WESTERN NORTHERN NEW YORK AGRICULTURAL DEVELOPMENT PROGRAM

LEWIS, JEFFERSON AND ST. LAWRENCE COUNTIES

Final Report of Work Completed April 1, 2002 to December 31, 2003

March 15, 2004

New York State College of Agriculture and Life Sciences
A Statutory College of the State University
Cornell University
Ithaca, New York

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The Northern NY Agricultural Development Program
Its Purpose and Background

In NYS, no area is more economically dependent on agriculture and more challenged by environmental limitations to agricultural productivity than the North Country. In 2002-2003, the Western Northern New York Agricultural Development Program (NNYADP) continued to support agricultural research, demonstrations, and outreach in Jefferson, Lewis and St. Lawrence counties to help overcome such limitations to agricultural productivity and profitability. This report documents findings, results and impacts of research and demonstration project that were conducted in the time period covering April 1, 2003-December 31, 2003.

The program is supported by the NYS Senate though the long term sponsorship of Senator James W. Wright and more recently by Senator Elizabeth O'C. Little and Assemblyman Darrel Aubertine. The program also receives support (funds, land, staff and expertise) from Cornell University's College of Agriculture and Life Sciences, the Cornell University Agricultural Experiment Station, Cornell Cooperative Extension at Cornell and in each of the six NNY counties, the W.H. Miner Institute, the U.S. Department of Agriculture, cooperating farmers and agri-service businesses.

For more information on the Northern NY Agricultural Development Program contact Jon Greenwood, Co-chair for WNNY, @ 315-386-3231, Joe Giroux @ 518-563-7523 or girofarm@together.net or Dave Smith, Coordinator for Cornell University @ 607-255-7286 or rds4@cornell.edu. Additional copies of this report are available from Dave Smith.

Western NNY Agricultural Development Committee— 2003

The committee consists of farmers from the three counties. It determines the research priorities, issues calls for proposals, reviews project proposals and selects projects for funding. In addition it reviews the progress of each of the projects at its research review meeting which is held each January. The committee members for 2002-2003 are listed below.

St. Lawrence County

- Jon Greenwood, **Chair** and Dairy Farmer
- David Fisher, Dairy Farmer
- Bob Andrews, Dairy Farmer
- Sandy von Allmen, Livestock Farmer

Jefferson County

- Ron Robbins, Dairy Farmer/Corn Grower
- Don Holman, Livestock Producer
- Cheryl Horton, Dairy Farmer/Town Supervisor

Lewis County

- Arleigh Rice, Town Board/Dairy Farmer (retired)
- Bernard Gohlert, Dairy Farmer
- Steve Ledoux, Livestock Producer

Biocontrol of Alfalfa Snout Beetle using Insecticidal Fungi

C.M Jones, J.E. Thies, Crop and Soil Sciences, Cornell University

The primary aim of our research is to develop an effective biological method for the control of Alfalfa Snout Beetle (ASB) for use on farms plagued by this insect in Northern New York State. In 2003, we determined the probable concentration of fungal propagules necessary for field application; established field plots on the John Peck Farm in Great Bend, Franklin County, NY to test field efficacy; developed molecular tools for tracking introduced fungi; and tested the potential for different rotation crop species to support persistence of the fungi in their rhizosphere.

The concentration of insecticidal fungi necessary for ASB control.

Aim: Laboratory experiments were conducted to confirm the effectiveness of the insecticidal fungi selected in previous trials on ASB and to determine the application rate needed for field application**.**

Procedure: Four concentrations of fungal conidia were applied directly to beetles collected from an ASB infested site on the Peck Farm in Great Bend, NY. The inoculated ASB were placed in Petri dishes, fed alfalfa and observed for three weeks. Death rates in comparison to control beetles with no fungi applied were determined.

Results: Three of the fungal isolates tested (*M. anisopliae* 3608, *M. anisopliae* 820, and *B. bassiana* 3065) produced 100% ASB mortality after 10-12 days at the highest concentration used and 80-90% mortality after 21 days at the lowest concentration used. Two isolates (*M. anisopliae* 820 and *B. bassiana* 3065) were subsequently used in the field trial described below.

Significance: The rate of approximately 5×10^5 conidia per gram of soil was deemed adequate and used in subsequent field trials. Field mortality of ASB will be determined in the 2004 field season. Mortality rates combined with plant protection will determine if these fungi are as effective in the field as they proved to be in the laboratory.

Field application of selected isolates of insecticidal fungi.

Aim: Field plots were established at the John Peck farm at Great Bend in Jefferson County to test the effectiveness of selected fungal isolates to control ASB on farm.

Procedure: Field plots were established in an infested area on the Peck Farm. Replicated plots were inoculated in early June, 2003, with two different species of insecticidal fungi; B. bassiana (3065) and M. anisopliae (820). The fungi were grown in the laboratory in large quantities, then dried and processed into an inoculum consisting of small pellets. A measured amount of inoculum was then rototilled into the plots. Soil samples were taken immediately before inoculation and at 2, 4, 6, and 12 weeks after inoculation. The samples analyzed to determine the number of total fungi and insecticidal fungi, as well as the total number of culturable bacteria. These counts enabled us to determine how well the introduced fungi survived in the

field after inoculation, and if the introduction of the fungi caused any changes in the fungal or bacterial populations in the soil.
Results: The inoculated plots had a much higher number of insecticidal fungi three months after inoculation than in the non-inoculated control plots. These plots will be monitored in 2004 to determine how well the treatment fungi have established themselves in the soil. The counts of other fungal species did not differ between treated and untreated plots. Interestingly, we did find that the number of culturable bacteria in the treated plots was significantly lower than in the control plots, which was not expected.

Significance: Significant numbers of inoculant fungi surviving in soil 3 months after application is extremely promising for continued beetle infection across the season, which should lead to reduced numbers of beetle larvae and reduced adult emergence in subsequent years. The effectiveness of the fungi at controlling ASB larvae and reducing adult emergence will be assessed in 2004 and 2005. Spray formulations of the fungal conidia may be a viable alternative to controlling ASB in the year of application and will be examined in future field trials.

Tracking of introduced insecticidal fungi:

Aim: Once a non-native microbial species or strain has been introduced into a soil eco-system, it is important to determine not only how well the organism persists in the environment, but also if this introduced organism has an effect, positive or negative, on the population of native microorganisms found in the soil. Therefore, we are using several different molecular biology-based techniques to gain a more thorough understanding of the potential soil microbial interactions that may occur.

Procedure: DNA from soil samples was extracted and analyzed to determine the microbial composition (i.e. what are the predominant fungal and bacterial groups) of the soil samples taken at the time points described above. This procedure allows us to see what species are present or absent in our soil samples, thus determining what effects the inoculum may have on the native microbial population.

Results: These assays are currently in progress, and results are expected in late February of 2004.

Significance: Very little research has been conducted on how insecticidal fungi may interact with other species or fungi or bacteria in the soil. Hence, we believe that it is crucial to determine if any interactions exist, and then subsequently to determine the nature of any such interactions. Because we found differences in the number of culturable bacteria in treated vs. non-treated soils, the use of these molecular techniques will allows us to more accurately assess what organisms are being affected in the treated soils, and finally whether this interaction is an aid or detriment to farmers.

