



Agriculture, Forestry, Fishing, Safety & Health



NIOSH Agricultural Center Initiative Evaluation Project January 2011

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**The NIOSH Agricultural Center Initiative
Evaluation Project
Fiscal Year 2009 Report**



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EXECUTIVE SUMMARY

NIOSH Agricultural Center Initiative Evaluation Report - FY 2010

Introduction

The Agricultural Health and Safety Center Initiative began with the development of two Centers in 1990 funded by the National Institute for Occupational Safety and Health (NIOSH). Due to the vast regional differences in agricultural production and practices across the United States, NIOSH chose to add additional Centers roughly corresponding to Public Health Service Regions. In FY 2010, the Initiative consisted of seven Agricultural Centers mandated to undertake research, develop prevention and education programs and provide consultation to constituents across the United States in an expanded North American Industry Classification System (NAICS), occupational sub code 11, Agriculture, Forestry, Fishing and Hunting.

The mission of the Initiative is to reduce injury and disease in three of the most hazardous occupations in the United States: agriculture, forestry, and fishing. This mission is to be accomplished by addressing the following objectives:

1. Conduct research related to the prevention of occupational disease and injury among producers, workers and their families.
2. Develop, implement and evaluate educational and outreach programs for promoting health and safety for production agriculture/forestry/fishing including farmers, workers and their families. This would include providing consultation and/or training to researchers, health and safety professionals, graduate/professional students, agricultural extension agents, and others in a position to improve the health and safety of workers.
3. Develop, implement and evaluate model programs for the prevention of illness and injury among agriculture/forestry/fishing producers, workers and their families.
4. Develop linkages and communication with other governmental and non-governmental bodies involved in health and safety with special emphasis on communications with other agricultural/forestry/fishing health and safety programs (PAR-06-057).

Sections of FY 2010 report

Based upon recommendations from the Agricultural Center Evaluation (ACE) team members the report for fiscal year 2010 is composed of three sections and three appendices:

- Program monitoring report on Center Initiative accomplishments for FY 2010
- An aggregate report on selected Initiative accomplishments for fiscal years 2007-2010, the first four years of the current five year funding cycle.
- An Illustration of projects featuring Research to Practice (*r2p*) successes from each Center
- Appendices include: 1) Center research projects by the National Occupational Research Agenda (NORA) Strategic Goal categories with cross sector applications identified, 2) a list of products developed by type, and 3) a list of projects by Core. Each appendix provides a different overview of the work of the Center Initiative

Background

In 1997 the High Plains Intermountain Center for Agricultural Health and Safety (HICAHS) obtained funding to begin the process of developing an Agricultural Center Initiative evaluation effort. Representatives from existing Centers attended biannual workshops, hosted by HICAHS, and collaboratively developed an Initiative database and defined indicators of progress on objectives. Reports were produced by the evaluation group for fiscal years 1999-2001, and with renewed funding 2004-2007.

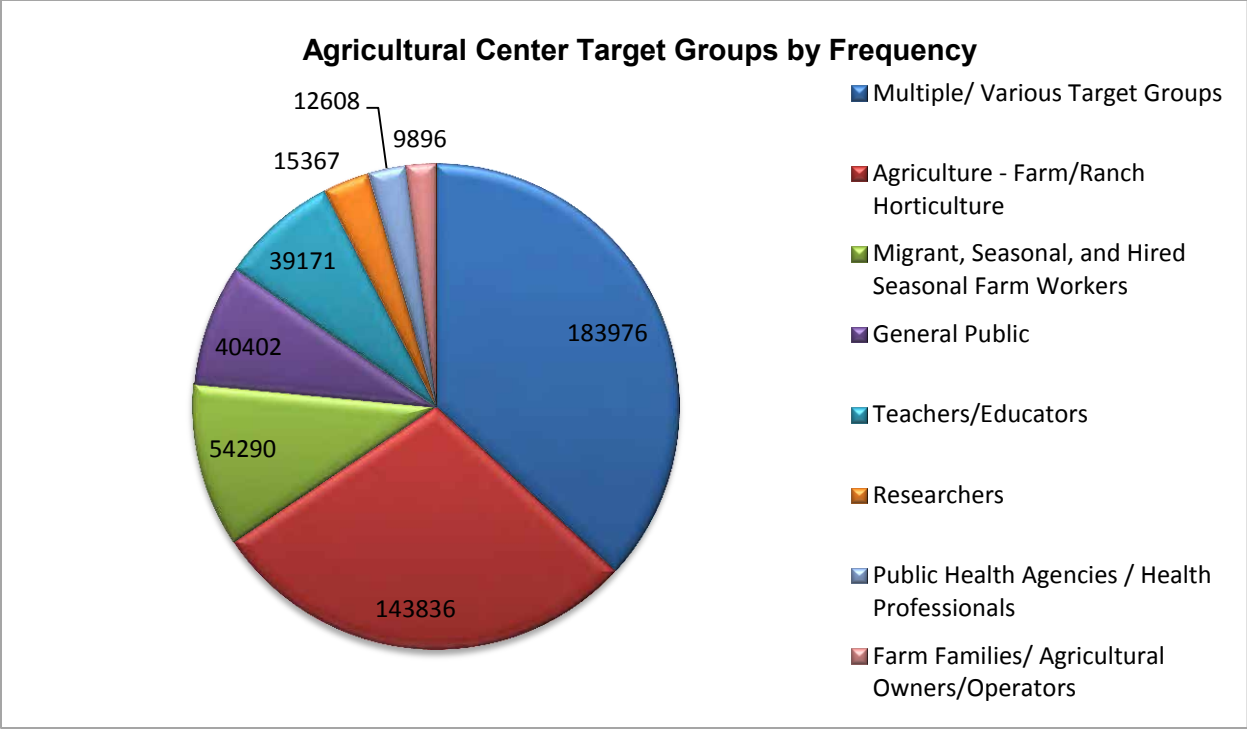
NIOSH awarded supplemental funding to continue the multi-site program evaluation for fiscal years 2008 – 2010. The reports for each FY were slightly altered each year based upon feedback received and suggestions made by the ACE team. In addition, with the assistance of a small subgroup, consisting of NIOSH, the Southwest Center team members and HICAHS, forms were developed in ACCESS™ that allow Centers to pull up reports by project with the necessary components to more easily respond to NIOSH requirements for year-end and progress reports.

