NEW YORK
Northeast Center for Agricultural Safety and Health
Annual Report Summary
Fiscal Year 2004

I. INTRODUCTION AND EXECUTIVE SUMMARY

In its third year of this grant cycle, the Northeast Center (NEC) had eight active projects - three research, three education projects and two prevention projects. Two pilot research projects continued toward completion on unexpended funds that were carried forward from the initial two years.

The NEC principal investigators in the past year came from four different institutions. In the absence of ongoing feasibility activity, projects sponsored by the NEC were focused in two Northeastern states. Three projects were led by an individual from an engineering background, one from occupational medicine, one from education and five from public health. In addition to its NIOSH Agricultural Centers funding, the NEC has been able to supplement its activities through other federal and state funding. The Northeast Center is completing work on NIOSH contracts related to development and evaluation of a worker- appropriate report that summarizes the findings of the National Agricultural Workers Survey (NAWS). Additionally, NEC staff are receiving support from three NIOSH/NIH RO1 grants and also from New York State sources.

One of the NIOSH RO1 projects is an “Environmental Justice" project that partners NEC with migrant health programs in NY and Maine in an effort to develop community-based solutions to occupational injury in local farmworker populations. At this point community teams at both sites have defined high priority occupational issues and are beginning to explore areas of potential intervention.

A second NIOSH-funded project is an extension of the NEC Orchard Ergonomics pilot research. This three year project will explore other apple picking bucket designs, evaluate these with electromyographic laboratory testing and then undertake full field trials of the design determined to be best by the EMG studies.

A third RO1, funded by the National Cancer Institute, is a renewal of the previous Migrant Injury Surveillance Project. This work will explore the utilization of health services by injured migrant farmworkers in NY and Maine. Interviews of a sample of workers in each state will define sources of health care and determinants of their selection of health care. Data on reported injuries will also seek to validate the current migrant injury surveillance strategy.

The NEC is currently receiving support from assistance from the New York State Dept of Health's Bureau of Occupational Health. As a member of the bureau’s Occupational Clinic Network, NYCAMH receives funding for research, prevention and clinical service activities within the state. The NYS Dept of Labor recently funded NYCAMH to begin a new program of on-farm safety inspections and related safety training in the farm community. This program will reach out to dairy, vegetable, livestock farms and orchards across the state using the safety trainers approach developed in the NEC regional trainers project. NYS Dept. of Labor funds also enhance the NEC-sponsored Agricultural Hazard Abatement Training program based at Cornell University.

A. CENTER ACCOMPLISHMENTS FOR YEAR

1) For the past several years limited NEC funds have been used to supplement the Kids Farm Safety Study. NEC staff members have contributed substantially to this study of the effect of the North American Guidelines for Childhood Agricultural Tasks (NAGCAT) on over 800 NY farms employing young workers. Completed in the past year, this study is one of the first to provide insight into the utility of the NAGCAT intervention. Led by Anne Gadomski, MD, MPH, the KFSS noted half as many injuries on the NAGCAT intervention farms as on the control farms *for the activities covered by the guidelines.* Unfortunately only about half of the injuries noted occurred in categories covered by NAGCAT recommendations.

2) NEC researchers have received RO1 funding for two separate projects derived from the Orchard Ergonomics pilot experience. The initial phase of this pilot involved meetings with farm owners and migrant community members to define areas of potential ergonomic intervention in orchard work. This experience formed the basis for our successful Environmental Justice application of a year ago. These same community-based approaches are now being tried with the onion industry in southeastern NY and the blueberry industry in Maine. This summer NIOSH funded our proposed Evaluation of an Ergonomically-Improved Apple Picking Bag. This will compare the design already developed with the pilot project and alternative designs in the EMG laboratory. The one shown to most effectively reduce muscle forces will then be tested for ability to reduce muscle fatigue from picking, for worker and owner acceptability and for economic impact in an orchard trial of 140 workers. In the third year of this project, the ergonomic Pacific Northwest Center. Here, in addition to fatigue and worker acceptance, the stability of workers using the bag will be tested with PNASH's recently developed electronic monitoring ladder.

3) During the past year, NYCAMH successfully applied for another five-year designation as one of the NYS Department of Health's Occupational Health Clinics. NYCAMH is the only of these nine clinic sites that is rurally–based and predominantly focused upon the farm community. This provides the Bureau of Occupational Health with statistics describing the pattern of occupational health problems affecting the farmers of central NY.

4) Preliminary data from the NEC's Hispanic Dairy Worker Study clearly documents a steady increase in the number of Spanish speaking workers on NY dairy farms. In distinction to the more traditional native English-speakers, these new workers are mostly involved in only one specific task on the farm – usually milking. To our surprise, these native Spanish-speakers report only about half as many occupational injuries as their Anglo counterparts.

5) Legislation aimed at instituting a self-supporting system for the collection and safe disposal of unwanted agrichemicals remains before the NYS legislature. Stimulated by a

NEC study that documented large amounts of organochlorines, arsenic and organophosphates needing proper disposal, this legislation has been jointly sponsored by the NYS Rural Water Association, NYCAMH and Rural Communities Assistance Program. Although this bill has yet to pass, its proposal has clearly stimulated the NYS Department of Environmental Conservation to re-activate its previously moribund "Clean Sweep" program. As a result agrichemical collections are being held in a large number of Rural NYS counties this year.

6) Currently over 200 farms are participating in the Cornell-based "Agricultural Hazard Abatement Training program. The initial 50 farms enrolled in the project currently have a 39% reduction in workers compensation claims over the course of four years of participation. These results are leading a regional farm insurer to consider requiring participation by all its insured farms.

FEASIBILITY PROJECTS:

The Northeast Center's funds for feasibility studies were exhausted in the past year. No additional proposals were solicited or funded in the past year. This activity funded nine of thirteen proposals over the NEC's initial two years of funding

B. REGIONAL ACTIVITIES

1) States in Center's Region: - 12 States

Maine	Vermont	Massachusetts
New Hampshire	Rhode Island	Connecticut
New York	Pennsylvania	Maryland
West Virginia	Delaware	New Jersey

2) States with Center Activity this last fiscal year:

Funded Projects:

Pennsylvania
New York

Outreach / education:

Pennsylvania	West Virginia
Massachusetts	Delaware
New York	New Hampshire
Maine	Maryland
New Jersey	Connecticut
Vermont	

II. REPORT ON THE OUTREACH PROGRAM

Each of the NIOSH Ag Centers has specific areas of strength. The NEC is not based in a large research university and has to work to compensate for this. However, it enjoys closer contact with the farm community than most of the other centers. The data in the Appendix to this report document the intensity and diversity of the NEC outreach. Staff or contractors from the NEC presented over 200 education and training events throughout the Northeastern and Mid-Atlantic states. There was extensive collaboration with county extension offices, county farm bureaus, regional farm equipment dealerships, rural schools, FFA groups, migrant health programs and numerous farms. These outreach efforts continue to be essential in opening opportunities for various NEC research initiatives.

NEC outreach takes a variety of forms ranging from simple displays at farm shows to extensive training with teaching models and considerable evaluation efforts. Because of our commitment to providing these services over a wide a region in our 12 states, we have increasingly relied upon the services of NEC-trained and equipped contract trainers. This approach enables outreach to be carried out with considerably less travel from center staff. Quality is assured by intermittent training sessions with these contractors at the NEC offices and by extensive evaluation efforts. In some regions of the country, this approach may not be needed or even appropriate. However, of the 12 states served by NEC, only six have designated state safety specialists that devote even half of their time to agricultural safety outreach. Thus the use of NEC contract trainers enables training in states where there safety specialist services are quite limited. In some states where there are excellent farm safety specialists, the contract trainers have be used by the safety specialist to extend greater services to the farm community.

Increasingly, NEC is seeking to use outreach opportunities to listen rather than to talk to the farm community. After years of education-based outreach efforts, we are questioning that this approach is optimal for achieving the behavior changes that we desire. Currently we are viewing outreach as opportunities to better understand the reasoning of farmers in making their equipment and operational decisions. We are trying to better understand the farmer's perception of both the costs and the benefits of safe behavior changes. We will certainly continue with many of our current education efforts, since they are essential to maintaining the Center's profile in the region's agricultural community. However, we plan in the future to better design outreach and prevention efforts that are specifically tailored to address areas of concern to most farmers.