Integrated pest management and the ecology of insecticidal fungi:

Aim: Integrated pest management includes the use of crop rotation and it has been found that different crop species differ in their effects on soil microbes. A glasshouse trial was undertaken to examine how the soil environment close to the root of plant species from different families may affect the growth and persistence of insecticidal fungi in soil.

Procedure: Three different crops: alfalfa, oat, and mustard, from three different plant families, were planted in both soil and sterile sand in pots. The pots were then inoculated with the fungi selected in the experiment described above and then kept in the glasshouse for a month before the counts of total and insecticidal fungi were determined.

Results: Of the 3 plant species tested, oats supported a higher number of total fungi and insecticidal fungi than either alfalfa or mustard. These results, however, are still preliminary and it will be necessary to repeat this experiment to confirm these results and provide a better understanding of which aspects of the soil environment (root secretions, pH, moisture, etc.) affect the survival and growth of the insecticidal fungi.

Significance: Crop rotation may help to reduce ASB infestations and also provide a suitable environment for insecticidal fungi to persist in sufficient number to provide beetle control in subsequent years – particularly once alfalfa is replanted at a site. Producing and applying fungal inoculum costs time and money, making persistence of the fungi in soil an important aspect of inoculum quality. ASB is a growing problem in NNY – one that apparently cannot be controlled by means of pesticide applications. It is clear that an integrated approach will be necessary to gain control of this pervasive pest. Future experiments will focus on other aspects of IPM in concert with biocontrol approaches.

Publications:

One article for publication in local newspapers was prepared and submitted to the NNY Advisory Committee, while two articles will be submitted in January and February, 2004. An illustrated concept paper (fact sheet) for distribution to CCE and NNY farmers was published in February 2004.

Presentations:

Janice Thies presented a progress report and future research plans to members of the Northern New York Advisory Committee and to leading members of the NY State Legislature on Jan. 31, 2003.

Alfalfa Snout Beetle: Entomology Research Progress in 2003

E. J. Shields, Entomology, Cornell University

Introduction:

In 2003 research continue on trying to understand the biological forces holding snout beetle at sub-economic levels throughout significant areas of Hungary. Our intent is to establish similar biological control agents within the snout beetle infested areas of NNY. The impact of an effective biological control system would be enhanced with the identification and incorporation of alfalfa genetic traits for tolerance and/or resistance, which could be incorporated into commercial alfalfa varieties.

Recent Research Progress

Biological control:

Nematodes:

Snout beetle pathogen surveys in Hungary in 2001-02, suggested that the biological control agent missing in the US, was the insect attacking nematode species, *Stinernema feltiae.* Under a USDA permit, we imported this nematode into the US and we are culturing this nematode in the laboratory. Under various situations in Hungary, two other species of nematodes were also present. These species, *Stinernema carpocapse* and *Heterorhabiditis bacteriophora* are present in some areas of the NNY snout beetle infested area and may be providing some control of snout beetle, though not sufficient for economic impact.

Previous research has documented the lowest temperatures where each species is capable of locating and killing the adult beetle. The focus of the previous research was to document which nematode species was most likely to attack and kill the adult beetles during spring emergence and late spring-early summer egg laying.

During the past year, we have been conducting laboratory experiments focused on understanding the pathogenic impact of these three nematode species on snout beetle adults and larvae. The parameters studied include the speed each nematode species located the host, successfully penetrated the host and the speed of each nematode killed the host.

Investigations are also underway to better understand the vertical profile of each of the nematode species within soil, the impact of that vertical profile on interspecies competition and the degree which the vertical profile for each species changes when two different species are in competition for hosts within the soil profile. This information is important in order to understand the competition between these three species in the field and to assist with decisions on field releases. The key question for establishment of biological control organisms is whether to release and establish a single species, two species or all three species simultaneously. Interspecies competition can reduce the effectiveness of released species and may be the cause of ineffective biological control.

These laboratory studies have been conducted to lay the groundwork for a series of two-year field studies to be established in NNY in the spring-summer of 2004. The field studies will

be focused on the effectiveness of the three nematode species against snout beetle when they are introduced into field plots in various combinations.

Microsporidia:

A microsporidan disease of snout beetle has been reported in the Czech Republic where it suppresses the snout beetle populations by interfering with egg production and egg viability. Surveys in NNY during 2002 for the microsporida located the organism at low levels in Oswego Co. and Franklin Co. Surveys conducted in 2003 failed to detect the organism in any of the beetles collected from Franklin Co. Snout beetle populations were extremely low in the Oswego Co. area, so no beetles could be collected there to confirm earlier findings.

We are interested in this organism because its presence reduces the number of eggs the infected ASB females can lay and reduces the percentage of eggs laid which are capable of hatching.

Insect Rearing in the Laboratory.

A critical cog in any insect research is the ability to either rear the insect in the laboratory on artificial diet or on natural food in the greenhouse. Without the ability to produce large numbers of each life stage of the insect, research progress is severely inhibited. With snout beetle requiring 2 years to complete a lifecycle, laboratory rearing of the insect has been a difficult hurtle. During the early-mid 90's, storage techniques were developed to allow the mass collection of newly emerged adults in the spring and hold these insects in cold storage for 6-9 months. This allows researchers to bring adults out of cold storage, feed them and have the beetles lay viable eggs. During 2003, greenhouse trials were conducted to test the potential of producing large number of snout beetle larvae of similar age on potted alfalfa plants. Wastebaskets filled with soil and planted to alfalfa were inoculated with a single dose of 800 eggs suspended in a dilute agar-water solution. A subset of containers was broken down and the snout beetles were collected and sized 26 d, 39 d, 52 d, 68 d, and 89 d after inoculation. Results from the trial were very positive and the trial will be repeated in 2004 to refine the "harvest" intervals for each larval stage of snout beetle.

Greenhouse Screening for the Identification of Genetic Resistance in Alfalfa.

With the development of the first reliable, repeatable greenhouse screening method for alfalfa snout beetle in 2002, 10,000 plants were evaluated in the greenhouse during 2003 resistance to snout beetle larval feeding. The evaluations were conducted in two different trials; the first trial initiated in May and the second trial initiated in September. In these trials, 6,000 wild type alfalfa plants and 4,000 alfalfa plants from various Hungarian alfalfa varieties were evaluated for potential resistance. From these trials, a number of plants were selected for further testing and possible cross breeding. With the increased support from the NNY project for this research, we plan to significantly increase the number of plants evaluated in 2004.

NEW YORK CORN SILAGE HYBRID TESTS

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Debbie Cherney, Animal Science, Cornell University
Margaret Smith, Plant Breeding and Biometry, Cornell University

Corn silage hybrids were tested at four locations in New York in 2003. We evaluated 80 to 100 day hybrids in RM at Chazy (W.H. Miner Institute, Clinton Co.) and Madrid (Dave Fisher Farm, St. Lawrence Co.), experimental sites that average about 2000 GDD from May through September. We evaluated 95 to 115-day hybrids in relative maturity (RM) at Aurora (Cayuga Co.) and Groveland Station (Livingston Co.), experimental sites that average about 2400 growing degree days (GDD, 86-50^{o} system) from May through September. All seed companies were invited to enter their hybrids in these tests at a fee.

