only in the past few years and currently is most numerous in western and central New York. Field population of CRW can occur as mixed populations or as only a single species.

Life Cycle and Damage

Both species of CRW have similar life cycles and can be discussed together. Adult CRW beetles are found in corn fields from pollination until the first killing frost (late July - Oct.). During this time, the adult females are laying eggs in the soil cracks and around the bases of corn plants which will overwinter and hatch in late May (next spring). In the spring, newly hatched larvae locate the young corn plants and begin feeding on the developing roots. Larval development and root feeding damage are completed by mid July, larvae pupate and emerge as adult beetles during late July and early August to begin laying eggs to complete their life cycle.

CRW larvae damage corn by feeding on the root system and if present in sufficient numbers, will reduce corn yields by inhibiting the ability of the corn plant to uptake water and nutrients. Additional yield loss occurs as CRW larval feeding destroys the plant's brace roots resulting in harvest loss due to lodging. Harvest losses due to lodging are usually of greater importance than physiological yield losses. Potentially damaging populations of CRW are controlled by rotation to a non-susceptible crop or by soil insecticides incorporated in the seed bed at planting or at cultivation.

Fields at Risk

Fields planted to continuous corn are at greater risk to economic CRW infestations than first year corn since CRW eggs are laid the previous fall in existing corn fields. Fields in continuous corn production increase the risk of developing economic CRW infestations, the longer corn is planted to the field on a continuing basis. Continuous corn fields planted after late planted corn the previous year are at high risk due to the attractiveness of the late pollinating corn to the adult CRW resulting in heavier than normal egg laying in the field.

Research conducted during the 1991-92 growing seasons by Dr. Paula Davis indicates that corn grown for silage is much more sensitive to yield losses from CRW feeding than corn grown for grain. In corn grown for silage, as few as 100 CRW eggs/row foot (root damage rating of 2.9) results in economic losses from $13-$18 per acre. Economic loss in silage corn frequently occurs without lodging or "goose-necking" as an indication of larval feeding. In contrast, corn grown for grain suffers losses between $3-$5 with 100 CRW eggs/row foot. With the cost of soil insecticides ranging between $14-$18 per acre, an insecticide is warranted in fields grown for silage with as few as 100 CRW eggs per row foot. However, in fields of corn grown for grain, soil insecticide is not economically warranted until the egg population rises to a minimum of 300/row foot (root damage rating of 4.0).

The need to rotate or use a soil insecticide at planting for control of CRW can be determined by counting the number of adult CRW beetles per 55 corn plants (5 plants in 11 different field locations within a field) in each corn field during and shortly after pollination. If these beetle counts exceed 1 beetle per plant as a field average, then a registered soil insecticide is recommended at planting the following spring. Please refer to the "1994 Cornell Recommends for Integrated Field Crop Management" for the recommended soil insecticides for New York. Interactions do occur between survival of the CRW larvae and soil texture. However, these interactions are not well understood. It is interesting to note that sandy soils rarely develop economic CRW infestations.

Efficacy of Currently Registered Soil Insecticides

Results from the 1993 CRW soil insecticide efficacy trial are listed in table 1. On the 1-6 Iowa root damage rating scale, damage ranged from 1.85 (very little damage) to 5.45 (severe damage) in the untreated checks. Economic losses begin to occur between 3.0 and 3.5 depending upon the frequency of rain fall during July and early August and the root regeneration capabilities of the corn variety. CRW larval pressure was moderately heavy at the Tully site and very heavy at the Aurora site.

PEST MANAGEMENT

Table 1. Efficacy of soil insecticides against corn rootworm larvae in New York. Trials were conducted at both Aurora, NY and Tully, NY during 1993.