Initiative accomplishments FY 2010 – Program monitoring

All seven Centers provided data on 134 projects into a copy of the ACCESS™ database which was forwarded to HICAHS for aggregation and reporting. The FY 2010 Initiative data combines the productivity of all Centers to provide the necessary results to address eleven evaluation questions; the results of three of these questions are presented here, the reader is encouraged to review the full report for the remaining responses and discussion related to these outcome measures.

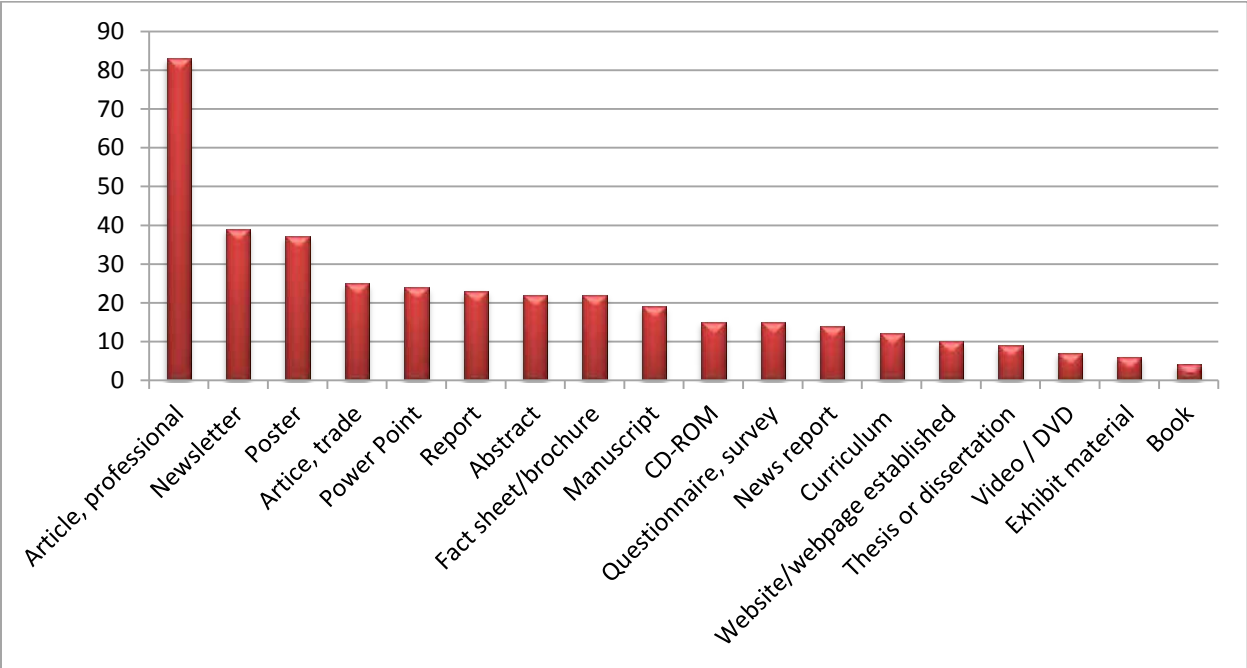
1. What were the target populations or audience contacts by specific activities by the Center Initiative during FY 2010?

The Agricultural Center Initiative had a broad range of target groups during FY 2010. Just over 500,000 contacts were reported and the top five reported target groups account for 90% of the total contact counts. The activities of the Initiative have been divided into direct and indirect (product distribution) contact with constituents. Of the 122,439 direct activities reported the top ten included media interviews, material distribution, presentations at conferences, outreach education, and training. Indirect contacts totaled 378,739 and the reported products included published articles, newsletters, curriculum, CD-ROMs, and power point presentations for distribution. As shown below, the vast majority of all efforts targeted either agricultural owners and operators or more than one group within the agricultural community.



2. What products by type were produced by the Center Initiative during FY 2010?

A total of 389 products were developed during the 2010 monitoring period. The majority of the efforts reported (63%) were attempts to disseminate information and educational materials. Based upon the variety of product types, it is clear that the information and educational materials developed from the research undertaken by the Center Initiative are reaching a variety of audiences.