III. CENTER PROJECT REPORT BY CORE / TYPE:

RESEARCH CORE

A. PROJECT TITLE: Display of Stability Data for Safe Tractor Operation

B. PROJECT OFFICER(s):

D.J. Murphy
221 Agricultural Engineering Building
814-865-7157
djm13@psu.edu
hjs1@psu.edu

H.J. Sommer
337 Leonhard Building
814-863-8997

C. PROJECT DESCRIPTION

The specific goal is to help reduce the total number of tractor overturns by providing on-the-job training to tractor operators about safe tractor operation. This project revolves around three technology based hypotheses and five specific ancillary goals centered about one key question, "Can current electronics provide useful feedback to tractor operators about stability/instability under a variety of operating conditions"?

Hypothesis 1 (H1) - Current state-of-the-art sensors can successfully monitor both side and rear stability/instability, and they can be cost effective for commercial agricultural tractors.

Hypothesis 2 (H2) - State-of-the-art sensors can quantify side and rear stability/instability of a tractor by itself or with attached implements (single-point hitch, three-point hitch, front end loader).

Hypothesis 3 (H3) - A simple cost effective visual interface can be developed to provide useful training information to tractor operators so that they can learn to identify unsafe operating conditions and avoid overturns.

Goal 1 (supports H1) - Exhaustively evaluate expensive instrument grade sensors used by research groups versus new commercial grade sensors to compare measurement efficacy versus cost and simplicity of integration into a user display.

Goal 2 (supports H1) - Design and build a cost effective (<$150) microprocessor based commercial grade device to measure tractor stability/instability and validate it against instrument grade sensors on full size tractor overturn tests.

Goal 3 (supports H2) - Analyze recent tractor accident statistics to quantify the frequency, etiology and human consequences of tractor overturn with attached implements.

Goal 4 (supports H2) - Perform full size tractor overturn tests with attached implements and use data from instrument grade sensors to modify the commercial grade device.

Goal 5 (supports H3) - Investigate both ergonomics and psychology principles and standards involving hazard warning indicators and build a visual display for tractor stability/instability based upon these principles and standards.

D. PROJECT START AND END DATES: 9/30/01 – 9/29/06

E. PROJECT ACTIVITIES / ACCOMPLISHMENTS

A new full color LCD display module was developed and tested. The LCD provides current indication of tractor roll angle in large easily readable numerals and provides a moving bar graph of current roll angle and recent roll angles to allow the operator to see immediate past overturn events. The LCD display is interfaced to the overturn sensor by a standard CAN vehicle bus. This display was successfully tested on a full size radio controlled tractor during side and rear overturn demonstrations on August 17 and 19 during Penn State's annual Ag Progress Days farm exposition. This work was presented at the 2004 National Symposium on Agricultural Health and Safety and we have received tentative acceptance for a refereed article from JASH.

Figure 1 - Side Overturn Test with Rear Deck Mower During Statistical Testing

An extensive battery of side overturn tests (N>40) were completed with a full size umbilical controlled tractor both with and without a rear deck mower as shown in Figure 1. The tests were conducted on August 10 and 11 at Penn State's Larson Agricultural Research Center. The operator maneuvered the tractor to hit a bump with uphill wheels on a side slope to cause tractor overturn and to cause unstable operation but no actual overturn (near miss). Data from at least ten overturn events were collected for each of four conditions to statistically test if the overturn device could reliably predict 1) overturn with rear deck mower, 2) near miss with rear deck mower, 3) overturn with no mower, and 4) near miss with no mower. Results from this battery of statistical tests will be reported in a future journal paper.

A new iteration of the overturn sensor has been developed and initially tested to reliably sense rear overturn and cut tractor engine power quickly enough to prevent overturn. The prototype sensor was validated in laboratory tests using a two-wheel inverted pendulum robot similar to a small Segway Human Transporter. This new device combines a pitch angle signal from the current MEMS accelerometer with a pitch rate signal from a new low-cost MEMS gyro using a Kalman filter to reject noise. Data from rear overturn demonstrations conducted at Ag Progess Days on August 17 and 19 was analyzed to empirically correlate overturn potential against pitch angle and pitch rate for future tractor tests of this device.

Location of mass center was experimentally measured for the full size radio controlled tractor and for the full size umbilical controlled tractor both with and without a rear deck attached.

F. PROJECT PRODUCTS

1. **Presentations:** Nichol C. 2004. Simplified Overturn Stability Monitoring of Agricultural Tractors. Presentation 610, National Symposium on Agricultural Health and Safety, Keystone Resort, CO.
2. **Publications:**
   a. **Peer Reviewed Journal:** Nichol C, Sommer J, Murphy D. Simplified Overturn Stability Monitoring of Agricultural Tractors. Journal of Agricultural Safety and Health. Tentative Acceptance. October, 2004.

G. STATES THE PROJECT WAS ACTIVE IN: PA

A. PROJECT TITLE - Confined Space Manure Storage Ventilation Standards

B. PROJECT OFFICER(s) - Harvey B. Manbeck, Ph.D., P.E.
213 Ag Engineering Bldg.
University Park, PA 16802
Tel. (814) 865-4071
e-mail: hmanbeck@psu.edu

C. PROJECT DESCRIPTION :

The effectiveness of several ventilation strategies for reduction of noxious gas concentrations and replenishment of oxygen in confined space on-farm manure storage facilities will be identified through experimental and simulation research efforts. Gas concentration data collected in a controlled storage facility and in field installations will be used to validate simulation efforts. Results will be used to develop a draft standard for ventilation of on-farm manure storage facilities.

D. PROJECT START AND END DATES - 9/30/01 - 9/29/06

E. PROJECT ACTIVITIES / ACCOMPLISHMENTS

1. We finalized the experimental design for the screening of ventilation strategies for removing noxious gases from confined manure storages with solid floors, completely slotted floors, and partially slotted floors.

2. We completed a series of experiments to determine if the concentration of noxious gases in the various storages varies across the width during and after ventilation. We learned that, in all but a few special cases, gas concentrations did not vary across the width of the confined storage facility for totally slotted and for solid floor confined storages. Gas concentrations varied across the width of the confined storage for several of the ventilation strategies for the partially slotted floor cases. Since the gas distribution did not vary across the width of the confined storages during and after ventilation, we were able to simplify considerably our data collection protocols for many subsequent experiments.

3. We developed several Excel macros to assist in reduction of the voluminous data sets. The macros calculate the time to achieve PEL's (T_{PEL}) for each monitored gas (ammonia, hydrogen sulfide, carbon dioxide and methane), the ventilation mixing factor (K), and the ventilation efficiency ratio (VEF) at each monitoring location for each ventilation strategy tested.

4. We have nearly completed all of the ventilation strategy screening experiments for the solid floor and the totally slotted floor confined space manure systems. We are currently conducting the screening experiments for the partially slotted confined space manure systems. All the ventilation strategy screening tests should be completed by early to mid-November, 2004 and we anticipate reporting the results in a M.S. thesis in December, 2004.

5. We have continued efforts to model the ventilation of the confined space manure storages using the computational fluid dynamics (CFD) program Phoenics). All the inputs for the modeling have been defined except the gas emission rates from the stored manure during agitation, during ventilation, and when the manure is quiescent. We have determined from the literature that the emission rates will be dependent upon several key factors: temperature, gas concentration above the manure surface, solids content of the manure, and air

velocity across the manure surface. A series of experiments have been planned to measure the emission rates as a function of these variables. These experiments will commence as soon as the ventilation screening tests are completed in November, 2004.

F. PROJECT PRODUCTS

1. **Presentations:** Pesce, E.P., J. Zhao, H.B. Manbeck and D.J. Murphy. 2004. Preliminary screening of ventilation strategies for confined space manure storages. Presentation No. 04-4182 presented at the 2004 ASAE/ASCE Annual International Meeting. Ottawa, Canada. August 1-4.