Materials and Methods

We planted all hybrids at about 38000 plants/acre to achieve harvest populations of about 34000 plants/acre. The Madrid site was planted on 7 May and the Chazy site was planted on 20 May. All hybrids were grouped within a 5-day RM (i.e. 95-99-day hybrids) The Aurora site was planted on 25 April and the Groveland Station site was planted on 5 May. Each variety was planted in a randomized complete block design with four replications. Each individual hybrid plot consisted of two 18-foot rows spaced 30 inches apart. Each individual plot received about 250 lbs/acre of 10-20-20 at planting. The Madrid and Groveland Station were well-manured dairy sites so received no sidedressed N. The Aurora and Chazy sites received 150 lbs/acre of sidedressed N at the 4 to 6-leaf (V4 to V6) stage. We used preemergence herbicides and hand-weeding to control weeds. Emergence notes and silking dates were taken for all hybrids.

Each hybrid was harvested for silage yield determination when the plants attained 65-70 % moisture. The Madrid site was harvested on 12 and 19 September. The Chazy site was harvested on 15 and 22 September. The Aurora site was harvested on four dates: 29 August, 2 September, 5 September, and 8 September. The Groveland Station site was harvested on 11 and 18 September. Five plants were selected randomly and ground through a shredder at harvest. An approximate 1000 g subsample was taken of the shredded material to estimate moisture content and forage quality of each hybrid. The five-plant subsamples were dried at 140^{o}F in a forced air dryer to constant moisture. Samples were then further ground through a Wiley mill, fitted with a 1-mm screen.

Samples were analyzed by wet chemistry for neutral detergent fiber (NDF), according to procedures by VanSoest et al. (1991), and for total N (x 6.25 = crude protein) using a Leco FP528N analyzer with Dumas combustion (Wiles et al., 1998). Samples were also analyzed for in vitro true digestibility (IVTD), according to stage 1 of the procedure described by Marten and Barnes (1980). Samples were incubated for 48 hours at 39^{o}F in a buffered rumen fluid containing the Kansas State buffer supplemented with urea at 0.5 g/1. Replicates were incubated separately for Aurora and Groveland Station (4 incubations runs), while two replicates were incubated together for Chazy and Madrid (2 incubation runs). Following fermentation, residues were analyzed for NDF to determine 48 hour NDF digestibility. The NDF digestibility was calculated as ([1-NDF residue at 48 hours/initial residue] x 100). Ash content was determined by combusting 1 g of material at 510^{o}C for 4 hours. Starch (0.1 g samples) was analyzed by Dairy One of Ithaca using wet chemistry for three of the sites and Near Infrared Reflectance

Spectrophotometer (NIRS) analysis for Chazy samples. Samples were pre-extracted for sugars, and then a glucoamylase enzyme was used to hydrolyze starch to dextrose. Samples were injected into a YSI 2700 SELECT Biochemistry Analyzer, where dextrose is oxidized to hydrogen peroxide and lactone. Hydrogen peroxide is detected by an electrode, and current at the electrode is directly proportional to hydrogen peroxide concentration, which is directly related to dextrose and to starch concentration.

We then calculated milk per ton and milk yield per acre for each hybrid using Milk2000 (Version 7.54), a spreadsheet from the University of Wisconsin. Milk2000 follows 2001 NRC guidelines. The cow's maintenance energy requirement is subtracted from energy intake to provide an estimate of the energy available from corn silage to conversion to milk. A 48 hour NDF digestibility reflects maintenance requirement better than a 30-hour NDF digestibility, so the program was modified to require input of 48-hour NDF digestibility, as described in NRC 2001.

Results and Discussion

Chazy and Madrid Sites.

Both the Chazy and Madrid sites had above-average temperatures in 2003 as indicated by above average GDD from 1 May through September at Chazy (2450) and Madrid (2329, Table 1). Both sites were very wet in May, which resulted in a delayed planting date at Chazy. Both sites had ample precipitation during the remainder of the growing season and mean silage yields were above-average at Chazy (23.3 tons/acre) and Madrid (21.0 tons/acre). There were no interactions for silage yield and quality characteristics, except for starch.

The hybrids 4240 (Chemgro), HLS 012 (Hyland), and HL S011 had the highest calculated milk/yields in the 77-85-day RM at both sites (Tables 4 and 5). In the 86-90-day RM, all five hybrids had the same calculated milk yields at both sites. Likewise, in the 91-95-d RM, most hybrids had the same calculated milk yields at both sites. In the 96-100-day RM, 38T27 (Pioneer), NX3360 (N33-H6, Northrup King), 38A24 (Pioneer), TA 4010F (T.A. Seeds), and 36N70 (Pioneer) had the highest calculated milk yields at both sites. 38T27 also had above average milk/ton in the 96-100-day RM at both sites.

Aurora and Groveland Sites.

The 2003 growing season had mostly normal temperatures with average GDD from 1 May through September at Aurora (2441) and Groveland Station (2385, Table 1). Both sites received ample precipitation through July, but the Aurora site received only 1.65 in. in August. Consequently, some 111-115-day hybrids, which were in the silking stage about 1 August, yielded less than some of the 95-100-day hybrids, which were in the silking stage about 22 July. The Groveland station site, which was mostly stress-free, had a mean silage yield (65% moisture) of 26.7 tons/acre compared to 24.4 tons/acre at Aurora. Hybrid x site interactions were observed for silage yield and most quality characteristics.

Most hybrids in the 95-100-day RM had similar calculated milk yields at Aurora and Groveland station (Tables 2 and 3). The hybrid 5424 (Chemgro) had exceptional silage yields, and 477SL (Doebler's) and HL S047 had above-average milk/ton in the 95-100 day RM at both sites. Eleven of the 15 hybrids in the 101-105-d RM had similar calculated milk yields at both sites, although the top 11 hybrids were not consistent across sites. The hybrid HLS 058 (Hyland)

had much above-average silage yields, and DKC51-43 (DeKalb) and 36N71 (Pioneer) had above-average milk/ton in the 101-105-day RM at both sites. The hybrid, H-8562 (Golden Harvest) had exceptionally high calculated milk yields in the 106-110-day RM at both sites because of exceptional silage yields and above-average milk/ton. The hybrid 34B23 (Pioneer) had high milk/ton, which contributed to above-average calculated milk yields in the 106-110-day RM at both sites. Most of the 111-115-day RM hybrids had exceptional silage yields but below-average milk/ton at Groveland Station. In contrast, most of the 111-115-day RM hybrids had below-average silage yields but above-average milk/ton at Aurora. The 111-115-day RM hybrids contributed most to the interaction of silage yield and quality characteristics at the two sites.

Conclusion

The 2003 growing season in New York was an excellent growing season, despite the somewhat cold and excessively wet conditions in May. Many regions of the state, including the Groveland Station, Madrid, and Chazy sites, received ample GDD and precipitation throughout the growing season, which resulted in above-average yields. Other regions of the state, including the Aurora site, received less than 2.0 in. of precipitation in August, which reduced yields somewhat. The results from this study reflect well the yield and quality of corn silage that was planted in April and May in New York in 2003.Unfortunately, a significant amount of corn silage acreage was planted in June.

The results of this study have been incorporated into the recommended corn silage hybrid tables in our annual Cornell Guide for Integrated Field Crop Management. We only list hybrids that have calculated milk yields that are above the average for their hybrid RM range (i.e. 101-105-day RM). We urge all seed companies to participate in our corn silage hybrid testing program so we can provide the best information to our New York dairy producers.