3. Which NORA goals were addressed by Center research during FY 2010?

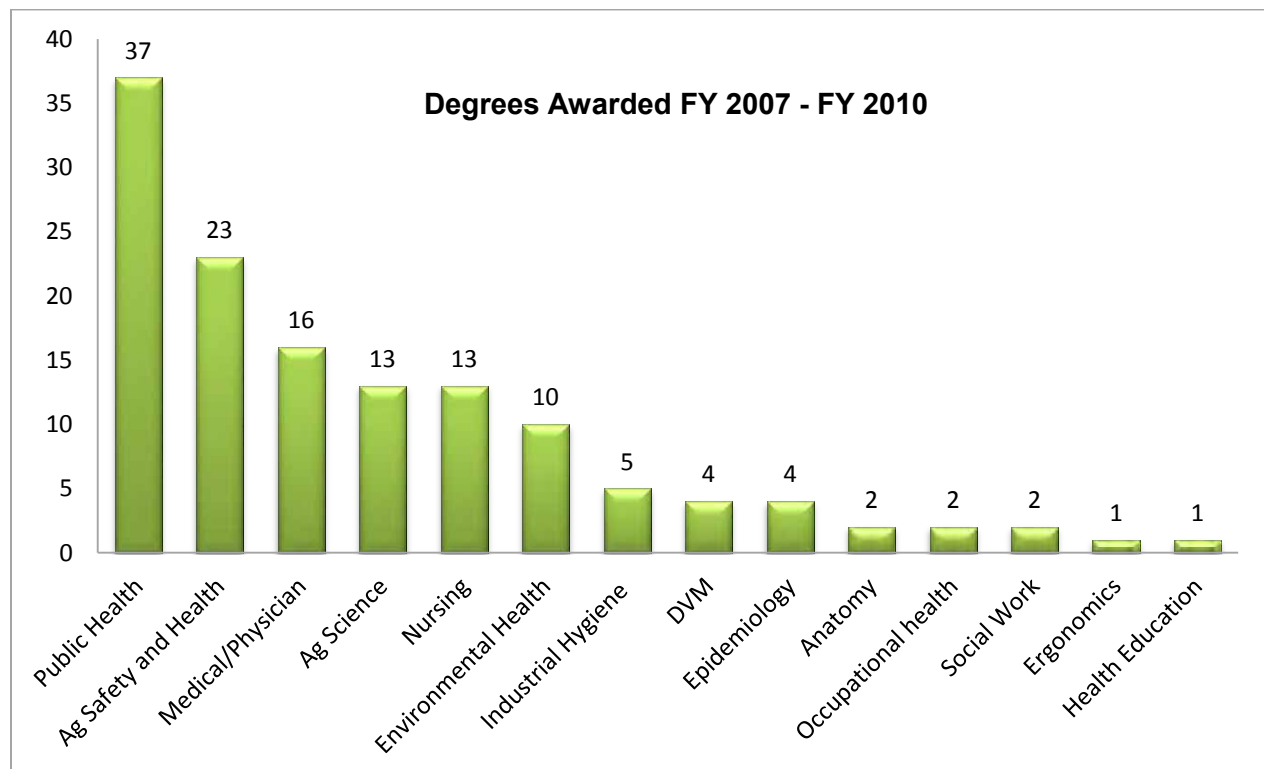
For the last two reporting years, the ACE team has reported research projects under the NORA II categorizations. FY 2010 saw at least one project addressing all nine NORA II strategic goals. Strategic goal 3 – outreach, communications, and partnerships – had the most reported projects with 57. Strategic goal 2 – vulnerable workers – had the second most projects reported with 51.

Aggregate report for current funding cycle FY 2007-2010

The second section of the report provides an overview of the work of the Center Initiative for the years 2007 through 2010, the first four years of the current five year funding cycle. The information provided responds to a selection of the overall aggregate evaluation questions to illustrate the cumulative accomplishments of Center personnel related to research, outreach, products, and additions to the knowledge base related to agriculture/forestry/fishing health and safety.

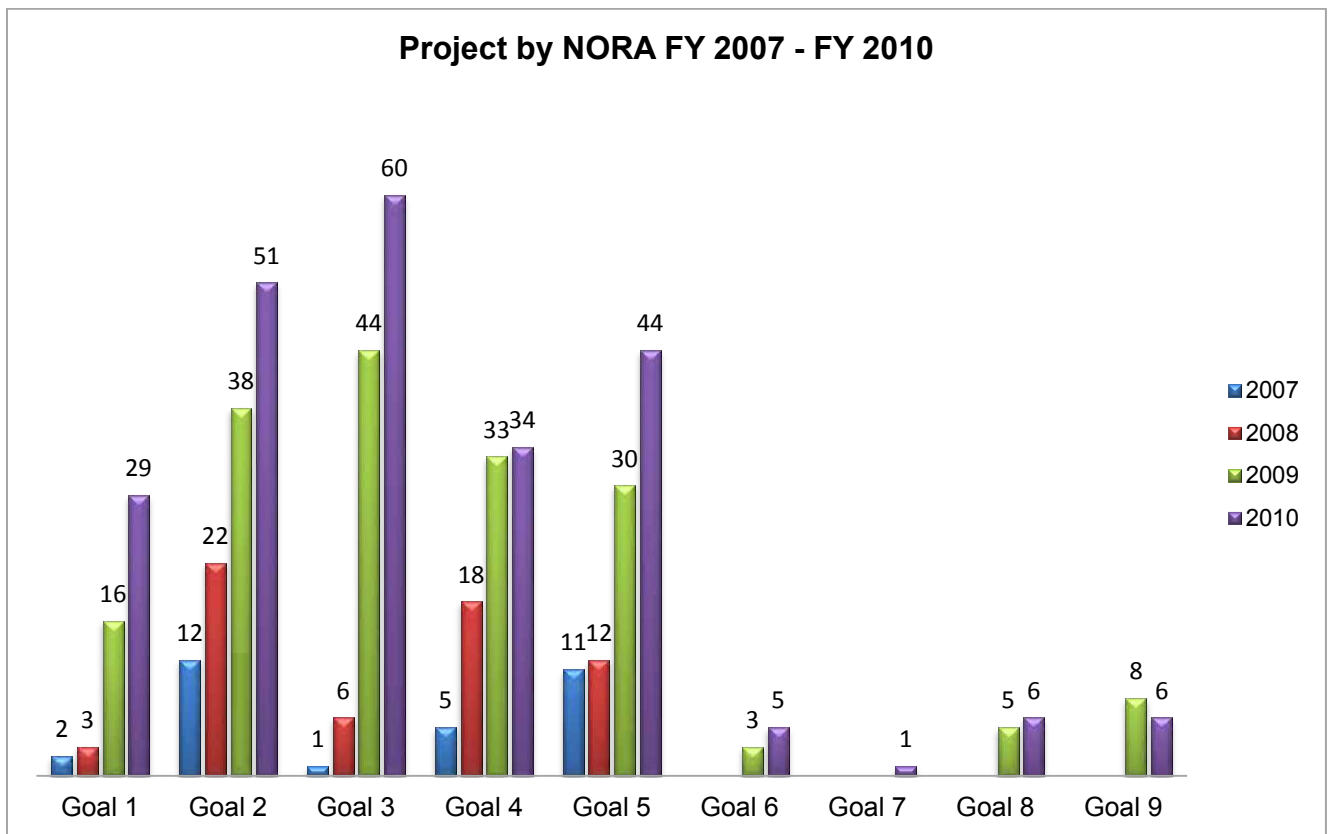
1. For what disciplines were degrees awarded by Centers between FYs 2007-2010?