2. **Publications** None

3. **Education / Training / Outreach** None

4. **Conferences / Meetings Sponsored:** None

5. **Other Products:** None

G. STATES THE PROJECT WAS ACTIVE IN - Pennsylvania

****

A. PROJECT TITLE: The Hispanic Workforce in Northeastern Dairy: Size, Growth, and Implications for Health and Safety (short title: Hispanic Dairy Workers Study)

B. PROJECT OFFICERS: Giulia Earle-Richardson
One Atwell Road
Cooperstown, NY 13326
(607) 547-6023
gearlerichardson@nycamh.com

C. PROJECT DESCRIPTION: The overall purpose of the study is to examine the phenomenon of foreign, Spanish-speaking workers entering the dairy workforce in three northeastern states: New York, Pennsylvania, and Vermont. The specific aim of the study is to describe the magnitude and growth rate of Hispanic worker employment in the dairy industry, and compare injury rates between Hispanic and non-Hispanic workers. In addition, a one-time, on-farm interview of all dairy farm employees will be conducted to validate the employer's injury reporting and also gather additional demographic and work history information. The results will be used to inform NEC health and safety activities as well as those of other local and regional rural health agencies.

D: PROJECT START AND END DATES: September 30, 2001 – September 29, 2004

E. PROJECT ACTIVITIES / ACCOMPLISHMENTS:

Enrollment: Currently 294 farms are enrolled in the study.

Publicity: Articles were printed in Farming Magazine, Country Folks, and Farm Bureau publications. A paper is being written on our baseline findings as well as information regarding quarterly phone calls.

Data Collection:

Initial interviews have been completed all of the enrolled farms. Many farms have completed the study (8 rounds of phone calls). The remainders of the farms are up to at least the fourth round of telephone updates. The Housekeeping file has been updated, and data has been entered on all participating farms.

F. PROJECT PRODUCTS:

I. Presentations:

a. Poster presentation at Cultivating a Sustainable Ag Workplace, Troutdale, OR.
b. Poster presentation at 2004 at Coast Migrant Stream Forum, St. Petersburg, FL.

II. Publications:

a. Peer Reviewed Journal: NA
b. Trade Journals:
    1. Country Folks
    2. New York Farm Bureau
    3. Vermont Farm Bureau
    4. Pennsylvania Farm Bureau
    5. Farming Magazine
c. Fact Sheets/ Brochures/ Technical Presentations:
    1. Handout for 2004 Empire Farm Days, Seneca Falls, NY.
    2. Display at 2004 Empire Farm Days.

III. Education/Training/Outreach:

a. Training Seminars: NA
b. Short Courses: NA
c. Hazard Surveys/ Consultations:
    1. Consulted with 12 member NYCAMH Advisory Board
    2. Consulted with farm owner focus groups (five members each, for two focus groups)

d. Academic Training: NA
e. Web Site: Study listed on NEC website
f. Newsletters: NYCAMH Healthy Horizons, Spring 2004
g. CD ROM's or other Computer Based Training Programs: NA

h. Other: - Study information disseminated through Cornell listserv
i. **Conferences/Meetings Sponsored:** N/A

G. STATES THE PROJECT WAS ACTIVE IN: NY, PA, VT

****

A. Project Title The Prevention of Lyme Disease Among Agricultural Workers and Landscapers in a Lyme Endemic Area

B. Project Officers

Principal Investigator: Benjamin J. Luft

Chairman and Professor of Medicine
Department of Medicine
SUNY at Stony Brook
T16-040-HSC
Stony Brook, N.Y. 11790-8161
Phone 631-444-3808

Co-Principal Investigator: Linda A. Cocchiarella, M.D.

Asst. Professor of Medicine
Department of Medicine
SUNY at Stony Brook
Long Island Occupational and
Environmental Health Center
635 Belle Terre Road, Suite 207
Port Jefferson, N.Y. 11777
Phone 631-642-9100
Fax 631-331-4854

C. Project Description

Borrelia burgdorferi (Lyme disease) is the most common vector borne disease in North America. The disease is endemic in areas in the northeastern United States, with a particularly high infection rate in Southeastern New York State and on Long Island. Lyme disease corresponds to the distribution of the northern deer tick, and the ticks are commonly found in brush, wooded areas and in tall grass. Individuals working or playing in these areas are at high risk for tick bites and infection.

It seems likely that agricultural workers and landscapers on Long Island would be at increased risk of Lyme disease, and that detection and prevention efforts should be targeted to these groups. However, the prevalence and incidence of Lyme disease among agricultural workers and landscapers is currently not known, nor is it clear whether current methods of detection and prevention programs are appropriate for these populations.

The overall goals of this study remain exploring the extent to which agricultural workers and landscapers constitute a high-risk group for Lyme disease, and assessing whether current prevention programs adequately meet the needs of these groups.

Specifically, the study will examine the sero-prevalence of Lyme disease in agricultural workers and landscapers as compared to the general population on Long Island; whether there are significant rate differences between these two groups, and which characteristics of the work environment, work tasks, and workers predict increased risk of Lyme sero-positivity. By following this group over time, the sero-incidence of Lyme disease among agricultural workers and landscapers will be determined.

In addition, a qualitative assessment will be made of existing Lyme disease recognition and prevention resources to determine in terms of language, culture and general orientation whether they are appropriate to a population of agricultural workers and landscapers and to the realities encountered by this workforce.

D. Project Start and End Dates: 9/30/01 to 09/30/04

E. Project Activities/Accomplishments

Our third year of activity focused primarily on the delivery of Lyme disease screenings. The study protocol and details regarding the test procedure were explained at each Lyme disease screening. Both the employers and the employees were informed that participation was strictly voluntary. After obtaining informed consent a participant was tested for Lyme disease. We drew blood from each participant and the blood tests performed were sent to SUNY Stony Brook's lab for testing. Specifically, all samples underwent the Elisa blood test and all positive Elisa's were confirmed by the performance of a Western Blot blood test. Translation services were provided in both Spanish and Polish, as were educational materials. Consents were available in English, Polish and Spanish. Upon receipt and review of lab results, a letter advising of these results was sent to each participant. Anyone whose test results indicated they should receive further medical care was advised of this both verbally and in writing.

Employers who participated in the initial screening program were contacted in an effort to allow initial study participants to continue their participation in this project. We visited 14 locations during this past year, as compared to 34 during the previous year. We provided Lyme screenings to 184 workers. This number is significantly smaller than last year's activity due to a number of factors including reluctance by employers to

continue to allow employees to participate during the growing season and the transient nature of the targeted population (seasonal and migrant workers).

The following is a list of locations where Lyme screening services were provided throughout the months of October 1, 2003 through Sept. 30, 2004. Group sizes ranged from 5 to 35, with most sites providing an average of 10 participants.

Ivy Acres	October 7, 2003	Half Hollow Nursery	Nov 13, 2003
Bed and Boarders	October 9, 2003	NSLGA	Nov 17, 2003
Peconic Bay	October 9, 2003	Ivy Acres	Nov 18, 2003
Cornell Extension	October 14, 2003	Lenz Winery	Nov 20, 2003
April Gonzales Landscaping	October 23 2003	USDA	Dec 2, 2003
Bayberry Nursery	October 23, 2003	North Shore Tree	Dec 16, 2003
Paumonok Vineyards	November 12, 2003	Temple Control	Feb 9, 2004

Interest by the agriculture workers exceeded that of landscapers. The agricultural workers involved primarily included those employed at nurseries and vineyards. Small growers showed less interest in participating. Similar to the agriculture groups, participation by large landscaper firms was greater than the small companies. We believe this was primarily due to the smaller employers limited workforce coupled with a busy work schedule.

The following table details the gender, race and type of worker that participated in the screening program during this grant year.

TYPE	**MALE**	**FEMALE**
CONTROL		
WHITE	9	4
LANDSCAPING		
WHITE	15	3
BLACK	1	
HISPANIC	6	
TOTAL	22	3
AGRICULTURE		
WHITE	45	23
BLACK	1	
ASIAN	1	2
NATIVE AMERICAN		1
HISPANIC	8	2
TOTAL	55	28
AG - Vineyard		
WHITE	19	3
BLACK	2	
HISPANIC	7	
ASIAN		1
TOTAL	28	3
AG – NURSERY		
WHITE	7	5
BLACK	1	
HISPANIC	19	
TOTAL	27	5
ALL AGRICULTURE	110	36

Patients identified with new cases of Lyme disease were directed to the appropriate was not previously established in the healthcare system. Therefore, if not for this screening program, their Lyme disease may have continued undiagnosed until more significant symptoms developed. Data entry and statistical analysis are not yet complete; therefore, information regarding the sero-prevalence is not available at this time. Despite the decrease in interest during this grant year, the following Spring, after the screening program had concluded, we received several calls from employers attempting to schedule their seasonal Lyme testing. They were disappointed to learn that the screening component of the study had ended.