Table 1. NYS Corn Silage Trials - Weather Data, 2003 Growing Season

	Precipitation				GDD (86-50 F)			
Month	Aurora	Groveland Station*	Chazy**	Madrid***	Aurora	Groveland Station	Chazy	Madrid
April	1.87	1.55	2.47	1.42	101	150	122	96
May	4.34	3.55	4.46	5.38	251	277	299	248
June	3.14	2.27	3.42	2.56	458	440	441	436
July	5.68	6.99	2.59	3.62	642	614	611	617
August	1.65	3.44	4.64	4.94	678	663	673	626
Sept.	3.95	4.13	3.45	3.23	412	391	426	402

* Weather data from Dansville.
** July precipitation and June & July GDD from Plattsburgh.
*** Weather data from Canton, May precipitation from Gouverneur.

Corn Grain Hybrid Testing Program for Western Northern NY

Margaret Smith, Department of Plant Breeding and Biometry, Cornell University

Project Goal

Our goal was to evaluate the performance of early maturing corn hybrids harvested as grain for Jefferson, Lewis, and St. Lawrence Counties, to provide decision-making information for Western NNY farmers and for seed companies serving Western NNY.

Background

Corn is the primary row crop grown in Jefferson, Lewis, and St. Lawrence counties, planted on about 82,500 acres and providing essential feed for the dairy industry. Roughly 18,000 acres are harvested as grain. If an ethanol production facility is established in NY, as is currently planned, the increased demand for corn grain as feedstock for that facility would provide new grain marketing opportunities for Western NNY farmers, and increase interest in corn production for grain in this region. Furthermore, grain yield is an important contributor to silage yield, so grain yield evaluation provides an indication of which hybrids would be good candidates for silage use in a region. It is important to evaluate silage quality on these hybrids as well, but seed companies will often enter their hybrids into grain evaluation trials as a first step in determining what is worth marketing in a region for either grain or silage. Thus grain yield evaluations of commercial hybrids provide essential comparative information to farmers interested in grain production in Western NNY, and to seed companies who make marketing decisions based initially on performance in grain yield trials.

Activities

During 2003, we summarized the results of early season corn grain testing done in 2002 and tested a new set of early maturing hybrids in Western NNY. Seed companies marketing corn in New York were contacted to request entry of their early maturing commercial hybrids into these evaluation tests. We evaluated a total of 48 hybrids in 2003 using three replications at each location. Hybrid evaluations were conducted with farmer-cooperators in Jefferson County (Ron Robbins, Sackets Harbor, NY) and St. Lawrence County (Jon Greenwood, Madrid, NY). The data collected from each plot of every hybrid included grain yield, maturity, stalk and root quality, and disease and insect resistance. Results of 2002 testing were published in the 2002 Hybrid Corn Grain Performance Trials Report (Plant Breeding Mimeo 2003-1) and were incorporated into the tables of recommended hybrids in the 2004 Cornell Guide for Integrated Field Crop Management (Cornell University, 2003). These results are available for farmer and seed company use in selecting hybrids best adapted to the challenging soils and climates of Western NNY. Results from 2003 trials, which were harvested during October and November, will be made available through these same publications in 2004.

Results

The 2003 growing season was unusually wet with rainfall in Western NNY about 20% higher for the growing season than the long-term average. Most of the excess rain came in May and October, with a few areas getting unusually heavy rains in August as well. Total growing degree days for the season were about average, but May and October were cooler than average and the major growth period for corn (July through September) was warmer than average. The lack of drought stress during flowering combined with warmer than average temperatures made for some excellent corn yields in the region. Results from our hybrid evaluations are shown in Tables 1 and 2 below.

Table 1. 2003 Early Maturity Corn Hybrid Trial (1400-1900 growing degree days, 70-90 days relative maturity), Madrid, St. Lawrence County, NY.

Brand	Hybrid	Yield, bu/A	Grain Mois-ture, %	Yield: Moisture Ratio	Stand-ability Rating*	Stalk Lodging, %	Test Weight, lb/bu
Hyland	HL2232	95	30.1	3.2	7.0	13	51
Dekalb	DKC35-50(RR)	134	30.5	4.4	7.3	11	51
T.A. Seeds	TA2210	171	30.5	5.6	7.3	13	51
Doebler's	241XRR	137	30.6	4.5	8.0	6	52
Doebler's	236X	144	30.8	4.7	8.3	6	52
Chemgro	4240	163	30.9	5.3	7.7	10	52
Dekalb	DKC35-51(RR/YGCB)	176	31.1	5.7	8.0	1	51
Garst	8905RR	138	31.8	4.3	8.7	3	51
Golden Harvest	H6775Bt	180	31.8	5.7	8.3	2	54
Golden Harvest	EX26495Bt	192	31.9	6.0	8.7	1	53
Doebler's	353XYG	186	32.2	5.8	9.0	0	54
Hytest	HT7215BT/RR	214	32.6	6.6	9.0	0	54
Golden Harvest	EX26195RR	152	32.6	4.7	8.0	9	53
Hytest	HT7220BT	220	32.7	6.7	9.0	0	53
Golden Harvest	EX26621Bt	193	32.7	5.9	8.7	0	57
NK	N22-T8(NX2240)	200	32.8	6.1	8.7	1	54
Doebler's	296XP	177	33.0	5.4	8.0	6	54
FS Seeds	AG4312	174	33.1	5.3	8.0	12	53
	Mean	169	31.8	5.3	8.2	5	53
	CV	11	2.4		5.9		3
	LSD	27	1.2		0.8		2

* Standability rating (1-9 scale, 1=poor, 9=excellent).

Table 2. 2003 Medium-early Maturity Corn Hybrid Trial (1900-2400 growing degree days, 85-95 days relative maturity), Sackets Harbor, Jefferson County, NY.

Brand	Hybrid	Yield, bu/A	Grain Mois-ture, %	Yield: Moisture Ratio	Stalk Lodging, %	Test Weight, lb/bu
NK	N45-A6	164	25.7	6.4	1	49
NK	N35-B8(NX3511)	187	25.8	7.2	5	48
Doebler's	296XP	123	26.0	4.7	9	48
Garst	8715	157	27.1	5.8	9	49
FS Seeds	AG4717	164	27.4	6.0	8	46
NK	N29-A2(NX3151)	175	27.6	6.3	1	47
Dekalb	DKC40-57(YGCB)	106	28.0	3.8	1	49
Chemgro	5560RR	172	28.3	6.1	7	51
NK	N45-T5	166	28.4	5.8	6	48
Dekalb	DKC42-95(RR/YGCB)	146	28.7	5.1	2	44
Garst	8945	124	28.7	4.3	12	50
Hyland	HL2507	151	29.0	5.2	9	49
Golden Harvest	H7298RR	171	29.1	5.9	13	47
Golden Harvest	H7287	156	29.2	5.3	14	47
Hyland	HLB292	163	29.3	5.6	0	54
Garst	8888	114	29.3	3.9	16	51
Doebler's	469XP	146	29.4	5.0	8	48
Garst	8865	129	29.5	4.4	7	45
Dekalb	DKC46-28(RR)	122	29.6	4.1	10	44
NK	N3030BT	159	29.7	5.4	2	45
Dekalb	DKC47-10(RR/YGCB)	137	29.8	4.6	2	49
Dekalb	DKC39-48(RR/YGCB)	122	29.9	4.1	3	47
T.A. Seeds	EX10098	151	30.0	5.0	0	47
Hytest	HT7351RR	117	30.6	3.8	9	47
Dekalb	DKC39-45	75	31.2	2.4	5	45
Doebler's	353XYG	127	31.9	4.0	3	50
Hytest	HT7344BT	111	32.2	3.4	0	44
Hyland	HL2368	94	34.4	2.7	11	45
	Mean	140	29.1	4.9	6	48
	CV	11	6.7			6
	LSD	24	3.2			4

