What's Cropping Up?

A NEWSLETTER FOR NEW YORK FIELD CROPS & SOILS VOLUME 5, NUMBER 4, 1995

Coastal Zone Management Act: Federal Agro-Environmental Policy Update

Gregory L. Poe
Agricultural, Resource, & Managerial Economics

The 104th Congress is grappling with approaching deadlines for the 1995 Farm Bill and reauthorization of critical national environmental legislation such as the Clean Water Act and the Endangered Species Act. It is probable that new Federal initiatives will impact future land use decisions and will be of obvious interest to many farmers and landowners. However, of more immediate concern to New York agriculture is previous Federal water quality legislation such as the 1990 Coastal Zone Act Reauthorization Amendments (CZARA). The implementation of this program is now being designed and debated, and may have direct impact on land-use decisions as early as January 1996.

The Coastal Zone Management Act (CZMA) was created in 1972 to assist states in developing comprehensive programs for the management, beneficial use, protection, and development of the Nation's coastal resources, including the Great Lakes. For most of its history, the geographical extent of the CZMA was limited to shorelands immediately adjacent to coastlines and important coastal resources such as sand dunes, beaches, and estuaries. However, in the late 1980s, concern about coastal water quality increased dramatically due to an alarming rise in beach closures, prohibitions on harvesting shellfish, and loss in biological productivity in coastal waters. Acknowledging the economic and ecological value of our oceans and the dependence of coastal resources on water quality, Congress enacted the 1990 CZARA.

The 1990 CZARA is particularly important because it embodies three emerging trends in water quality management. First, increased attention is being given to managing water quality at a watershed scale, which often involves a land base quite distant from the point of impact. New York "coastal" watersheds, for example, encompass about 75 percent of the state and two-thirds of the agricultural land. Second, the focus of water pollution control policies is being shifted toward non-point source pollution because monitoring studies demonstrate that non-point pollution is the largest remaining water quality problem. These studies also show that agriculture is the leading source of non-point pollution. And third, regulatory approaches to managing non-point source pollution are now being considered alongside traditional voluntary programs.

Thus, CZARA has strong potential implications for landowners. It requires states to develop enforceable management practices on activities identified as important sources of non-point pollution in coastal watersheds. Five major categories of non-point pollution that impair or threaten coastal water quality nationwide have been identified: agricultural runoff, urban runoff, silviculture (forestry) runoff, marinas and recreational boating, and hydromodification (channelization, dams and streambank erosion).

The CZARA measures for agriculture cover a range of farm activities, with separate management measures for erosion and sediment control, animal housing and barnyard runoff, nutrient management, pesticide management, grazing, and irrigation. Many of these practices, such as integrated pest management or nutrient management planning, are activities that may actually

(SEE COASTAL ZONE, PAGE 7)

DISEASE MANAGEMENT

Baytan Seed Treatment: A New Tool For Wheat Producers

Gary Bergstrom
Plant Pathology

In January 1995, the Department of Environmental Conservation approved the registration of Baytan 30 Flowable Fungicide (triadimenol) for use as a seed treatment on wheat and other cereal crops in New York. Baytan 30F is applied directly to crop seed, avoiding nontarget organisms, at extremely low amounts of active ingredient per acre. Triadimenol is a systemic fungicide with low mammalian toxicity. There is limited human exposure to the seed-applied chemical and no detectable residues in the harvested grain. Due to the need for precise application of this product, it is restricted for use by commercial seed treaters and will be sold only to those whose application equipment has been inspected and certified by Gustafson, Inc.

Uses in Integrated Pest Management

I have conducted field trials with Baytan 30F for over 10 years on small grains in New York. Baytan in combination with a protectant fungicide performed as well or better than industry standard products like Vitavax 200 (carboxin plus thiram) in control of seed decay, seedling blights, common bunt, and loose smut. In addition, it is the first registered seed fungicide to systemically protect wheat foliage against early season powdery mildew and leaf rust. It fits well into established integrated pest management (IPM) programs. Current IPM recommendations include application of foliar fungicides to winter wheat only after threshold levels of disease are detected in May. In many locations and years, Baytan 30F seed treatment may suppress powdery mildew and other diseases to below threshold levels in May, and thus alleviate the need for foliar applications to these fields. Baytan 30F has significantly better activity against seedborne Septoria nodorum blotch than other currently registered seed fungicides. Research results suggest that Baytan could be useful in the integrated control of this disease in the Northeast, and thus add further value to certified, treated seed.