The Center Initiative clearly responds to needs related to agricultural/forestry/fishing occupational health and safety concerns by providing education opportunities for multiple disciplines that can continue to provide research, outreach and services to this occupational sector. Over the past four year period 133 students have graduated in a variety of disciplines that have been supported by the Center Initiative.



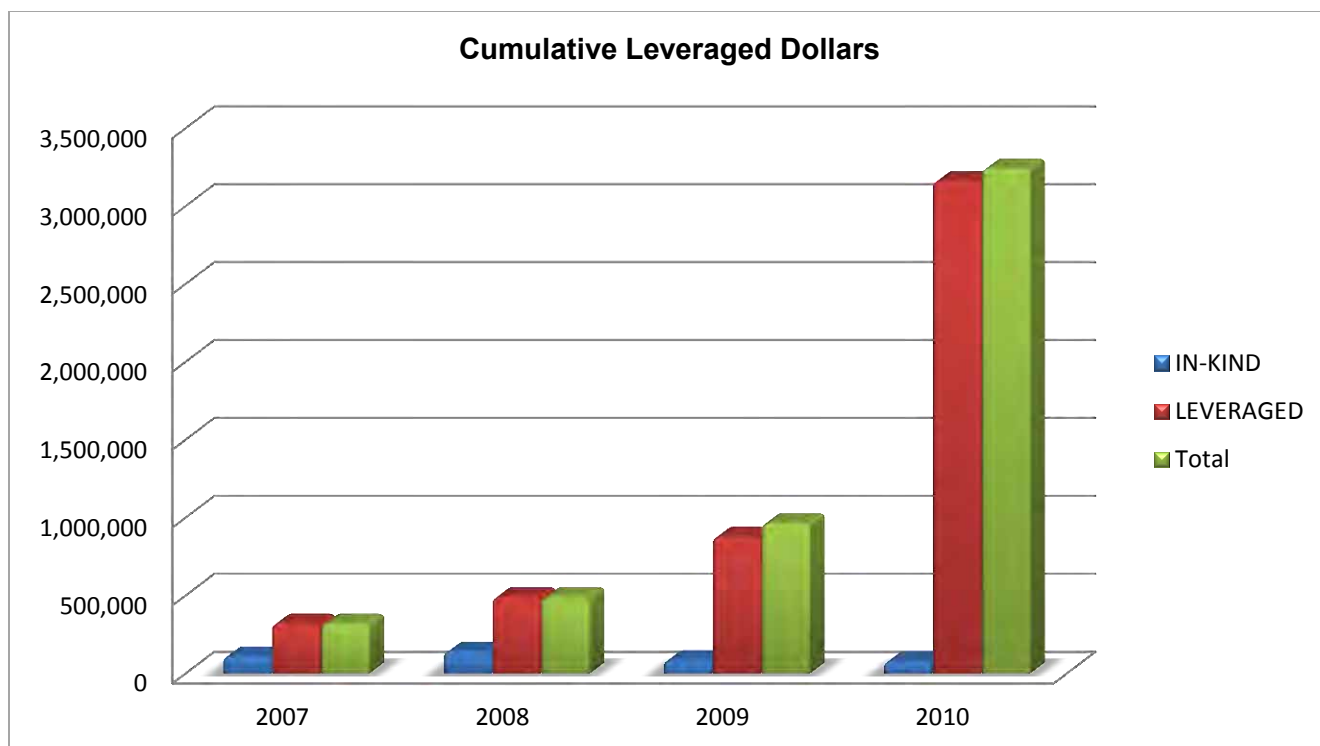
2. How many research (including pilot/feasibility) projects by NORA II goals were supported by the Center Initiative during FYs 2007-2010?

It is important to identify the move from NORA I to NORA II as a framework within which research projects can be categorized. As the sector based framework was adopted at the end of 2008, the ACE team responded by re-categorizing those projects that had been funded since 2007. In this report a special effort was made to re-categorize all feasibility/pilot projects funded by the Centers. All nine strategic goals are addressed by at least one project; a considerable accomplishment as Forestry and Fishing (Goals 6-9) were not part of the charge to the Centers when the funding cycle began.