The quality of our testing data this year was excellent, as reflected in the low coefficients of variation (CVs) for yield in the trials (11% at both Madrid and Sackets Harbor). These low CVs indicate that the values in these tables are quite reliable and not overly influenced by random

field-level variation. Results provide information on a broad array of commercially available hybrids, allowing farmers and seed companies to compare productivity and adaptation of hybrids from various seed companies. In addition, this year one seed company entered hybrids that include pairs of hybrids with and without the Bt gene for European corn borer resistance [e.g., Dekalb DKC35-50(RR) vs. Dekalb DKC35-51(RRYGCB)]. This will provide farmers with some direct comparisons of the yield and standability benefits that come from the Bt gene for European corn borer resistance in Western NNY locations, and help determine whether the extra cost of these Bt hybrids is worth it. This is the type of information that helps both seed companies and farmers make decisions about hybrids for Western NNY.

In future years, we will plan to continue testing hybrids in the NNY region to ensure that farmers and seed companies have a solid basis for their choices of corn grain hybrids for this important region of the state.

Is Double Cropping Winter Triticale and BMR Sorghum Sudangrass an Option for North Country Dairy Producers?

Mike Hunter, Cornell Cooperative Extension Jefferson County

This project studied the feasibility and practicality of double cropping winter triticale and BMR sorghum sudangrass on dairy farms in Northern New York. With proper fertilization, winter triticale can potentially produce a forage with protein and digestibility that equals or exceeds corn silage in milk/ton while producing its growth in the off cycle of normal cropping practices. The goal was to determine the potential of forage triticale sown after the harvest of an annual crop such as soybeans, corn silage or BMR sorghum sudangrass and harvested before a planting of BMR sorghum-sudangrass in early June.

The site selected was a field that is a Kingsbury Silt Clay soil located on a farm on NYS Route 26 just outside of the hamlet of Plessis. The heavy clay soil site was chosen to determine if this double crop system is feasible on the somewhat poorly drained soils that are predominant in Northern Jefferson County.

A one acre field plot was subsoiled, moldboard plowed, disked on September 18, 2002. Two hundred fifty pounds of 10-20-20 starter fertilizer was surface broadcast and incorporated prior to planting. The field plot was split planted in order to evaluate the winter hardiness and production of two different winter triticale varieties (Presto and Trical 336.) The winter triticale was seeded at a rate of 100 lbs/acre on September 19, 2002.

In late March 2003, nitrogen was applied at 5 different rates: 0, 50, 100, 150 and 200 lbs actual N per acre. In early April, after the frost was out of the ground, a major snowfall occurred. Shortly after the snow, there was another thawing period followed by a hard freeze. Significant ice sheeting was evident on the triticale plots; this ultimately caused severe winterkill on both of these two triticale varieties.

In May of 2003, there was such severe crop loss that no forage samples were collected from these plots. Therefore, we were not successful in completing this project. There was such heavy rainfall in May 2003 this plot was left and what little bit of triticale survived was mowed and baled for straw in early July. It was so late and at this time of year dry we did not attempt to no-till BMR Sorghum Sudangrass into this plot. It is discouraging that this happened, however, this is the reason why it is so valuable to try some of these new cropping systems out in a small scale research and demonstration setting.

As a result of this crop failure, we decided to plant Trical 336 winter triticale in the same field to evaluate its survival in another growing season and also its potential production as a forage crop in these heavy clay soils.

Late Planted Corn vs BMR Sorghum Sudangrass

Mike Hunter, Cornell Cooperative Extension Jefferson County
Peter Barney, Cornell Cooperative Extension St. Lawrence County

We are always looking for a forage crop that we can grow that gives us tonnage and quality when grown on NNY soils and under North Country climatic conditions. On many farms corn has supplied the yields and returns that farmers are looking for. However, in many parts of the North County field, soil and climatic conditions do not allow a good economic return from corn. This is particularly true where wet, cold soil often delay planting until after June 1 or soils that just do not have the ability to produce enough corn silage to break even. We believe that BMR S/S has the traits we are looking for to replace corn when corn is not feasible to grow or will not return a good yield due to late planting. This study is designed to compare BMR S/S and corn for silage when the crops are planted different planting dates.

In 1999 we started to look at BMR S/S as an optional crop. A variety trial was set up on a farm in St. Lawrence County. We studied four varieties which were only harvested once due to a very dry season which limited regret for a second cut. The four varieties averaged 1.52 ton of dry matter per acre or 4.36 ton per acre of 65% moisture forage. The forage quality was excellent. The crude protein averaged 18.25% and the NEL averaged 0.605. This was a very good start with experience with this crop. More work followed the next year.

In 2000 five different varieties were studied. We also compared the use of manure plus nitrogen fertilizer with a single application of manure. The average for the five varieties with manure and fertilizer was 3.32 tons of dry matter per acre or 11.16 tons per acre at 65% moisture. The average with manure only was 2.57 tons of dry matter per acre or 7.34 tons@ 65% moisture. Crude protein averaged 14.03 for two cuts with manure & fertilizer and 13.49 on the manure only plots. From this work we learned that fertility rates for nitrogen needed to be much higher and forage analysis needs to be done by in-vitro analysis to give an accurate reading on the energy.

The years of 2002 and 2003 work was done on seeding rates and cutting heights to determine the proper height for optimal forage quality. We studied 5 different seeding rates which were replicated 4 times. The study led to a recommendation of 65-70 lb. per acre seeding rate and a cutting height of 38-40” for optimal protein content.

In 2003, we proposed to compare planting corn after June 1 with planting BMR S/S to determine after what date it was economically more favorable to plant BMR S/S than corn. Above normal rainfall prevented field work in the experimental plots until the end of June. Thus, we missed the needed early June plantings which were required for comparison to the later plantings. The project for 2003 was cancelled and rescheduled for scheduled for 2004.

Corn Cutting Height Demonstration Project

Mike Hunter, Cornell Cooperative Extension Jefferson County

Producing high quality corn silage can lower purchased feed cost, improve animal performance and increase milk production. Each year dairy producers strive to harvest optimal yields of the highest quality forage possible.

Corn growers should evaluate the effect of raising the corn cutting height of their corn silage. Increasing the cutting height of corn silage decreases overall yield. However, increased cutting height can improve the quality of the corn silage because the lower portion of the corn stalk is high in fiber and lower in digestible energy. The objective of this demonstration was to compare silage quality and yields when harvesting is at 6 inch, 12 inch or 18 inch stubble height.

This demonstration project included 10 different corn hybrids, including a brown midrib corn hybrid. Dry matter percentages and forage yields were recorded for each hybrid harvested at the 3 different cutting heights.