Contributions to Profitability

New York wheat producers will have the option of buying certified seed of several winter wheat varieties in 1995 that has been treated with Baytan 30F. It will be applied at a rate of 1.25 fl oz per 100 lb of seed in combination with a seed protectant fungicide (captan or thiram). The projected added cost to producers for treated seed is approximately $8 per acre at a 2.25 bu per acre seeding rate. A yield increase of 3 to 4 bu per acre, due to disease control, is needed at current commodity prices in order to return a profit on Baytan application (Table 1). In eight large scale tests on New York farms (from 1990-94) Baytan seed treatment resulted in an average yield increase of 4 to 5 bu per acre (range 0 to 7).

Recommendations

Any wheat producer who maximizes production factors for yield and/or has a farm history of severe powdery mildew should seriously consider the purchase of Baytan-treated, certified seed of winter wheat in 1995. There is currently insufficient economic justification to recommend the purchase of Baytan-treated seed of barley, oat, or rye. In New York, Baytan-treated seed of winter wheat should be planted prior to mid-October and at a depth of 1.5 inches or less. The Baytan label (and the treated, certified seed label) should be consulted for additional cautionary statements and information.

Table 1. Influence of grain price and yield on the relative profit of Baytan/thiram seed treatment of winter wheat.*

Grain price	Yield increase (bu/A)							
($/bu)	0	1	2	3	4	5	6	7
	Relative profit ($/A)							
2.50	-8.00	-5.50	-3.00	-0.50	2.00	4.50	7.00	9.50
3.00	-8.00	-5.00	-2.00	1.00	4.00	7.00	10.00	13.00
3.50	-8.00	-4.50	-1.00	2.50	6.00	9.50	13.00	16.50
4.00	-8.00	-4.00	0.00	4.00	8.00	12.00	16.00	20.00

*Assumes additional input of $8 per acre for 1.69 fl oz Baytan 30 F and 2.7 fl oz Thiram 42 S applied to 135 lb. seed. This compares to an input cost of $2 per acre for 4.7 fl oz Vitavax applied to 135 lb seed. Actual costs can be expected to vary.

Batavia Wheat Features Sprouting Resistance

SEED & VARIETIES

Bill Pardee
Plant Breeding and Biometry

Batavia wheat is a new high yielding variety from the program of Mark Sorrells, wheat breeder at Cornell. Batavia has greater resistance to pre-harvest sprouting than any white wheat now available. Batavia matches Geneva and Harus in yield, test weight and standability. Batavia should be a superior choice for New York farmers as a high yielding wheat with reduced sprouting risk. Batavia has a light colored straw which should help straw sales appeal. Ample supplies of certified seed will be available for planting this fall.

Pre-harvest sprouting is a common risk for New York white wheat growers. Wet weather just before harvest can initiate germination while kernels are still in the head. This can happen when grain approaches maturity and kernel moisture drops below 16%. Trouble starts when rains re-wet the kernels and keeps them wet for 20 hours or more. This activates enzymes that start the germination process. The first sign of sprouting is a slight swelling of the germ (called a "push"). If wet conditions continue, the radical, or seedling roots emerge, and the seed is said to have "legs".

Sprouting reduces grain value in several ways. This changes flour chemistry, reducing its usefulness to millers and bakers. Sprouted wheat is normally rejected for milling use, but may find use in dog food or in other animal feeds. These uses have less value, so sprouted wheat sells for less. This can mean substantial losses to farmers in bad sprouting years.

Soft red wheats have a natural dormancy factor that delays sprout initiation. Red wheats will sprout if heads are kept wet too long, but are substantially more resistant than past white varieties. But white wheats make up some 90% of the market in the Empire state. So we need a white wheat with better sprouting resistance.

In developing white wheat varieties with greater seed dormancy (more sprouting resistance), Sorrells faced formidable challenges. Other breeders had tried for decades, with no success. Genes for seed dormancy were tightly linked with the genes governing red color. Sorrells had to break this linkage to separate the two traits. Sorrells searched world collections of wheat types, and made numerous crosses. Finally, he found several white wheat lines that had sprouting resistance. These lines were undesirable in themselves, but the traits were finally unlinked. Progress became possible.

More crossing followed, to transfer this dormancy factor into lines suited to New York State. Batavia is the result, joining sprout resistance with white seed color. Batavia surpasses other white wheats in sprouting resistance, but is not quite equal to red wheat varieties.