Compound	Timing	Placement	Aurora	Tully
Counter 15G	AP	IF	4.40*	3.13
Counter 15G	AP	T-Band	3.50	2.28
Counter 15G	Cultiv.	Band	2.80	****
Counter 20CR	AP	IF	3.20	2.85
Counter 20CR	AP	T-Band	2.70	2.45
Counter 20CR	Cultiv.	Band	2.60	****
Dyfonate 20G	AP	T-Band	2.20	2.58
Dyfonate 4E	AP	T-Band	2.70	2.45
Dyfonate 20G	Cultiv.	Band	3.05	****
Dyfonate 4E	Cultiv.	Band	3.05	****
Force 1.5G	AP	IF	4.20	3.38
Force 1.5G	AP	T-Band	2.95	2.68
Furadan 4F	AP	T-Band	****	3.90
Furadan 4F	Cultiv.	BC	****	2.73
Furadan 4F	Cultiv.	Band	1.85	****
Lorsban 15G	AP	IF	4.50	3.55
Lorsban 15G	AP	T-Band	3.40	2.88
Thimet 20G	AP	T-Band	4.45	3.40
Untreated Check			5.45	4.63
Critical Difference for Significance =			1.63	0.73

*Iowa 1-6 Root Damage Rating Scale; 1 = no damage; Ratings greater than 3.0 are usually considered economically damaging.

AP = at planting, Cultiv. = 6-8 leaf stage, IF = In-furrow, T-Band = 7 in. band in front of the press wheel, BC = Broadcast

CROP MANAGEMENT

Carefully Select Soybean Varieties

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Soil, Crop and Atmospheric Sciences

Soybean acreage continues to expand in NY with approximately 55,000 acres planted in 1993. First-time as well as experienced soybean growers should carefully select varieties, especially as it relates to maturity group and planting date. To minimize production risks associated with the vagaries of the weather, we recommend that soybean producers in central and western NY plant about 20% of the acreage to early (Group 00 and 0), 60% of the acreage to medium (Group I), and 20% of the acreage to late (Group II) varieties. In Northern NY, we recommend that soybean producers plant 80% of the acreage to Group 00 or 0 varieties and 20% of the acreage to Group I varieties.

Central and Western NY

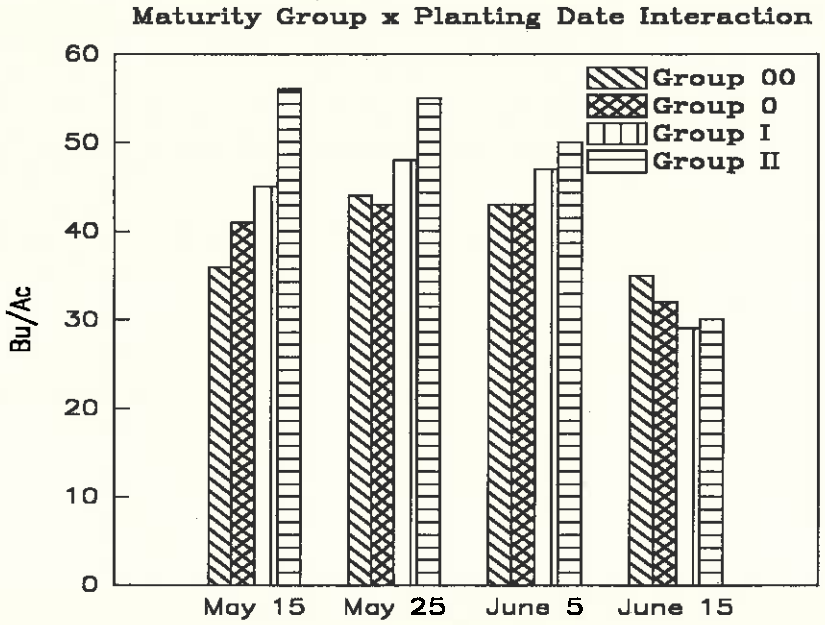
Group I varieties yielded as well as Group II varieties in Cornell's variety trials at Aurora and Mt. Morris in 1992 and 1993 (Table 1). We recommend that soybean producers plant 60% of their acreage to Group I varieties because of their high yield potential as well as their earlier maturity and harvest date compared to Group II varieties. Northrup King S19-90, Terra Runner III, DeKalb CX187, and Evasoy yielded exceptionally well at both sites in 1992 and 1993. Other recommended Group I varieties include OAC Dorado (Golden Harvest), Parker (Minnesota Crop Improvement Association), Haroson (Golden Harvest), and Pioneer 9162. We recommend that soybean producers plant Group I varieties from May 20 to June 1 because yields of Group I varieties decline steeply if planted in June (Fig. 1).