A forage samples were collected from each hybrid and at each cutting height. The samples were analyzed by the Dairy One Forage Lab in Ithaca, N.Y, using wet chemistry analysis methods. Crude protein, ash, fat, starch, NDF, IVTD, dNDF were measured. The forage test results were entered into the Wisconsin MILK 2000 program which calculated potential Milk Per Ton and Milk Per Acre from each hybrid and each cutting height.

Participating Farms and Corn Hybrid Varieties
Mike Burger- Adams, NY (Jefferson Co.)- NK3030BT
Bill Eastman- Ellisburg, NY (Jefferson Co.)- Garst 8766
Lynn Murray- Copenhagen, NY (Jefferson Co.)- AG4597
Larry Woodruff Jr.- Watertown, NY (Jefferson Co.)- TMF94
Dan O'Brien- Lowville, NY (Lewis Co.)- EX26042, E301, 317SL
Steve & Dale Farney- Lowville, NY (Lewis Co.)- 38K06
Moses Beiler- Glenfield, NY (Lewis Co.)- DK37-81
Lauren Zehr- Lowville, NY (Lewis Co.)- F407

Increasing corn cutting height from 6 inches to 18 inches reduced yields by 14.3%. As cutting height increased from 6 inches to 18 inches, no significant change in dNDF and IVTD were observed. However increasing cutting heights from 6 to 18inches improves silage quality as follows:

- NEL (mcal/lb) increased by 1.73%
- Crude Protein increased 2.78%
- Starch (% of DM) increased 4.31%
- % Dry Matter increased 2.04%
- Milk per Ton increased 4.03%
- Milk per Acre increased 4.80%
- NDF (% of DM) decreased 1%
- ADF (% of DM) decreased 7.96%

As a result of this project we have concluded that corn silage quality can be improved by raising the corn cutting height from 6" to 18". However, in many cases producers can't afford to take a 14.3% reduction in overall yield. So, decisions on cutting height must consider both quality and yield. Corn cutting height is a decision that can be made just prior to harvesting the corn in the fall. If there are currently adequate forage inventories on the farm or if current yields appear to be higher than normal a producer may opt to raise the cutting height and sacrifice overall dry matter tons to improve the quality of the corn silage. Another management option that has been discussed with at least one large diary producer as a result of this project is to harvest some of the corn at a higher cutting height, segregate that feed from the bunk silo (maybe in an ag bag) and use this higher quality corn silage for the transition cow group. Overall total percent dry matter increased as the cutting height was raised. If a corn grower were harvesting a field of corn that was a little too wet to harvest they could effectively increase the dry matter by simply raising the cutting height of the corn.

Grass Variety Study

Peter Barney, Cornell Cooperative Extension St. Lawrence County

BACKGROUND.

Grass production is of growing importance to the agriculture industry in the North Country. Soil types and conditions as well as cool, damp growing conditions favor grass production. Land resources in many areas of the North Country and weather factors do not favor the growing of large acreages of legume forage such as alfalfa. As a result of these factors, on-going research on grass production is important to the entire region.

Information on grass that is constantly requested by our farmers consists of:

- What species is best to grow here in Northern New York and on my farm?
- Which variety, within the species, is best to grow?
- Will this grass species survive the winter?
- When will it head?
- Will it tolerate an aggressive cutting plan?
- Can I pasture this grass?
- What yield can I expect?
- What feed value can I expect?
- What are the economics of grass production for dairy and livestock production?

METHODS.

In the late summer of 2000 an 8 species, 49 variety replicated grass variety trial was established at the CCE St. Lawrence County Learning Farm. The species were reed canarygrass, smooth bromegrass, orchardgrass, timothy, festulolium, perennial ryegrass, tall fescue and meadow fescue. The first data were collected in the summer of 2001. Each replicate was split in half. One half was harvested as a hay crop and the other half was harvested in a manner to mimic an intensive rotational pasture system.

RESULTS.

Heading dates. Heading dates were collected in May and June. Heading of the various species of grass and the varieties within the species varied from May 25 to as late as June 20 providing a wide range to consider for various management systems. Heading is also affected by weather conditions. An important finding was that each year all orchardgrass varieties were headed by June 1. This included the new varieties that were advertised as being later maturing. All perennial ryegrass and festulolium varieties also headed early. Tall fescue, bromegrass, timothy and reed canarygrass were later with canarygrass being the latest to head. This information is used to match up to harvesting systems and planting with other perennial forage crops so that proper harvesting stage of development matches up. Wide ranges of heading dates were recorded and all varieties were tolerant of the grazing-equivalent cutting system.

Yields and forage quality. Yield and quality data were collected in 2002 and 2003.

In 2002 the plots was harvested twice. A third cutting was not taken because of the extremely dry conditions. Yield and quality data was obtained on the first two cuts. Yields ranged from a low of 2 tons of dry matter per acre for a ryegrass variety to 4.73 tons of dry matter per acre for an orchard grass variety. Quality generally was between 15-20% crude protein across both cuts. The yields listed below are for the grass species averaged over two cuts. Timothy yields are lower than expected because of low tolerance to drought. Crude protein was relatively consistent within the cut. The difference between the cuts is due to dry weather on the second cut.

2002 Data

		Ave.Crude Protein	Ave. Crude Protein
Species	Ave. tons D. M. per Acre	First Cut	Second Cut
Canarygrass	3.81	23.8	17.7
Bromegrass	3.61	24.4	20.3
Timothy	2.62	22.3	16.0
Orchardgrass	3.91	22.3	17.0
Festulolium	2.83	21.4	12.9
P. Ryegrass	2.66	22.8	14.4
Tall Fescue	3.45	20.4	17.9
M. Fescue	3.07	22.1	17.5

In the spring of 2003, following a severe winter we observed that both the perennial ryegrass varieties and the festulolium varieties had been winter-killed. This confirmed the lack of winter hardiness in the ryegrass varieties. The timothy varieties were so severely damaged by drought in 2002 that the stands were not harvestable. Yields and quality samples were taken on the remaining varieties for three cuts. In 2003, the yields ranged from a low of 2.13 tons of dry matter per acre for a smooth bromegrass to a high of 4.03 tons of dry matter per acre for a tall fescue variety over three cuts. The crude protein ranged from 13.7 to 23.8 over the three cuts and 26 varieties. The chart below shows the average yields per acre of dry matter along with the average crude protein for each species and each cut.

2003 Data

		Ave C.P.	Ave C.P.	Ave C.P.
Species	Ave tons D.M. per A.	First Cut	Second Cut	Third Cut
Canarygrass	2.93	19.6	23.4	19.4
Bromegrass	2.36	20.0	22.8	17.6
Orchardgrass	3.27	17.1	21.1	16.0
Tall Fescue	3.69	17.8	18.7	15.7
M. Fescue	2.33	17.0	18.7	18.6

These results showed that the new low endophyte tall fescue varieties have very good tolerance to our weather conditions. They yield very well with good quality. We consistently showed that with proper management, cutting and fertilization, we were able to produce quality forage with good yields.

PLANNING FOR SUCCESSFUL STALL BARN MODERNIZATION: RETROFITTED MILKING PARLORS

Frans Vokey, CCE Lewis County and Curt Gooch, PRODAIRY, Cornell University.

Partner Organizations.

Funding:
Northern NY Agriculture Development Program
PRO-Dairy, Cornell University
Cornell Small Farms Program

Guest Instructor:
David Kammel, Extension Ag Engineer, University of Wisconsin

Background Situation.