Certified seed supplies of Batavia are ample for planting this fall. Batavia offers an opportunity for New York growers to reduce risk, without sacrificing yield, test weight or standability.

Batavia Performance Comparisons
Cornell trials, 5 year averages

	Yield Bu/A	Test Weight	Lodging rating	Sprout Score*
Batavia	65	57.1	2.8	3.9
Geneva	66	57.7	2.7	6.4
Harus	65	57.7	3.1	4.9

Sprout score: Under continuous moisture with
0 = no sprouting, 10 = 100% sprouting

CROP MANAGEMENT

Corn Silage Quality and the Stay-Green Characteristic

Bill Cox and Jerry Cherney
Soil, Crop and Atmospheric Sciences

The introduction of the stay-green characteristic in modern hybrids has contributed in part to the phenomenal increases in corn grain yields in the USA during the last 10 years. The stay-green characteristic allows the leaves, especially those inserted just above the ear, to maintain relatively high photosynthetic rates during grain-filling, thereby extending the grain-filling period and increasing grain yields. The stay-green characteristic does not benefit silage yields as much because the grain only represents about 50% of silage yields. Also, silage harvest commences at the 1/3 milk line stage of development, about 7 to 10 days before physiological maturity, so an extended grain-filling period is not as important for high silage yields.

The stay-green characteristic, however, should improve corn silage quality, especially stover quality, because a stay-green hybrid can rely on the relatively high photosynthetic rates of the stay-green leaves to fill the grain rather than on remobilization of non-structural carbohydrates from the stover to fill the grain. Nevertheless, there is some concern in NY that the stay-green characteristic actually decreases corn silage quality. Let's examine some data gathered at Cornell in recent years to determine if this concern is justified.

Stay-green ratings vary among seed companies so we have limited our hybrid comparisons to within a specific seed company. In 1990, we evaluated three Pioneer hybrids at Aurora with stay-green ratings from 6 to 8 (Table 1). Pioneer 3429, the hybrid with the lowest stay-green rating, had the lowest digestibility or corn silage quality in that comparison. Likewise, in a comparison of two other Pioneer hybrids at Aurora and Mt. Pleasant in 1990 and 1991, Pioneer 3790, the hybrid with the lower stay-green rating, had somewhat lower digestibility (Table 1). Based on these Pioneer hybrid comparisons, the data would suggest that a stay-green hybrid may have slightly higher digestibility.

In 1991 and 1992, we also evaluated five Hytest hybrids that varied in stay-green ratings from 7 to 9 (Table 2). When averaged across years, Hytest 650A, which had the lowest stay-green rating, had slightly higher digestibility. Consequently, the Hytest data would suggest that stay-green hybrids may have slightly lower digestibility.

Table 1. Stay Green rating and in vitro dry matter digestibility (IVDMD) of three Pioneer hybrids at Aurora in 1990 and two other hybrids at Mt. Pleasant in 1990 and 1991.

HYBRID	STAYGREEN	IVDMD	
		1990	1991
Pioneer 3592	7	70.4	-
Pioneer 3527	8	70.1	-
Pioneer 3429	6	68.0	-
Pioneer 3925	8	72.2	76.5
Pioneer 3790	7	71.6	75.0

Obviously, the data is inconclusive and will probably always be because many other

(SEE CORN SILAGE)

CROP MANAGEMENT

(FROM PAGE 4)

factors influence silage quality. For example, hybrids that have high grain content or low lignin content in the stover consistently have higher silage quality when compared to other hybrids. Both characteristics as well as other unknown characteristics influence silage quality more than the stay-green characteristic. Our recommendation for selecting corn hybrids for silage is to ignore the stay-green characteristic and focus on potential yield and quality ratings. Finally, if you select a stay-green hybrid, don't be fooled by the green appearance in September. A stay-green hybrid can be at the 1/3 milk-line and 70% moisture and still be very green. In fact, the concern by some with stay-green hybrids may be associated with delayed harvest beyond the optimum stage of development for silage quality.

Table 2. Stay-green rating and in vitro true digestibility (IVTD) of five Hytest hybrids at Aurora in 1991 and 1992.