Some Group II varieties yielded well at both sites although most Group II varieties did not attain full maturity in 1992. Outstanding Group II varieties include Terra TS 253, Northrup King NK S20-20, Conrad (Iowa Agricultural Experiment Station), Asgrow A2835, Terra TS 205, Sturdy (Minnesota Agricultural Experiment Station), Pioneer 9273, and DeKalb CX259. We recommend that soybean producers plant Group II before Group I varieties sometime between May 15 and 25 (Fig. 1).

The best early (Group 00/0) varieties yielded about 10 bu/acre lower than the best Group I and II varieties in 1992 and 1993. Nevertheless, we recommend that soybean producers finish up planting with Group 00 or 0 varieties to protect against a cool growing season, late season drought, or delayed planting because of a wet spring. We recommend Lambert (Minnesota Crop Improvement Association), AC Bravor (Hoffman Seeds Inc.) and Maple Glen (Golden Harvest) in the Group 00 or 0 maturity groups.

Northern NY

Group 00 and 0 varieties yield exceptionally well in Northern NY so we recommend that soybean growers plant mostly early varieties in that region. AC Bravor, in particular, has yielded exceptionally high at both Canton and Chazy (Table 2). Other high-yielding early varieties to consider are Maple Glen and Lambert. A high-yielding King Grain variety, PS 42, can be purchased in Ontario or Quebec. We recommend that soybean producers plant early varieties in late May and early June in Northern NY. If Northern NY growers wish to plant a Group I variety such as OAC Dorado, we recommend planting before May 25.



CROP MANAGEMENT

Table 1. Yields of early (Group 00/0), medium (Group I), and late Group II) maturing soybean varieties at Aurora (Cayuga Co.) and Mt. Morris (Livingston Co.) in 1992 and 1993.

	AURORA		MT. MORRIS		
Variety	1992	1993	1992	1993	Mean
			bu/ac		
			Early (Group 00/0)		
Lambert	61	50	41	70	56
AC Bravor	55	46	45	73	55
Maple Glen	55	41	51	62	52
OAC Musca	53	45	-	70	-
			Medium (Group I)		
NK S19-90	67	49	66	85	67
Runner III	65	48	63	87	66
DeKalb CX187	63	52	63	78	64
EvaSoy	65	44	59	82	63
OAC Dorado	57	42	64	73	59
Parker	61	50	46	72	57
Haroson	56	44	53	69	56
Pioneer 9162	53	44	49	73	55
			Late (Group II)		
Terra TS 253	65	65	48	84	66
NK S20-20	55	65	54	85	65
Conrad	66	65	47	76	64
Asgrow A2835	56	72	50	75	63
Terra TS 205	64	61	51	72	62
Sturdy	62	55	51	77	61
Pioneer 9273	55	70	48	70	61
DeKalb CX 259	59	68	42	69	60

Table 2. Yields of early (Group 00/0), and medium (Group I) maturing soybean varieties at Canton (St. Lawrence Co.) and Chazy (Clinton Co.) in 1992 and 1993.

	CANTON		CHAZY		
Variety	1992	1993	1992	1993	Mean
			bu/ac		
			Early (Group 00/0)		
AC Bravor	67	56	63	72	65
Maple Glen	62	47	60	60	57
Lambert	49	59	45	60	53
			Medium (Group I)		
OAC Dorado	59	59	51	59	57
Haroson	48	57	47	57	52
Parker	52	57	38	57	51

Calendar of Events

March 4-5	Transitions Sustainable Agriculture Conference, Holiday Inn, Auburn, NY.
March 22-24	Certified Crop Adviser (CCA) Training Session, Emerson Hall, Cornell University.
June 2	Small Grain Management Field Day, Aurora Research Farm
July 8-11	Northeast Branch American Society of Agronomy meetings, MacDonald College, Canada
August 5	Certified Crop Adviser (CCA) Exam, Site to be announced.
Nov. 13-18	American Society of Agronomy Meetings, Seattle, Washington.

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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