Throughout the North Country the majority of dairy farms use conventional tie-stall and stanchion barns to house and manage animals in herds averaging about 75 cows. As average herd size continues to grow, more educational and research emphasis is placed on modern design of freestall barns and new milking centers. However, new information on how to modernize and improve conventional barns or low-cost milking parlors is rare. Some farmers in this region have demonstrated that feasible options exist for making use of an existing barn to construct a retrofitted, affordable milking parlor along with a freestall barn to improve worker comfort and safety, increase labor efficiency, and limit their reliance on hired labor. In addition to meeting these goals, the end result has typically been an improvement in the financial position of the farm as a result of higher milk production and better herd health.

The transition from pipeline to parlor involves a major transition for a farm and requires thorough planning and knowledge of the best process by which to make this transition. Education in planning such a transition and demonstration of real-life cases is needed to familiarize local dairy producers with feasible alternatives.

Expected Outcomes.

The seminar and tours will help farmers decide if transitioning to a parlor system is the right choice for their business. If it is, this program will give them ideas to help them envision feasible options as well as knowledge of a step-by-step process for planning and implementing this transition. They will also connect with farmers and Educators that can provide assistance in the future.

Project Activities.

This project consisted of a seminar in Carthage, Jefferson County, on December 12, 2003 where over 60 farmers and several consultants attended. Guest speaker David Kammel (University. of Wisconsin.) has extensive experience working personally with farmers that have transitioned from a conventional dairy barn and pipeline milking, to a parlor/freestall system. He presented examples of how to convert space in a conventional barn to a milking parlor. A local dairy

producer spoke on his experience in making the transition to a parlor. Curt Gooch (PRODAIRY) discussed facilities options that accompany the transition to a parlor (i.e. housing, manure and feeding systems) and Jason Karszes (PRODAIRY) covered the basics of barn design and financial concerns. The seminar was complimented with farm tours at eight locations in Lewis and Jefferson Counties the following week. An average of twenty farmers visited each farm on the tour. Small-group follow-up sessions in Northern NY are being planned for February (tentative date) for producers interested in presenting their business and facilities plans to Extension Educators and State Extension Specialists. During this session, they will receive feedback and assistance in fine-tuning their plans.

Outreach and Media.

Several members of the target audience – farmers interested in modernizing their stall barn operation – were engaged in the planning process of this program and passed the word to others. Others were notified through CCE announcements, other appropriate local and regional media outlets, through sponsoring business partners, and by word of mouth. Representatives of milking equipment companies were notified of the program and send extra flyers to distribute to their customers.

Farmer Impacts.

As a result of this program, Cornell Cooperative Extension has been working with several farmers to develop plans to transition their farm from a conventional milking system to a parlor. One farmer reported that before this program he felt "locked into" his current situation and he never imagined being able to afford to make a change. The seminar, he says, gave him new ideas on how he actually could improve his farm, even in the current economic climate. That producer has recently drawn up plans for a new parlor and sent them to me for review.

Sheep Farm Demonstration Project
St. Lawrence CCE Extension Learning Farm

Betsey Hodge, Cornell Cooperative Extension St. Lawrence County

The Northern New York Agricultural Development Program has supported the sheep farm demonstration project in one form or another for many years.

- **Our first objective is to encourage sheep farming** as a way to utilize farms and land in northern New York.
- **Our second objective is to increase the income of existing sheep farms** through organized marketing and learning to produce the correct product for the market.
- **Our third objective is to share information gained at the farm**.

In 2003 we accomplished these objectives through many methods.

1. Meetings and workshops -

- **Pasture workshop** in February 2003 in cooperation with the NY Pasture Association, ANCA and Cornell Small Farm Program. One of the featured speakers was a sheep farmer from Minnesota, Janet McNally. She keeps her sheep outside year round and talked about many pasture strategies.
- **Sheep & Goat Festival** each year in May. In 2002 we featured workshops on tattooing, foot trimming, shearing, showing, etc. In 2003 we had the usual open-house and then the speaker was Anna Moore from the USDA Scrapie Program. Attendees came from all over the north country.
- **Shearing school** in June. 8 families attended.
- **Grass-fed livestock meeting**, fall 2002. Speakers included Ridge Shinn from the New England Livestock Alliance, Martha Pickard from ANCA and several grass farmers.

2. Economic Development and Marketing

- **Organize and coordinate truckloads of lambs to the New Holland market.** Two truckloads with at least 150 lambs each (15 to 20 producers) were organized in the fall of 2002 and 2003.
- **Support the graded sale at Empire Livestock in Gouverneur**. We advertised and encouraged producers to support the local efforts to provide a graded sale. We market lambs there and report on the results. Information regarding grading is also included in our educational materials.
- **Organize loads of lambs for a cooperative in Vermont** that sells directly to New York City restaurants. Sellling to this coop has doubled the income on lambs sold by many producers. The producers are learning to do the organizing themselves as well what it takes to produce the type of lamb that is required by the restaurants.
- **Lambs were also marketed to First Pool downstate**. They were short of fall and winter lambs and we can usually deliver a load by combining several producers' lambs. Prices are set ahead of time and are usually above auction prices.
- **Organized a wool pool** at the Extension Farm and sale to the Canadian Wool Growers Cooperative. Over 11,000 pounds of wool were shipped in 2003.

- **Value-added products were demonstrated**. Wool was sent to be made into **yarn** and the costs and the volume of finished product were reported. Cull ewes were processed into a lamb jerky type product and sold as **doggie treats**. Both products were marketed at our Harvest Festival with good results. Efforts continue to improve our marketing including trying the internet. The project to make and promote lamb Italian Sausage continues also.
- **Improve the breeding stock in the area,** we bought and used two Dorset rams from Janet McNally of Tamarack farms in Minnesota. Tamarack Farms promoted easy keeping sheep that can stand the cold and do well on a hay/grass diet. These are things that lead to profitability of sheep operations in the North Country. Many people buy their stock locally and the genetics were getting close. The new rams provided new ewe lambs and many rams for North Country flocks.
- **Establishment of 3 new meat goat and 3 commercial sheep farms** in the 6-county NNY region.
- **Grass-fed versus grain-fed lamb for taste and texture**. Producers donated lambs that were raised under the two conditions and were roasted at the farm. Producers taste-tested them and found that a well raised grass-fed lamb was as good as a grain fed lamb. Carcasses were photographed for educational purposes. This comparison was showed that the market discrimination against grass-fed lamb is not always well-founded. We need to change the consumers' image of the North Country's well-raised, grass-fed lamb.

3. Sheep Management and Care

- **Assistance and hands-on experience.** New farmers come to the farm to observe and learn techniques such as tail docking, foot trimming, sheering, pasture management, etc.
- **Demonstration--Growing of oats to feed the sheep.** Conducted in both 2002 and 2003. Costs, savings and challenges of growing oats were studied.
- **Demonstrating good flock management practices** like weighing the lambs weekly and raising lambs for a specific market motivated producers to do the same and increase their bottom line.
- **Fecal sampling for parasite control.** A fecal sampling kit and microscope were purchased and demonstrated during 2002-2003.
- **Livestock handling demonstration.** The efficient handling of the sheep for procedures like vaccination and shearing were demonstrated. The costs associated with obtaining equipment were studied. For instance; freight costs were high so we found someone locally who could make the panels at a more reasonable cost.
- **Training veterinary science students.** Students from SUNY Canton used the sheep at the farm to learn about handling sheep, injection sites, foot trimming, feeding, lambing, etc. It is our hope that some of them will be encouraged to try sheep farming someday.