F. Project Products: NA

G. States the Project was Active in: The project was active in New York.

A. PROJECT TITLE – Orchard Ergonomics Pilot Study

B. **PROJECT OFFICER(s) –**

John J. May, Giulia Earle-Richardson, PI's
Christine Mason, Project Coordinator
Research
NYCAMH/NEC
One Atwell Road
Cooperstown, NY 13326
Phone – 800-343-7527
e-mail –

C. PROJECT DESCRIPTION

The purpose of this project was to develop and test simple changes to apple harvesting equipment in order to reduce back and shoulder strain, while improving picking comfort and efficiency. This project relied heavily on the knowledge and input of professionals in the apple industry, including orchard growers, farmworkers, crew leaders and industry representatives. A hip belt designed to transfer the weight of the full apple bag from the lower back to the hips, and a suspension/shoulder pad ensemble designed to diffuse the contact stress from the pressure of the straps on the shoulders were tested at two New York Orchards during actual apple harvesting. Subsequent electromyographic studies at Penn State confirmed a decrease in muscle load with the use of the hip-belt design.

D. PROJECT START AND END DATES – 9/30/01 to 9/29/2003

E. PROJECT ACTIVITIES / ACCOMPLISHMENTS

The past year has been devoted to further modification of the basic hip-belt design to address concerns raised by workers during the fieldwork of the initial two years of this pilot project. In consultation with ergonomics experts at Penn State and a local craftsman various designs were tried to perfect the bag-belt attachment mechanism. Various models were constructed and reviewed by staff and a limited number of farmers and farmworkers. The "final version" was then sent to the NIOSH Ag Center at Davis, CA for additional input from Dr. Fattalah's group. Following this, further design changes were undertaken and then a number of bags were purchased and adapted in preparation for testing during the 2004 harvest season.

F. PROJECT PRODUCTS

1) **Presentations**: 4
   a. 2004 National Symposium on Agricultural Safety and Health, Keystone, CO
   b. APHA – 2004, Washington, DC
   c. The East Coast Migrant Stream Forum 2004
   d. Canadian Agriculture and Safety Assoc. – ACSA - 2004

2) Publications:

a) Peer Reviewed Journal: 2

Earle-Richardson G, Fulmer S, Jenkins P, Mason C, Bresee, C, May, JJ. Ergonomic Analysis of New York Apple Harvest Work Using a PATH Work Sampling Approach. J Ag Safety Health 2004; 10:163-176.

Earle-Richardson G, Jenkins P, Fulmer S, Mason C, Burdick P, May J. Pilot evaluation of an ergonomic intervention to reduce back, neck and shoulder strain among apple harvest workers in New York State. Applied Ergon (accepted)

b) Trade Journals:
c) Fact Sheets / Brochures / Technical Publications:
d) Other Publications:

3**) Education / Training / Outreach:**
   a) Training Seminars:
   b) Short Courses:

4) **Conferences / Meetings Sponsored:**

5) Other Products:
   I. The hip belt; semi-final version
   II. Numerous PowerPoint presentations

G. STATES THE PROJECT WAS ACTIVE IN

New York

****

EDUCATION CORE

A. Project Title: Agricultural Hazard Abatement & Training Program

B. Project Officers

Eric M. Hallman
Director, Agricultural Health & Safety
College of Veterinary Medicine
Cornell University
777 Warren Road
Ithaca, New York 14850
Tel. (607) 255-5492
E-mail: emh14@cornell.edu

C. Project Description

A program of assistance for farm owners with hazard audits and abatement; training of owner or safety officer in collaborative educational approaches to employees aimed at reducing occupational injury and illness on the farm. This statistically significant program relates to risk management & has 2 major components: 1) reducing work site hazards 2) establishing on-going employee safety training programs in order to improve work practices

D. Project Start and End Dates

September 30, 2001 – September 29, 2006

E. PROJECT ACTIVITIES / ACCOMPLISHMENTS

The AHAT program has been ongoing in a self-insured workers' compensation group since 1999 and is facilitated by the Cornell Agricultural Health and Safety program. Farm participation has been voluntary and without any monetary incentive to participate other than the potential savings on workers' compensation insurance.

While the real-life application of this program has revealed a number of challenges, the program has made significant progress. Presently more than 200 farms voluntarily participate in the program and an analysis of workers' compensation claims filed by 50 farms original to the program indicated a 39% decrease in claims filed over the course of four years participation.

During this past year a risk assessment instrument was developed to measure management safety activities and attitudes. Recommendations to farm owners are

classified as critical (imminent danger to worker safety), required (necessary to meet basic underwriting requirements), and advisory (reduce risks and improve safety efforts). It is now being used on all farm visits with follow-up responses from the farm owners required. This will provide a more accurate measurement of safety efforts.

Due to rising medical costs and thus the overall increase in cost of claims, the insurance company is currently moving towards making farm participation in AHAT mandatory.

F. PROJECT PRODUCTS

1. **Presentations:** 3
   - Effective Injury Reduction Through Organized Loss Control Programming (NIFS)
   - Agricultural Health & Safety in NYS (DOL Post-Harvest Conf.)
   - The Key to Unlocking Safety Performance Barriers (Herdsman Conference)

2. **Publications**

   A. Peer Reviewed Journal:

   B. Trade Journals: American Agriculturalist – 12 monthly safety columns.

   C. Fact Sheets / Brochures / Technical Publications:

   D. Other Publications:

3. **Education / Training / Outreach**

   1. **Training Seminars:** 14 regional seminars for participating farm safety officer and owners. Total attendance: 106. Topics: Introduction to Hazard Communication Standard; Investigating Injuries; Improving Work Practices.

   2. **Short Courses:**

   3. **Hazard Surveys / Consultations: 43**

   4. **News Letters:** 1 *Safety Matters: Road Safety Special Edition*

   5. **CD-ROMs or other Computer-Based Training Programs:** Hazard Communication Training and Compliance for Farm Owners

4. **Conferences / Meetings Sponsored:**

5. Other Products:

G. STATES THE PROJECT WAS ACTIVE IN

New York, Vermont, Pennsylvania

****

A. PROJECT TITLE – Northeast Youth Initiative

B. PROJECT OFFICER(s)

Sharon Scofield – Supervisor Outreach/Education
NYCAMH/NEC
One Atwell Road
Cooperstown, NY 13326
Phone – 800-343-7527
e-mail – sscofield@nycamh.com

C. PROJECT DESCRIPTION

This project is a three-part program including Safety for AG Educators, Amish and Mennonite Outreach, and Safety Day Camps. All these are aimed at reducing injuries to young workers and visitors to Northeastern farms.

Project aims are –

- Enhanced awareness of agricultural hazards among those instructing adolescents in aspects of agricultural production
- Inclusion of basic occupational health and safety information and practices in the lesson plans of these instructors
- Enhanced knowledge of agricultural safety and health hazards among current young workers in agriculture
- Increased discussion of safety and health issues among families who have participated in safety day camp activities

D. PROJECT START AND END DATES – 9/30/01 to 9/29/04

E. PROJECT ACTIVITIES / ACCOMPLISHMENTS -

SAGE – Safety for AG Educators – SAGE Newsletters were distributed to 675 Northeast Agricultural Educators in Fall 2003 on Tractor Rollovers and Winter 2003 on Hazardous Farm Gases**.** The SAGE was distributed to Agricultural Educators in Maine, New Hampshire, Vermont, New York, Pennsylvania, Rhode Island, Massachusetts, Connecticut, New Jersey, West Virginia, Delaware, Maryland. The second mailing of evaluation forms from non-SAGE readers was collected in November 2003. SAGE Newsletters were written by Keith Additon and distributed with the assistance of Peggy Bleich. Efforts to link this activity with Cornell Cooperative Extension 4-H activities have not proven to be successful.