3. What was the reported monetary value leveraged (beyond NIOSH support) by the Center Initiative (in dollars and in-kind) between 2007 and 2010?

In FYs 2007 and 2008, just under a million dollars were leveraged each year by the Initiative. Just over \$2,000,000 dollars were leveraged in 2009 and fiscal year 2010 saw the most leveraged dollars with just over \$3.1 million. A total of \$5,122,347 has been reported leveraged over the four year span of this report, adding considerable additional funding from sources other than NIOSH to support the work of the Centers.



Project success stories

This year's ACE report again includes a section presenting a project *r2p* (Research to practice) "success story" from each Center. These short reports represent multiple approaches to translation of projects to practice accomplished through the efforts of Initiative personnel.

Discussion

The 2010 fiscal year report represents the work and accomplishments of the staff, collaborators, and partners of the seven Agricultural Centers undertaking research, prevention and education on behalf of those working in agricultural, forestry and fishing occupations across the United States.

NIOSH provided supplemental funding support to each participating Center to acknowledge the time and effort that individual team members put into the ACE data collection process; and the Centers are most appreciative of the funding provided.

The Centers which make up the Agriculture/forestry/fishing Initiative provided data in the ACCESS™ database to HICAHS for aggregation. A number of limitations to this monitoring process are presented in the report and represent some of the methodological limitations of all multisite evaluation efforts.

Summary and Recommendations

The ACE team has now completed four full years of program monitoring under the current funding cycle. The results presented in the report describe a broad range of activities across

diverse regions of the country during fiscal year 2010 as well as cumulative accomplishments over the current funding cycle.

The ACE project began as a response to an external evaluation review of the Center Initiative (Kennedy 1995). The National Academy of Science evaluation completed in 2008 also encouraged the Centers to work together with NIOSH to approach evaluation collaboratively. The ACE team, with support from NIOSH, has provided a multisite approach to monitoring and documenting the research activities, products, outreach, and translation efforts of Initiative projects.

- The primary recommendation of this ACE report is to build upon the experience, knowledge and collaboration the ACE process has provided and continue to pursue a multi-site approach to evaluation with the new funding cycle beginning fiscal year 2012 (9/15/11-9/14/16).

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Evaluation Report NIOSH Agricultural Center Initiative Fiscal Year 2010

Introduction

The Agricultural Health and Safety Center Initiative in FY 2010 consisted of seven Centers funded by the National Institute for Occupational Safety and Health (NIOSH) to undertake:

- Research
- Development and evaluation of prevention programs
- Development and evaluation of educational programs
- Provision of consultation and outreach efforts across the ten Public Health Service regions in the United States.

The overall mission of these Centers is to reduce injury and disease in an occupation that has been identified as one of the most hazardous in the United States, agricultural production. NIOSH expanded the responsibilities of the Centers to include the forestry and fishing industry classifications, now referred to as AgFF. Preliminary data is available from the 2009 Census of Fatal Occupational Injuries (CFOI). The agriculture, forestry, fishing, and hunting sector had the highest fatal work injury rate of 26.0 per 100,000 employed (BLS, 2010). This rate is twice as high as the next two sectors reported by CFOI and is significantly higher than the all worker fatal injury rate of 3.3 per 100,000 workers (BLS, 2010). The nonfatal injuries and illnesses for AgFF were reported at a rate of 4.9 per 100 full-time workers which is higher than the national rate of 3.9 per 100 workers (BLS, 2009). “Collectively, the three sectors consistently have the highest injury and fatality rates of any U.S. industries, so the overall effect on the safety and health of exposed populations in agricultural, forestry, and fishing worksites is enormous” (NRC, 2008, p. 1).

Outline of FY 2010 report

The report for fiscal year 2010 consists of six sections. Suggestions and feedback have continued to shape and improve the reporting process throughout the current funding cycle. This report contains the following sections:

- A report of Center Initiative accomplishments for FY 2010
- An aggregate report on key Initiative accomplishments in the current funding cycle: 2007-2010
- An *r2p* success story from each Center which illustrates how Initiative work is reaching target audiences
- A presentation of research projects by NORA intermediate goals
- A list of projects by core
- A list of products produced in 2010

Background

In 1990 the National Institute for Occupational Safety and Health (NIOSH) began an Initiative to address one of the most hazardous and long ignored occupations in the nation, that of agricultural production. Due to the vast regional differences in products and practices across the country, NIOSH chose to fund the development of multiple Centers roughly corresponding to

Public Health Service regions. As a cooperative agreement, the Centers and NIOSH address the objectives of the Agricultural Health and Safety Initiative which are to:

1. Conduct research related to the prevention of occupational disease and injury among agricultural producers, workers and their families.
2. Develop, implement and evaluate educational and outreach programs for promoting health and safety for production agriculture/forestry/fishing including farmers, workers and their families. This would include providing consultation and/or training to researchers, health and safety professionals, graduate/professional students, agricultural extension agents, and others in a position to improve the health and safety of agricultural workers.
3. Develop, implement and evaluate model programs for the prevention of illness and injury among agricultural producers, workers and their families.
4. Develop linkages and communication with other governmental and non-governmental bodies involved in agricultural health and safety with special emphasis on communications with other agricultural health and safety programs. (PAR-06-057)

Two external evaluations of the Center Initiative, the 1995 Kennedy Report and 2008 National Academy of Sciences evaluation of NIOSH, have encouraged the Centers to work together to develop a cross-site evaluation of the Center Initiative. In response to the first of these recommendations, a collaborative multisite evaluation design of the Center Initiative was proposed by one Center and NIOSH agreed to fund workshops to develop the evaluation approach in 1997. Over the next three years, a team of representatives from each funded Center and NIOSH developed a program monitoring approach to Initiative accountability. A six month pilot of the evaluation was completed for fiscal year 1999, with a report issued in early 2000. Centers continued to gather data based upon the indicators and variables selected and defined by the evaluation team for two full years, with reports issued for fiscal years 2000 and 2001. There was a funding hiatus for Initiative evaluation after completion of the FY 2001 report.