4. Outreach/Sheep & Goat Newsletter –

The **Sheep and Goat Newsletter** was published monthly in the four-county agricultural new and shared electronically with other counties and producers. The newsletter reports meetings, results of our demonstrations, new information for producers and opportunities for marketing. Other outreach involves telephone conversations, farm visits, email queries, radio shows, as well as educational meetings and workshops.

North Country Dairy Viability Initiative

Madeline Pennington, Cornell Cooperative Extension St. Lawrence County
Judy Tomlinson, Empire State Development for NNY

Background:

The Dairy industry in Northern New York holds a primary position in the overall economy of the region. Realizing that the various players involved in the Dairy Value Chain were making decisions that had a large impact on other parts of the chain, representatives from the Dairy Chain came together to discuss the issues. From this discussion a Steering Committee formed to improve the viability and enhance the profitability of the North Country Dairy Industry.

Accomplishments in 2002:

- Formed a **steering committee of stakeholders** and appointed an executive committee.
- Held **meetings in each of the four counties** involved and gathered information with approximately 350 people in attendance.
- Formed **sub-committees** in nine issue areas.
    - Manufacturing Committee – Supporting a manufacturing study to benchmark dairy manufacturing facilities in the North County and comparing them against others in the country. The study is being undertaken by CITEC and being funded through a joint effort by Empire State Development and New York State Science Technology Academic Research.
    - Education Committee – Formed North Country Dairy Education PWT. This group designs and delivers CCE educational programs on a multi-county/regional basis in support of the NNY dairy value chain in general and to help further the goals of the North Country Dairy Viability Initiative.
- **Presentations** – Several presentations have been made statewide to groups to share information and gather ideas. The NYS Cheesemakers Association has heard two presentations on the efforts and has pledged their support as well as provided funding to the effort. The New York Farm Bureau Board heard a presentation on the Initiative and pledged their support and encouraged the group to continue to move forward with NC efforts.
- **Media** – The Northeast Dairy Business Magazine published an article featuring a cover shot of members of the group in their October 2002 issue. Local radio stations and local TV have done several news updates on the efforts of the group.
- **Reports** – Three reports have been distributed to North Country Dairy Producers, Manufactures, Bankers, and other members of the Dairy Value Chain.
- **Partnerships** – Worked with others to help accomplish the following projects:
    - ***Regional Come Farm With Us –*** Working with Lewis, Oneida, Jefferson and St. Lawrence Counties to attract potential farm and agribusiness to the area.
    - ***Regional Leadership Program*** – Leadership development skills training exposing participants to new ideas, such as effective board management, group dynamics, conflict resolution and effective communication skills. Program offered in St. Lawrence, Franklin, Clinton and Essex counties.

- ***Agricultural Worker Training Pilot Project*** – NYS Department of Labor, Empire State Development Corporation, Jefferson County Agricultural Development Corporation and Jefferson County Cooperative Extension are providing leadership in this pilot project.

Accomplishments in 2003.

- ***"The North Country Dairy Value Chain—Working Together."*** An educational forum/workshop on strengthening the North Country dairy value chain was held on May 16 in Canton, NY. Speakers included Brian Henehan ("Value Chains of the Dairy Industry in Northern New York") and Chuck Nicholson ("Milk Supplies & Cheese Plants",). Henehan and Nicholson are from the Department of Applied Economics and Management at Cornell University. 51 participants.

- Leadership teams have formed in each county. The St. Lawrence County Team meets monthly and other county groups will be reorganizing and becoming more active in 2004.
- The Regional Leadership Team meets via conference call two times per month to support the existing issue committees and county leadership team efforts.
- Judy Tomlinson, Empire State Development assumed the role of coordinator of the North Country Dairy Viability Initiative. Empire State Development has agreed to allow Judy to spend at least one day per week (390 hours/year) focused on the Dairy Viability Initiatives efforts.
- Marketing Issues Sub-Committee:
  - Developed a Dairy Viability Display to be used at activities and events in the Region.
  - Developed a flyer to promote the accomplishments of the North Country Dairy Initiative.
- Financial Sub-Committee:
  - Drafted the North Country Dairy Viability Report of Economic Impact.
- Manufacturing Sub-Committee:
  - ***"New Technologies in the Dairy Industry,"*** an educational forum, was held July 2nd in Canton New York. Guest speaker: Dr. David M. Barbano, Professor, Department of Food Science, Cornell University. 32 participants representing the entire dairy value chain attended.
  - A subgroup was formed to begin to explore if/how new dairy processing technologies might be used to enhance the competitiveness of the NNY diary value chain. This subgroup has 34 active members and growing
  - A benchmarking study of dairy manufacturing facilities in NNY and compare dairy manufacturing in the region with that in the western and Midwestern US continued through a partnership of the North Country Dairy Viability Initiative, CITEC and Empire State Development. Funding for this study is from Empire State Development. Final results are expected in the spring of 2004.

- The Education Sub-Committee (Dairy PWT):
  - Identified areas for regional programs and identified point persons.
  - Eleven different regional programs are planned for December 2003 through April 2004. These include but are not limited to: crop congresses, herd health, animal handling, modernizing tie-stall barns, pesticide applicator training, organic grain production, manure handling, manure odor control, high forage diets, farm transfers to the next generation, training a skilled labor force.

- The St. Lawrence County Dairy Viability Team:
  - Coordinated two articles for the Watertown Daily Times promoting the dairy value chain.
  - Developed a logo for the North Country Dairy Viability Initiative.
  - Developed a list of dairy foods produced in St. Lawrence County.
  - Sponsoring a Dairy Appreciation Night at the Clarkson Univ. hockey game on January 19, 2004.

The Come Farm With Us Program

Michele Ledoux, CCE Lewis County

Farming is a corner stone for the economic vitality of communities across NNY. However, farming and agriculture more broadly economy has not received the attention of state and local economic development agencies. The economic impact of the agricultural sector is greater than may realize. Economic development efforts are most often evaluated by the number of jobs they create, and individual farms don't tend to create large numbers of jobs. However, the total number farm workers (both owners and employees) account for a significant number of jobs in each NNY county. More importantly, farms are economic powerhouses when it comes to the number of jobs they support in the businesses that support the farming sector...

The Come Farm With Us program is an economic development initiative. It is designed to ensure the long term strength of NNY's important agricultural sector. Its purpose is to encourage farmers from outside the region to buy and operate farms in Northern New York. In addition it assists farmers in finding buyers for their farms who will keep them in operation.

Come Farm with Us is a collaborative effort works with an annual budget of only $10,000. This small investment has attracted over $6 million in investment through the sale of 32 farms. Most of the "" North Country farmers are interested in dairy. However, some are planning to raise sheep or vegetables, providing our local farming sector some diversification which will help ensure the sectors continued vitality in the long run. The program publicizes NNY as an agricultural center, helping support other ag-based economic development such as the local branding initiatives that are underway in Jefferson and Lewis Counties.

You can learn more about the Come Farm With Us program at its website www.comefarmwithus.org. The site gets 50 visits per day, with half of those going to the farm listings.