Amish/Mennonite Trainings – Since September 2003, twenty-three Amish/Mennonite schools were visited in New York (4), Pennsylvania (9) and Delaware (10) by Jane Boyd. Ms Boyd was assisted by Ronald Jester, University of Delaware, in contacting schools in Delaware. Evaluation forms were returned from 19 schools reaching 534 students. Evaluation forms were also completed by 28 teachers and 106 parents. Topics covered included safety around elevators, gravity flow wagons, ponds, animals, ladders, fire, tractors, manure pits, fences, PTO's, machinery, chemicals, and wagons. The three farm safety topics talked about most after the farm safety presentation were gravity flow wagons, bulls, and pond safety.

Safety Day Camps – Progressive Farmer Safety Day Camps(6) were coordinated by/or with NYCAMH/NEC staff in New York and Maine reaching 1208 youth. Staff from NYCAMH/NEC provided farm safety training for 22 Farm Safety Day Camp type events reaching 5277 children/youth. Safety topics taught included Mechanical, Tractor, SMV, PPE, Sun, First Aid, PTO, Firearm, Pesticide, Silo/Manure Gas, Hearing, Animal, ATV, and Lawnmower safety. Pre and post day camp evaluation forms were received for NYCAMH coordinated events. Barb Kersman, Dave Tetor, Tonya VanSlyke, and Sharon Scofield attended coordinator training sponsored by Progressive Farmer in Millbrook, NY in the fall of 2003. NYCAMH/NEC staff providing training included Robert Yeager, Sue Ackerman, Becky Ireland-Perry, John Case, Joe Staruck, Dave Tetor, Jim Dyer, Arleen Clark, Rich Smith, Lisa Fields, Sharon Scofield, Bernadette Hodge, Steve Clark, and Art Bleich.

F. PROJECT PRODUCTS

1. **Presentations:** None

2. **Publications** - 2

   Other Publications:
   SAGE Newsletter
   Fall 2003 – Tractor Rollovers
   Winter 2003 – Hazardous Farm Gases

3. **Education / Training / Outreach**

   a.Training Seminars: 23 Amish / Mennonite schools (see below)

   b.Short Courses: 28 safety day camps – either organized or partially staffed

   c.Hazard Surveys / Consultations: N/A

   d.News Letters: N/A

   e.CD-ROMs or other Computer-Based Training Programs: N/A

f.Other: N/A

4. **Conferences / Meetings Sponsored:** N/A

5. **Other Products:** N/A

G. STATES THE PROJECT WAS ACTIVE IN

SAGE – New York, Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, Pennsylvania, New Jersey, Delaware, Maryland, West Virginia

Amish/Mennonite Trainings – Delaware, New York, Pennsylvania

Safety Day Camps – New York, Maine, Pennsylvania, Maryland, West Virginia, and Delaware

****

A. PROJECT TITLE – Northeastern Regional Safety and Health Trainers

B. PROJECT OFFICER(s)

Sharon Scofield – Supervisor Outreach/Education
NYCAMH/NEC
One Atwell Road
Cooperstown, NY 13326
Phone – 800-343-7527 e-mail – sscofield@nycamh.com

C. PROJECT DESCRIPTION

The major aim of this project is to insure the availability of educational resources and occupational health/safety expertise in Northeastern agricultural communities that are not currently served.

D. PROJECT START AND END DATES – 9/130/01-9/29/04

E. PROJECT ACTIVITIES / ACCOMPLISHMENTS

West Virginia – Robert Yeager continued to provide farm safety and health programs in West Virginia, Delaware, and Maryland. Mr Yeager visited Cooperstown for training on use of the Personal Protective Equipment (PPE) farm safety demonstration. He provided 20 trainings and 1 technical assistance event reaching 2754 farmers and farm youth. Topics covered included PPE, Tractor, and Mechanical safety. He wrote six farm safety articles for the West Virginia Farm Bureau monthly newsletter.

New York – The DOL/NE Trainers continued to provide farm safety and health

programs in New York. Adult education programs totaled 21 events reaching 391. Youth programs totaled 43 events reaching 1404 in New York and Connecticut. Outreach programs totaled 42 events reaching 2441 participants in New York and Pennsylvania.

Maine – Collaboration was initiated with the Adult Education Center in Houlton, Maine. The Director is Otis Smith. Keith Addition held training of part-time safety trainers in Maine in November 2003. Two educational programs were held reaching 80 participants.

F. PROJECT PRODUCTS

1. **Presentations:** N/A
2. **Publications**

b. Trade Journals:

Article title	Publication	State
Tractor Tragedy	Country Folks Safety Savvy	NY
Bunker Silo Safety	Country Folks Safety Savvy	NY
Hazardous Silo Gases	Farm Bureau Grassroots	NY
Tractor Safety ROPS	Country Folks Grower	NY
ROPS	New York Vegetable Growers Newsletter	NY
ROPS	Agricultural Affiliates Newsletter	NY
Thinking Safety - ROPS	Country Folks Grower	
SMV/Lighting	Country Folks Safety Savvy	NY
Tractor safety run overs	New York State Vegetable Growers Association Newsletter	NY
Tractor safety run overs	Agricultural Affiliates Newsletter	NY
Tractor safety-run overs	Country Folks Grower	NY
Silage safety	New York Farm Bureau Grassroots	NY
Hazard Farm Gases	Safety for Ag Educators (SAGE)	
Farm Safety Plan	Country Folks Safety Savvy	NY
Climbing Hazards	Country Folks Safety Savvy	
Regional Migrant Health Center Workers/Tractor Training for Migrant Employees	Country Folks Grower	NY
NYCAMH Youth Farm Safety, PPE, Migrant Worker Safety, DOL Safety Trainers, Apple Picking Bag	Country Folks National Ag Week Articles	NY
ATV Safety	New York Farm Bureau Grassroots	NY
SMV, Marking and Lighting	Country Folks Safety SAVVY	NY
Dairy Workforce Study Update	Country Folks Newspaper	NY
Large Round Bale Safety	Country Folks Safety Savvy	NY
Agricultural Safety & Health - Yields for a Lifetime - National Farm Safety & Health Week	Country Folks Safety Savvy	NY
Agricultural Safety & Health …Yields for a Lifetime/Ad Every 3.5 Seconds	Evening Telegram	NY
NYCAMH - Farm Partners, Dairy Workforce, Migrant Health (2), Farm Surveys, Youth Hazard Display	Country Folks National Farm Safety & Health Week Edition	NY

Preventing Fires on Your Farm	Country Folks Safety Savvy	NY
Farmers Clinic Ad and Article	Little Falls Evening Times	NY
On Farm Safety Trainings	CORE Report	NY

c. Fact Sheets / Brochures / Technical Publications:

Tractor Safety
Mechanical Hazards
PTO Safety
Silo Safety
Personal Protective Equipment

d. Other Publications:

3. Education / Training / Outreach

a. Training Seminars:

Mechanical and Tractor Safety
Orchard/Vegetable Safety program
Toxic gas, confined space
Silo/tractors
Tractors/Mech/PTO
Silo Safety
Orchard/Vegetable/Tractor Safety Program
Topics of the NYCAMH Orchard safety program, the how to do trainings, recruit the farmers, and evaluations
PPE, PTO, Tractor Safety, Silo Safety, and mechanical hazard safety
PPE
Tractor safety, PTO, PPE, and mechanical hazard safety
Respiratory Protection/Toxicity Dx
PPE/ Toxicity Dx
Proper Handwashing
PPE, Tractor, PTO, SMV, Mechanical and Lymes Disease Safety
PPE, PTO, Tractor Safety, run over, roll over safety
PPE.PTO.Tractor safety, mechanical hazards, lyme disease, West Nile, lifting, knife, heat, personal
PPE, Tractor, PTO, Mechanical, SMV Safety
Silo, PPE
Migrant Farm Safety
Migrant Worker Safety
PPE, Tractor, Mechanical, PTO Safety
Migrant Farmworker Safety
Farm Safety Concerns on the Farm
Silage/PPE Safety
Silage/PPE Safety