In the fall of 2004, a new evaluation contract was awarded to the High Plains Intermountain Center for Agricultural Health and Safety (HICAHS: V. Buchan & H.Holmquist-Johnson, #212-2004-09852) renewing the Agricultural Center Initiative evaluation effort. Each Center again designated a representative to become a member of the collaborative Agricultural Center Evaluation Team (ACE). The monitoring model that had been developed for 2000 and 2001 reports was reviewed, and modifications as well as additions were made to the variables to be included and to the definitions of those variables.

The team meets once each year to make the necessary modifications to both the variables being collected and to make recommendations related to reporting format. In addition, over this last funding cycle, with the assistance of the Southwest Center and NIOSH, reports were developed in the ACCESS™ database that allows Centers to more easily provide NIOSH with progress and year end reports. The citations for all published reports may be found in the reference list at the end of the report.

Methodology (program monitoring)

The aim of this evaluation project is to document Initiative progress on the NIOSH objectives for the Agricultural Centers. The model, program monitoring (Rossi, Freeman & Lipsey, 2004), provides a picture of the scope, reach, and intensity of Initiative work across the nation. A monitoring approach to evaluation provides “administrative intelligence” meaning access to information that improves Initiative and Center planning, enhances collaboration opportunities, addresses accountability and helps set the stage for targeted outcomes assessment.

In each of the previous fiscal years, after the ACE workshop and based upon the recommendations of the ACE team, the lead center makes minor revisions in both the ACCESS™ database and the categories of the key variables or indicators. At this year’s workshop on September 16, 2010 the team decided that due to funding delays no changes would be made to the ACCESS™ database or to variables or indicators. Each center entered their data into the ACCESS™ database for the current fiscal year (September 15, 2009 through September 14, 2010). Centers, utilizing various methods of data collection on projects, collect information and forward that data to HICAHS for collation into an Initiative database. New to this year’s data collection was the incorporation of the Southwest Center’s server using a secure link and password. Each center uploaded the database to the secure server and then HICAHS staff downloaded and analyzed the collated data.

IDENTIFYING INFORMATION						
Center Name	Project Title and Description	Center/Project Objective	PI /Project Contact Person	Project Dates		
KEY INDICATORS						
Type of Agriculture	Contact Numbers	Activities	Academic Degrees	Products	Audience Demographics	
Collaboration	Leveraging	Regionalization	Special Sector			
NIOSH SPECIFIC INDICATORS						
Core Administrative and Planning Education and Outreach Multi-Disciplinary Research Prevention-Intervention	NORA II Strategic Goals 1: Surveillance 2: Vulnerable Populations 3: Outreach, Communications & Partnerships 4: Ag Health 5: Ag Safety 6: Forestry Safety 7: Forestry Health 8: Fishing Safety 9: Fishing Health			Research to Practice: Intervention and Education Research Field Use Policy Academia Evaluation Technical Assistance Surveillance		

Figure 1 Database Overview

Challenges

The success of any evaluation is greatly increased if it is “built in” from the beginning of program planning (Rossi, Freeman & Lipsey, 2004). The original NIOSH Center Initiative objectives included the need to evaluate individual projects within each Center, but lacked a clear agenda to address the Initiative as whole until the funding of the first workshop in 1997. Additional challenges include the great variance between the Centers’ approaches to fulfilling NIOSH objectives due to differences in auspices, resources, expertise and regional agriculture.

An additional challenge to both program monitoring and the cross site impact assessment efforts are Center personnel changes. The lead Center has incorporated updates and abbreviated training on the ACCESS database into each Workshop, but it is clear that personnel changes, while unavoidable in a large Initiative, impact data collection and reporting. Initiative evaluation efforts are enhanced when there is stability in the PIs at each Center as well as ACE team membership.

A final challenge has been the lack of stable funding to support Initiative-wide evaluation. Funding has been somewhat sporadic beginning with the first Workshop in 1997, with a hiatus between 1998 and 1999, and then again between 2002 and 2004 when a contract was announced and awarded. The ACE team has made remarkable progress in spite of all of these challenges in its efforts to present a national vision of the accomplishments of the Agricultural Center Initiative.

Limitations

Multisite evaluation efforts present methodological limitations for a number of reasons: the most difficult of these limitations is that they usually begin “after the fact.” The Center Initiative had been in existence for seven years prior to working collaboratively, and each Center had developed its own methods of project evaluation and reporting format. The only logical approach therefore was to involve all the Centers, and form a collaborative team approach to developing the evaluation model and implementation procedures.