HYBRID	STAY GREEN RATING	IVTD	
		1991	1992
Hytest 424	8	75.8	75.6
Hytest 474	8	76.1	75.1
Hytest 512	9	77.0	86.0
Hytest 650A	7	78.5	75.7
Hytest 7728	9	78.0	75.2

CROP MANAGEMENT

Consider Planting Wheat After Soybean Harvest

Bill Cox
Soil, Crop and Atmospheric Sciences

Wheat prices are exceptionally high so many NY growers wish to plant more wheat this autumn. Unfortunately, the dramatic summer increase in wheat prices surprised most so rotations may not have been designed for increased wheat acreage. Some growers in central NY planted significant pea acreage for the first time in 1995 so they can easily follow peas with wheat. Other potential crops that wheat can easily follow include sweet corn, green beans, dry beans, oats, and corn silage. Another potential crop to seriously consider is soybeans. The warm temperatures in June and July should result in soybean harvest from late September until mid-October. Wheat can be planted during the first two weeks of October in central/western NY with only a 3 to 5 bu/acre yield decrease when compared to a mid-September planting.

We have worked on four farms in central/western NY where winter wheat has been successfully planted from October 10-15 following soybean harvest in 1993 and 1994. Wheat yields on these farms when following soybeans have exceeded the NY State average in both years of the study (Table 1). We recommend seeding soft white winter wheat at 2¼ to 2½ bu/acre and soft red winter wheat at 1¾ to 2 bu/acre when planting from October 1 to October 15. Also, consider a 60 lb N/acre topdressing when following a 25 bu/acre soybean crop and a 40 lb N/acre topdressing when following a 50 bu/acre soybean crop (Table 2).

In conclusion, some growers may wish to increase wheat plantings this fall because of recent favorable prices. Wheat following soybeans is a viable option, especially when wheat can be can be planted before October 15. We do not recommend planting wheat after November 1 so timely harvest of soybeans followed by a light disking (or no-till) and timely planting of wheat is critical to the success of this rotation. Also, wheat acreage will increase significantly across the USA because of favorable prices, so forward contracting some of the crop should be considered.

Table 1. Wheat yields following soybeans on four farms in central/western NY in 1994 and 1995.

CAYUGA CO.	ORLEANS CO.	SENECA CO.	YATES CO.	NY STATE AVG.
		1994		
53	61	59	55	53
		1995		
63	73	63	64	50

Table 2. Wheat yields at two N rates following a 25 bu/acre and 50 bu/acre soybean crop at the Aurora Research Farm.

N Rate	25-bushel soybeans	50-bushel soybeans
30 lbs.	54	56
60 lbs.	63	58

(FROM COASTAL ZONE, PAGE1)

improve farm income and are already being promoted by Cornell Cooperative Extension and other agencies in New York. Other proposed regulations, such as 25 year/24 hour storm wastewater and barnyard runoff storage requirements for dairy farms with over 70 head are substantial and will likely reduce net income on many farms.

It is too early to say which of the proposed management regulations, if any, will apply to New York farms. The 1990 CZARA has initiated a process between the Federal agencies and individual states. This process is ongoing, and the final outcome for New York is not certain at present. In 1993, the Environmental Protection Agency (EPA) provided broad guidance identifying the activities to be controlled. Individual states, working through their own agencies and legislative bodies were required to submit their strategies in July 1995 for meeting the EPA guidelines. If the proposed strategies are acceptable to the EPA, each state would have up to nine years to implement and evaluate the management measures.

Rather than apply strict regulations, New York is pursuing an alternative management approach called the Responsible Agricultural Environmental Planning (REAP) program. This proposed program is an outcome of a New York Department of Agriculture and Markets agricultural environmental planning working group, which consists of representatives from other State and Federal agencies, Cornell, agribusiness, environmental groups, and the Farm Bureau. Over the last two years, this group has developed a broad outline for the REAP program: the program will be voluntary, but will need a high level of participation in order to avoid the application of strict regulations; incentives such as cost sharing or regulatory relief are likely; priority watersheds will be identified on the basis of important and threatened uses, such as providing public drinking water; and, targeting within watersheds will also be applied so as to first address farm practices that impact water quality in priority watersheds. In the upcoming months efforts will be directed to shaping this broad framework into a more specific program.

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
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.**

What's Cropping Up? - Subscription

Name:

Affiliation:

Address:

City: State: Zip:

Make check payable to: **CORNELL UNIVERSITY**
and return to:

Department of Soil, Crop and Atmospheric Sciences - Extension
144 Emerson Hall
Cornell University
Ithaca, NY 14853

Cornell Cooperative Extension

Department of Soil, Crop and Atmospheric Sciences
144 Emerson Hall
Cornell University
Ithaca, NY 14853

Helping You Put Knowledge to Work