PPE Safety
Tractor Safety PPE Mech
PPE/tractors
PPE Safety
Silo safety
Mechanical and Tractor Safety
Silage/PPE Safety
PPE/Mech/Tractors
PPE/Tractor/ Mech
PPE/tractor/mech
Silo, Tractor, PTO Safety
PPE/Tractor/PTO Safety
Silo/PTO/Tractor Safety
PPE Safety
Mechanical Hazards
Play It Safe Game, PPE (Mr. Sam)
Animal Safety/Mech Hazards/Farmstead Safety
Tractor Safety
PPE
PPE, Tractor, SMV and PTO Safety
PPE, ATV, PTO & mechanical hazard safety
Tractor safety, PPE, PTO, and mechanical hazard safety
Tractor safety, PTO, PPE, and mechanical hazard safety
PPE, Tractor, SMV and PTO Safety
PPE, Tractor, PTO and SMV Safety
PPE and Tractor Safety
Tractor safety, PTO, PPE, and mechanical hazard safety
PPE/Silo/Tractor Safety
Personal Protective Equipment
PPE, Tractor, PTO Safety
PPE, Tractor, PTO, SMV Safety
PPE and Tractor Safety
PPE.PTO, tractor safety runover, rollover, mechanical, safety
PPE
PPE, PTO, Mechanical Safety
Silo, PPE, Manure Gas Safety
PPE, Mechanical & Tractor Safety, Respiratory Problems in Farming
Respiratory Problems in the Farm Population
PPE, Tractor, PTO, SMV, Mechanical safety
PPE, Mechanical, PTO Safety
Tractor/Lawnmower Safety
Tractor/PTO/PPE

Mechanical Hazards
PPE, Tractor, PTO Safety
Silo Safety - Machines and Gases
Farm Survey, Play it Safe Game

b. Short Courses: 4
New York DOL Trainers – August 2003
West Virginia Trainer – October 2003
Maine Trainers – November 2003
New York Trainers – February 2004

c. Hazard Surveys / Consultations: 3
Gockley Farms
Sheldon Farms
Huntington Farms

d. News Letters: 2
NYCAMH Healthy Horizons June 2004
NYCAMH Healthy Horizons September 2004

G. STATES THE PROJECT WAS ACTIVE IN: -
New York, Maine, West Virginia, Maryland, Pennsylvania and Connecticut

****

PREVENTION CORE

PROJECT TITLE: Making Migrant Health Data Accessible to Farmworkers and Developing Collaborative Community Interventions (short title: Migrant Health Interventions)

B. PROJECT OFFICER: Giulia Earle-Richardson
NY Center Agric Medicine and Health
One Atwell Road
Cooperstown, NY 13326
(607) 547-6023
gearlerichardson@nycamh.com

C. PROJECT DESCRIPTION: This intervention has three goals overall:
a.) (year one) to increase knowledge and awareness by farmworkers and farmworker advocates of current Northeastern agricultural health and safety information by making it more accessible in terms of language, reading level, and physical location.;
b.) (years two through five) to develop occupational health resources for migrant health professionals in the Northeast c.) (all years) to accomplish a. and b. above in a culturally

appropriate manner, by soliciting feedback from farmworkers, migrant health center staff, and Spanish/Latin American language and cultural experts.

D. PROJECT START AND END DATES: September 30, 2001 – September 29, 2006

E. PROJECT ACTIVITIES / ACCOMPLISHMENTS:

Progress toward goal a: During the past year researchers worked on developing and testing several different formats for information brochures aimed at Northeastern migrant farmworkers. Three different formats were developed in both Spanish and Creole. The formats included: a) traditional written text with some photos / illustrations, b) low literacy text with many more illustrations / photos, c) photonovella format in which photographs of farmworkers on and off the job were assembled to develop short stories with limited text. These formats were evaluated in over 30 depth interviews of Hispanic, Haitian and Jamaican farmworkers. Results of the evaluation are pending.

In collaboration with NIOSH (Andrea Steege), an evaluation of the National Agricultural Workers Survey (NAWS) findings information brochures was undertaken. These information brochures were developed at NYCAMH to inform migrant farmworkers of the findings of the NAWS survey. The intent was to make this information clear and relevant to non-English speakers of possibly limited literacy. A series of these information brochures were tested in a controlled fashion (compared to traditional fact sheets) with migrant farmworkers in NY and NJ. Interviews involved 109 test farmworkers and 90 controls. Early assessment of the results suggests improved understanding of back injury and methods to prevent this.

Progress toward goal b: A draft version of the Migrant Farmworker Occupational Health Reference Manual has been assembled and is being continually updated. It currently has Cultural Background information on Hispanic cultures from Mexico and Central America, Haitian cultural information and cultural information on Native American (and Canadian Natives). Diagnostic modules are being developed for dermatitis and back injury to supplement the shoulder/upper extremity sections. The commodity section is being expanded – particularly the section on blueberry picking. The design of the manual is to use tabs and organizational sections to optimize ready information access in clinical settings. These sections include occupational history taking, cultural background information, access to worker's compensation services and commodity-based information on occupational risks / injuries and references to assist in appropriate diagnosis and treatment of the most common associated occupational health problems. Sections have been added with limited literacy Spanish and Creole patient information sheets for common disorders.

The manual has been presented to regional migrant clinicians and at the Eastern Stream Migrant Health Conference for feedback from clinicians. It is currently undergoing review by occupational physicians for further comment. In the coming year a beta version will be sent to selected migrant clinics to evaluate it more formally in the clinical arena.

Progress toward goal c: Work continues on the Spanish and Creole versions of the NYCAMH – NEC website. This site contains all of the information brochures, safety articles and other materials produced in any of the Center's activities. It also contains links to other NIOSH Ag Centers, NIOSH, NASD and other appropriate sites. These enhancements are expected to go online within the next six months.

F. PROJECT PRODUCTS:

I. Presentations: 3

The East Coast Migrant Stream Forum 2004 – presentation on the information brochures

APHA- 2004 – poster on the clinician's manual

Canadian Agriculture and Safety Assoc. – ACSA - 2004 – presentation on the clinician's manual

II. Publication:

a) Peer Reviewed Journal: 1
   - Geographic Distribution of Migrant and Seasonal Harvest Workers in New York State, 2000-2001. Submitted to Journal of Agricultural Safety and Health.

b) Trade Journals: 1 - article on the clinician's manual in Migrant Clinician's Network Newsline

c) Fact Sheets / Brochures / Technical Publications: 12 brochures of varying format

III. Education / Training / Outreach:

a) Training Seminars: N/A
b) Short Courses: N/A
c) Hazard Surveys / Consultations: N/A
d) Academic Training
e) Web Site: NYCAMH - NEC website: Haitian – Spanish version nearly ready to go online
f) Newsletters:
g) CDROMs or other Computer Based Training Programs: N/A

IV. Conferences / Meetings Sponsored: N/A

G. STATES THE PROJECT WAS ACTIVE IN: NY

****

A. PROJECT TITLE – Health Screening and Disease Prevention

B. PROJECT OFFICER(s) –

Sharon Scofield – Supervisor Outreach/Education
NYCAMH/NEC
One Atwell Road
Cooperstown, NY 13326
Phone – 800-343-7527
e-mail – sscofield@nycamh.com

C. PROJECT DESCRIPTION

The aim of this project is to prevent injury to farmers resulting from excessive exposure to loud noise, inhaled organic dust and ultraviolet irradiation. Farmers and their families and workers will be invited to participate in health screenings (hearing, respiratory, skin). After the screenings we will solicit a "Pledge to try" from participants to mechanisms to protect themselves from the above hazards or to create means to diminish the hazards.