Both the reliability and validity of the data collected and forwarded to HICAHS are impacted by a number of additional limitations, key among these are personnel changes, and with those changes, alterations in data collection procedures. It takes time to train ACE team members; they in turn need to work with their own Center principal investigators to provide the necessary data per project funded. Our experience indicates that each time there are personnel changes either on Center projects or with ACE team participation, the potential exists for the Center to lose both data and reliability related to that data. Personnel changes are clearly unavoidable, but it is important to acknowledge the limitations that accompany such events. Part of the responsibility of the lead Center is to increase reliability by data editing as each team member forwards individual Center data, a step that provides the opportunity to check back with team members to verify or correct information collected.

Acknowledgements

NIOSH as a collaborative partner

The importance of the NIOSH role as a federal collaborative partner in this process cannot be overemphasized. First, NIOSH has continuously provided administrative personnel to assist the center evaluators; these contacts have been supportive and very helpful in assisting the

evaluators and HICAHS with suggestions, definitions and updates from NIOSH. NIOSH has also provided three very important frameworks that have assisted the evaluation effort. The first framework is provided by the Initiative objectives that the Centers are to respond to based upon each Center's region and expertise. The second is the National Occupational Research Agenda (NORA, 2008) which provides a categorization scheme for all Initiative research projects. The third has been the "r2p" (Research to Practice) concept which the team has defined with the assistance of NIOSH.

Center representatives

The staff at the lead Center would like to express our deep appreciation to each current and past member of the ACE team (current are listed on the inside back cover) for their time, travel, ideas and efforts in maintaining the Agricultural Health and Safety Center Initiative evaluation project. Members of the team have volunteered for assignments related to helping with the database, report indexing, cover design, and numerous other additional duties that have enhanced the team's accomplishments. This report is only possible because of a truly dedicated and collaborative team effort.

Logic Model for the ACE Evaluation Process

Figure 2 provides a logic model overview of the Agricultural Center Evaluation (ACE) process. Input into the project consists of NIOSH funding, external evaluator reports, PAR objectives, and the National Occupational Research Agenda. Each of the seven centers has projects with a primary assignment in one of 4 cores; the work on these projects compromise the activities upon which indicator data is collected in each of the individual center databases and then forwarded to HICAHS and cumulated into the ACE database. The primary goal is to provide both short term and midterm outcome information via reports for all concerned stakeholders, including but not limited to: NIOSH, Center Personnel, Occupational Safety and Health Researchers, Agricultural organizations, and Extension Personnel. The evaluation model, program monitoring, provides information to share with all concerned stakeholders and to assist with decision making related to future program planning as well as provide immediate feedback to each center and to the ACE Team.