D. PROJECT START AND END DATES – 9/30/01 to 9/29/04

E. PROJECT ACTIVITIES / ACCOMPLISHMENTS

Seventeen respiratory screenings and one skin cancer screening were held in the Northeast, serving 294 participants in New York, Connecticut, Pennsylvania, New Hampshire and West Virginia. Eight of these screenings were done in conjunction with farm safety education programs. At each respiratory screening, participants were provided a pulmonary function test, education on respiratory protection for dust related chores, and a dust mask fitting. At the skin cancer screening, participants were offered a full screening for skin lesions. Environmental means to avoid dust and the sun were also discussed. Each participant was provided a brochure, which summarized the respiratory or skin protection points discussed. Note: one respiratory screening involved Hispanic Migrant Farmworkers at a regional migrant health clinic

F. PROJECT PRODUCTS

1. **Presentations** – N/A
2. **Publications**

b. Trade Journals:

Date	Topic	Journal	State
6/26/04	**Farming is a Dangerous Business Ad/NYCAMH activities at Empire Farm Days – including respiratory screening**	**Farming the Journal of Northeast Agricuture**	**VT**
6/28/04	**NYCAMH Farm Safety and Health Activities at Empire Farm Days – including respiratory screening**	**Country Folks Safety Savvy**	**NY**

c. Fact Sheets / Brochures / Technical Publications:

Disposable Dust/Mist Masks
Respiratory Hazards

3. Education / Training / Outreach

a.Training Seminars:

b.Short Courses:

c.Hazard Surveys / Consultations: Total of 18 health screening events involving 294 members of the farm community

d.News Letters:

e.CD-ROMs or other Computer-Based Training Programs:

f. Other:

4. Conferences / Meetings Sponsored:

5. Other Products:

G. STATES THE PROJECT WAS ACTIVE IN - Connecticut, New York, Pennsylvania, New Hampshire, West Virginia

APPENDIX

I. TOTAL CENTER BUDGET **

NEC budget for the year:

Personnel	$ 332,952
Fringe	$ 83,940
Equipment	$ 15,347
Travel	$ 40,832
Rent	$ 21,713
Consortium	$ 363,857
Supplies	$ 2,811
Other	$ 11,266
Total directs	$ 872,718
Indirects	$ 106,389
NEC Total	$ 979,107

2) In-kind contributions for year:

NYCAMH	$ 67,500
Penn State	$ 3,000
SUNY Stony Brook	$ 7,689
Total	$ 78,189

3) Other outside funding received by Center:

New York State Dept of Labor	$ 106,840
New York State Dept. of Health	$ 624,475
National Cancer Institute	$ 237,075
Bassett HealthWorks	$ 194,004
Cornell AgrAbility	$ 21,319
NIOSH R25 OH008144	$ 242,949
NIOSH RO1 OH008153	$ 233,674

Total Outside Funding $ 1,660,336

*** - note that final financial reporting for year three has not been completed. When this is completed in mid-December, a revised report will be submitted with the final budget figures.*

II. CENTER PROJECTS / ACTIVITIES

1) Ongoing Projects: 8 full projects – 2 pilot research projects continued on carryforward funds

2) Projects completed this fiscal year. - 2
- Orchard Ergonomics Pilot Study
- The Prevention of Lyme Disease Among Agricultural Workers and Landscapers in a Lyme Endemic Area

3) Projects dropped / discontinued this fiscal year - None

4) Projects involving Human Subjects Review Board Approval with HSRB Approval Number.

Research Projects:
Lyme Disease – SUNY Stony Brook IRB # 20014232
Ergonomic Interventions in Orchard Work – Bassett Healthcare IRB # 622
Hispanic Workers in Dairy - Bassett Healthcare IRB # 621

Education Projects:
Agricultural Hazard Abatement – Exempt – Cornell University IRB
Migrant Interventions – Exempt – Bassett Healthcare IRB

III. CENTER INVESTIGATORS

1) Scientific Investigators: Full projects PI's – 7, Co-investigators – 3,

2) Program Support Staff: Full projects – 13.5

IV. CENTER PRODUCTS

1) Presentations: 11
2) Publications:
a) Peer Reviewed Journal: 4 published / accepted
b) Trade Journals: 47
c) Fact Sheets / Brochures / Technical Publications: 23
d) Other Publications: 0

3) Education / Training / Outreach:

a) Training Seminars: 123
b) Short Courses: 32
c) Hazard Surveys / Consultations: 46

d) Academic Training

MD, PA, FNP: 0
BSN: 65 students for 3.5 hour course
BSN: 5 students for 40 hours each
PhD Candidates – 4 (Epidemiology- 2, Engineering-1, Fluid Dynamics - 1)
Master's Students: - 3

e) Web Site: 2
f) Newsletters: 3
g) CDROMs or other Computer Based Training Programs: 1
h) Other:

4) Conferences / Meetings Sponsored: - 1

Delaware Agricultural Safety and Health Meeting – 1/ 04

5) Other Products:
- 1 Hip belt made of neoprene using a girth as a base; adding adjustable webbing and buckles for fit, and hooks on which to place the apple bucket. Corresponding D-rings attached to apple buckets – original design produced in 2002, revised 2003-4

1 low-cost tractor stability monitoring system with LED display

1 model occupational health reference for migrant health physicians

12 model brochures formatted for farmworkers

V. SPECIFIC IMPROVEMENTS IN SAFETY AND HEALTH

1) decreased numbers of workers' compensation claims (39%) over past four years among farms participating in AHAT project

2) improved system for monitoring of tractor stability and display of this information to tractor operator through the Tractor Stability project.

3) improved use of protective equipment and hazard abatement among participants in the Health Screening program. Among those using PPE "never" and "rarely" there was a 24% (respiratory protection) and 26% (hearing protection) self-reported shift to "often" and "always" use. Participants was also asked to identify hazards in their farm work place and describe modes of abatement. At follow up contact, 10% (respiratory hazards) and 25% (hearing hazards) of these were reported to have been successfully abated.

4) decreased back and shoulder muscle forces required for apple picking activities with the use of the NYCAMH apple bucket modification as documented by electromyographic studies in laboratory evaluation at Penn State.

VI. COLLABORATION

Tractor stability
The Pennsylvania State University

Manure Ventilation
The Pennsylvania State University

Hispanic dairy workers
294 dairy farms in VT, NY & PA

Lyme disease
State University of New York, Stony Brook

Orchard Ergonomics
Andris Freivalds, PhD, Penn State
Fadi Fatallah, PhD, UC Davis, Western Center for Agricultural Health and Safety

Agricultural Hazard Abatement Training
Cornell University
Agri-Services Insurance

NE Youth Initiative
Progressive Farmer Foundation
NYS Soil and Water Districts

Amish/Mennonite Trainings –

School	State	School	State
		Conquest	NY
Greenhill		Fayette	NY
Shady Lane	DEL	Cayuga School	NY
West Center	DEL	Mill Road	NY
Green Hill	DEL	East Earl	**PA**
Coopers Corner	DEL	Valleyview	PA
Honeysuckle Knoll	DEL	Groftdale	PA
Apple Grove	DEL	Meadow Creek	PA
Southern Meadow	DEL	Mountain Way	PA
Rose Valley	DEL	Amsterdam School	PA
Cedar Grove	DEL	Sunnyside East	PA
Clyde	DEL	Green Bank	PA

Safety Day Camps -

Organization	Town	State
Oakland Amish School	Oakland	MD
Progressive Farmer Safety Day - Schoharie County	Cobleskill	NY
South Cayuga Elementary Classes	Aurora	NY
Wyoming County CCE Safety Day	Perry Center	NY
Wood County Progressive Farmer Day Camp	Parkersburg	WV
Wetzel County Progressive Farmer Safety Day	Hundred	WV
Tyler County Progressive Farmer Safety Day	Middlebourn	WV
Otsego County Safety Day 5th Graders	Laurens	NY
Dutchess Cty Progressive Farmer Day Camp	Millbrook	NY
Jackson County Progressive Farmer Safety Day	Ripley	WV
Otsego County Safety Day 5th Graders	Cooperstown	NY
Tucker County Progressive Farmer Safety Day	Parsons	WV
Preston County Progressive Farmer Safety Day	Bruceton Mills	WV
Lewis County PFDC Fifth grade students	Lowville	NY
Clymer Elementary School/PFDC	Clymer	NY
Herkimer County PFDC Fifth Grade Students	Frankfort	NY
Oneida County PFDC Fifth grade students	Boonville	NY
Fulton County CCE 4th Graders	Gloversville	NY
Wellington School PFDC Grades 1-4	Houlton	ME
Jefferson Cty CCE 5th Graders	Watertown	NY
Fulton County CCE 4th Graders	Johnstown	NY
Oswego County CCE/Farm Bureau 5th Graders	Sandy Creek	NY
Oppenheim-Ephratah Elementary School K-6 Grades	Oppenheim	NY
Safe Kids Coalition of Lancaster County	Georgetown	PA
Columbia County CCE Progressive Farmer Safety Day Hillsdale Elementary School	Hillsdale	NY
Delaware Progressive Farmer Safety Day Camp	Georgetown	DE
Marshall County Progressive Farmer Safety Day	Moundsville	WV
Nicholas County Progressive Farmer Safety Day	Summersville	WV

NE Regional Trainers

New York State Department of Labor
New York State Department of Health
Adult Education Center, Houlton, ME
Ron Jester, MS, Univ. of Delaware

Morgantown County Farm Bureau	Morgantown	WV
New Paltz Migrant Health Clinic	New Paltz	NY
NYC Watershed farmers	Delhi	NY
Cornell Coop Extension Otsego/Herkimer Counties	Richfield Springs	NY
Schoharie County Dairy Day	Cobleskill	NY

Otsego County Soil and Water District - Dairy Farmers	Pittsfield	NY
Finger Lakes Migrant Healthcare project	Penn Yan	NY
Migrant outreach workers, Orange, Ulster, Dutchess, Columbia Counties	New Paltz	NY
Training for the contract trainers	Cooperstown, NYCAMH	NY
USDA Regional Meeting	Alderson	WV
Albion Correctional Facility officers & grounds keepers	Albion	NY
Chenango County Pesticide applicators	S. New Berlin	NY
Schoharie County Pesticide applicators	Cobleskill	NY
Migrant Workers Hudson River Fruit Distribution	Milton	NY
CRAFT - Roxbury Farms	Kinderhook	NY
Hansen Farm Inc.	Stanley	NY
Hansen Farms Inc	Stanley	NY
Delaware County Milker Training	Hamden	NY
Gockley Farm Employees/Families	Philadephia	NY
Finger Lakes Migrant Health Center Staff/Becky Perry	Penn Yan	NY
Dave Tetor	Cairo	NY
West Virginia USDA Regional Meeting	Beckley	WV
Migrant Workers in Ontario, Wayne, and Yates - 29 locations		NY
Northeast Small Farm Expo	New Paltz	NY
Southern Cayuga HS Ag Classes	Poplar Ridge	NY
Medina HS Ag Classes	Medina	NY
NY State Regional FFA Meeting	Batavia	NY
Washington Cty CCE Tractor Safety Class	Greenwich	NY
FFA leadership Conference	Morrisville	NY
Prattsburgh HS Ag Classes	Prattsburgh	NY
SUNY Alfred Ag Classes	Portageville	NY
Oakland Maryland 4H	Oakland	MD
Springville HS Ag Classes	Springville	NY
Herman/Dekalb School	Hermon	NY
Edwards-Knox Central School	Russell	NY
Lisbon Central School	Lisbon	NY
SUNY Alfred Ag Class Seniors	Alfred	NY
Genesee Valley BOCES	Batavia	NY
South Cayuga FFA Safety Day	Poplar Ridge	NY
Steuben County BOCES	Hornell	NY
Owen D Young School	Van Hornesville	NY
Lewis County 4H winter workshop	Lowville	NY
Broome County Cornell Cooperative Ext 4-Hers	Binghamton	NY
Hundred High School Ag Classes	Hundred	WV
Cameron High School FFA	Cameron	WV
Delaware County CCE Tractor Safety Class	Hamden	NY

Schoharie Cty Progressive Farmer Safety Day Camp	Cobleskill	NY
Madison FFA Tractor Certification Class	Madison	NY
Rensselaer CCE tractor certification class	Troy	NY
Columbia County CCE Tractor Safety Class	Chatham	NY
Orange County CCE Tractor Safety Class	Pine Bush	NY
Valley High School FFA	Pine Grove	WV
Washington County CCE Tractor Safety	Salem	NY
KC Canary Tractor Safety Class	Fultonville	NY
Niagara County Farm and Rural Safety	Lockport	NY
Oneida County CCE Tractor Safety class	Oriskany	NY
Ulster County CCE Tractor Safety Class	New Paltz	NY
Tyler County FFA	Middlebourn	WV
Lewis County CCE tractor certification training	Lowville	NY
Letchworth HS Occupations Class	Gainesville	NY
St Johnsville High School Ag Class	St Johnsville	NY
Wyoming County CCE Safety Day	Perry Center	NY
Ag Class	Oxford Academy	NY
Advanced Health Class	Oxford Academy	NY
Nassau County 4H Camp Staff	Riverhead	NY
St Johnsville VOTEC Classes	St Johnsville	NY
Clymer Central School Ag Classes	Clymer	NY
Suffield HS Ag Classes	Suffield	CT
Cherry Valley/Springfield High School	Cherry Valley	NY
Allegany County CCE Tractor Safety	Belmont	NY
Farmer's Museum Jr Livestock Show	Cooperstown	NY
Rensselear County 4H	Schaghticoke	NY
Dairylea's Annual Meeting	Syracuse	NY
NYSCCE Association Trade Show	Kerhonkson	NY
NY Cooperative Extension Educators	Kerhonkson	NY
Stamford Farmer's Cooperative	Town of Stamford	NY
Progressive Farmer Safety Day Camp Coordinators	Millbrook	NY
U.S. & New York State Dept. of Labor Representatives	Old Forge	NY
CCE Delaware County	Hamden	NY
NY Farm Bureau Annual Meeting	Kerhonkson	NY
NY Farm Bureau Annual Meeting	Accord	NY
Keystone Farm Show	York	PA
New York Grower Show	Syracuse	NY
Orange county growers and migrant health providers	Middletown	NY
Ulster county growers and migrant health providers	Kingston	NY
Chester Valley Equipment Open House	Chester	NY
Empire State Fruit and Vegetable Expo	Rochester	NY
Hudson Valley Fruit School & trade show	Kingston	NY

Upper Hudson Fruit School	Lake George	NY
New York Farm Show	Syracuse	NY
Orange County Dairy Day	Middletown	NY
Gockley Farm	Evans Mills	NY
Fruit growers and migrant workers	Peru and Chazy	NY
NY FARMS!	Cortland	NY
Hardy County Safety Fair	Morfield	WV
Sheldon farms	Granville	NY
Richer Feeds	Central Bridge	NY
NY State DOL Preharvest meeting	Catskill	NY
NY State FFA Convention	Lowville	NY
Wyoming County Dairy Fest	Strykersville	NY
HANYS Community Task Force	Cooperstown	NY
Orchards in Wayne County		NY
Northern NY Ag Expo	Malone	NY
Orchard Owners in Orleans/Niagara Counties		NY
Empire Farm Days	Seneca Falls	NY
IL Richers Open House	Sangerfield	NY
Fonda Fair	Fonda	NY
Central New York Farm Progress Show	Mohawk	NY
Northeast Small Farm Expo	New Paltz	NY
Farmer's Museum Harvest Festival	Cooperstown	NY
Sundae on the Farm	Rotterdam Junction	NY
Bassett Healthcare Clinic Lobby	Cooperstown	NY

Health Screening

Connecticut Farm Bureau Annual Meeting	Windsor	CT
South Cayuga High School FFA and Adults	Poplar Ridge	NY
New Hampshire Farm Bureau Annual Meeting	Concord	NH
Keystone Farm Show	York	PA
Schoharie County Dairy Day	Cobleskill	NY
Western NY Corn Congress	Waterloo	NY
NY Northeast Organic Farming Association (NOFA)	Syracuse	NY
Empire State Fruit and Vegetable Expo	Rochester	NY
Bradford-Sullivan County Dairy Day	East Smithfield	PA
Sullivan County Dairy Day	Jeffersonville	NY
St Lawrence County Agribusiness Spring Farm Show	West Potsdam	NY
Niagara County Farm and Rural Safety Night	Lockport	NY
CRAFT – Apprentice Farmers	Kinderhook	NY
Hudson Valley Migrant Health Clinic Open House	Goshen	NY

Preston County Progressive Farmer Safety Day - Adults	Bruceton Mills	WV
Empire Farm Days	Seneca Falls	NY
Berkeley County Progressive Farmer Safety Day - Adults	Martinsburg	WV
NY/PA Beef Producers Meeting	Spencer	NY

Migrant Interventions

1.) Materials development with CDC/NIOSH – Andrea Steege - Evaluate NAWS materials for farmworkers

2.) Occupational physician critiques of Migrant Farmworker Occupational Health Reference Manual by:

Steven Kirkhorn, MD, MPH National Farm Medicine Center, Marshfield, WI
Michael Lax MD, MPH, Upstate Medical Center, Syracuse, NY.

3) Migrant Health Clinics – New York, New Jersey