NIOSH AgFF CENTER INITIATIVE EVALUATION LOGIC MODEL

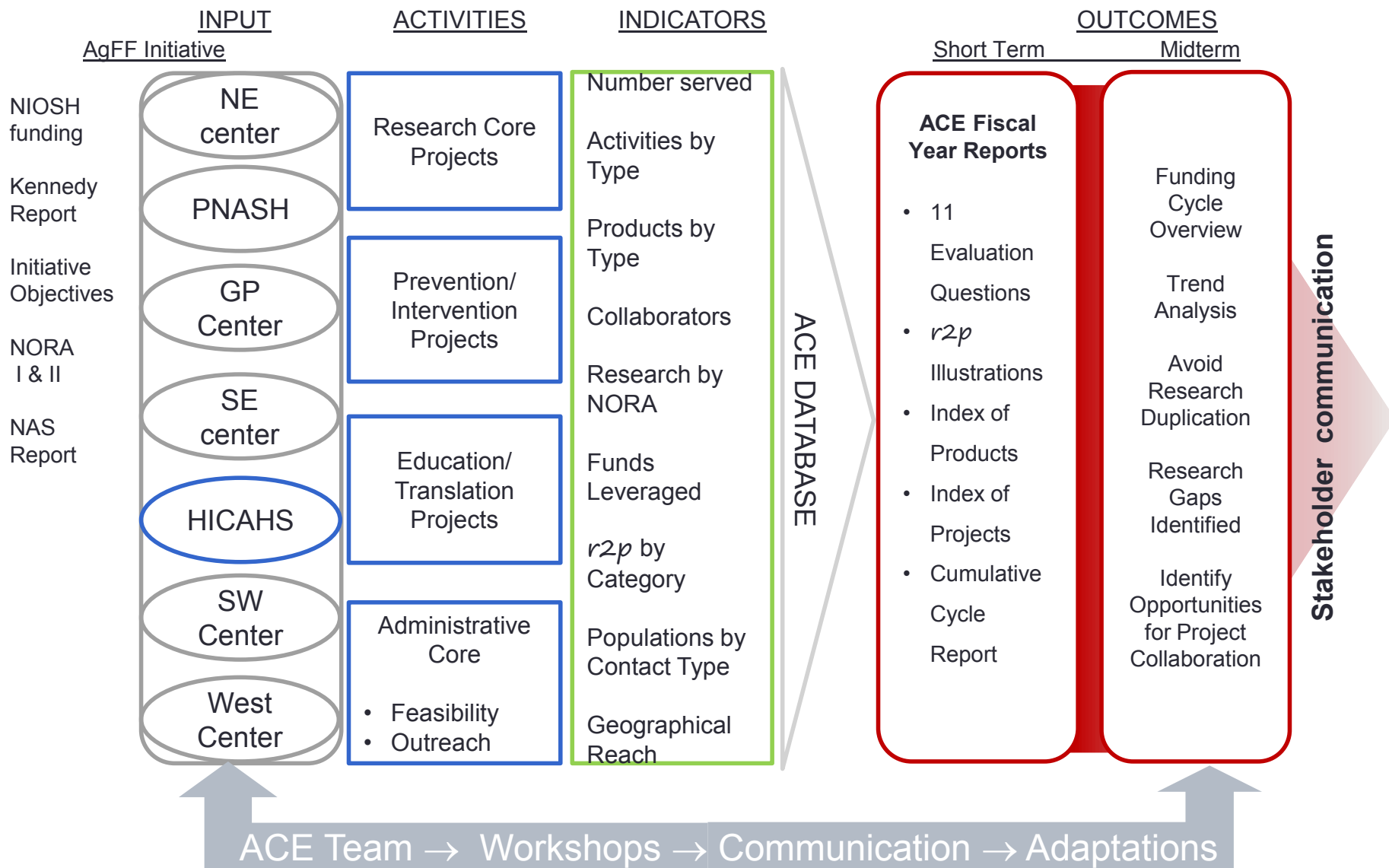


Figure 2. Logic Model

Program Monitoring Questions – FY 2010

1. What were the target populations or audience contacts by specific activities by the Center Initiative during FY 2010?

The mission of the Agricultural Center Initiative is met in a number of ways. The activities of the Initiative have been divided into two types of contact:

- Direct (active) contact with constituents (Table 1); and
- Product distribution (passive) contact with constituents (Table 2).

While the data presented in the tables are approximate numbers, as Center personnel vary in the specificity of data reporting, they are presented as an indicator of Centers' work with multiple target groups.

Table 1. Direct activities with constituents

Activity Type	Contact Count
Media interview	40,400
Material distribution	25,489
Conference-present	15,754
Material development	13,321
Website hit counts	7,723
Data collection	3,891
Outreach education	3,157
Training	2,567
Consultations	2,502
Professional presentation	1,093
Conference-attend	862
Workshop-present	815
Stakeholder meeting	753
Academic lecture / education	748
Exhibit	713
Center promotion	681
Participant recruitment	448
Workshop-arrange / sponsor	322
Conference-arrange / sponsor	290
Project development / planning	245
Data analysis	214
Workshop-attend	168
Testing / screening	126
Curriculum development	108
Professional development	31
Resource cultivation	18
TOTAL	122,439

Table 2 provides the indirect stakeholder contacts via material distribution, such as publications or newspaper articles (reported by circulation) and newsletters (reported by distribution lists). A primary objective of the Center Initiative is to translate information gained from research, intervention and evaluation projects to persons either working in agricultural production or working on their behalf. According to previously conducted needs assessments, these indirect methods of communication have been requested by persons employed in agriculture due to the convenience of their access.

Table 2. Indirect Contacts by Product distribution count

Product Type	Counts
Article published, professional (juried publication)	125,395
Article published, feature (trade publication)	113,550
Newsletter	91,452
Abstract	24,550
Curriculum (training)	9,134
CD-ROM	4,325
Manuscript	3,000
Poster	2,215
Video / DVD	1,700
PowerPoint Presentation (for distribution)	616
Book	450
Database	407
Website or webpage established	365
Questionnaire, survey, or evaluation instrument	358
Newsletter article	250
Report (unpublished)	171
Fact Sheet	150
Report to NIOSH (year-end or continuation)	150
Curriculum (short course)	130
Conference technical paper	100
Conference presentation	100
Course manual	91
Brochure	50
Paper	30
TOTAL	378,739

2. What were the target groups of the Center Initiative work during FY 2010?

The Agricultural Center Initiative had a broad range of target groups during FY 2010. Just over 500,000 contacts were reported and the top five reported target groups account for 90% of the total contact counts (Table 3). The vast majority of efforts targeted either agricultural owners and operators or more than one group within the agricultural community. The large numbers in Table 3 represent dissemination of information and corroborate the contact numbers. The

groups include a number of key constituent groups that assist with dissemination of Center work, such as health professionals, manufacturers, Cooperative Extension agents and educators.

Table 3. Agricultural Center target groups by frequency

Target Group	Contact Count
Multiple / Various Target Groups	183,976
Agriculture - Farm / Ranch / Horticulture	143,836
Migrant, seasonal, and hired seasonal farm workers	54,290
General Public	40,402
Teachers / Educators	39,171
Researchers	15,367
Public Health Agencies	7,836
Farm Families	7,336
Health Professionals	4,772
Agricultural Owner/operators	2,560
Children / students – primary and secondary school age	2,251
Academic Faculty	1,957
Agricultural Services	1,799
Students – College / University	1,315
Agricultural business/Manufacturers and Distributors	968
Agricultural Employees	874
Agricultural Producer	607
Advocacy groups - Farm worker health advocates	587
NIOSH / Ag. Centers	551
Agricultural – Forestry	487
Advisory Committee	401
Agricultural – Fishing / Hunting / Trapping	246
Community Based Organizations	141
Cooperative Extension	113
Media/Marketing Agents	102
State Agencies/ Workers Compensation or Insurance	60
Federal Agencies	24
Parents	10
TOTAL	512,039

3. What research projects did the Center Initiative undertake in FY 2010? By NORA research priority?

For the last two fiscal years, the ACE team has reported research projects under the NORA II categorizations. The complete list of projects by NORA II category can be found in the 2010 project list in the report appendices. Included in Table 4 and in the appendices are pilot projects that have been funded under the Center Initiative. Two notable changes occurred in this year's

reporting as compared to FY 2009: all nine strategic goals now have at least one project that addressed the intermediate goals and all but one (9) of the strategic goals had an increase in project numbers. The majority of projects continue to address goals 2 and 3; however, there has been an increase in those targeting strategic goal 5.

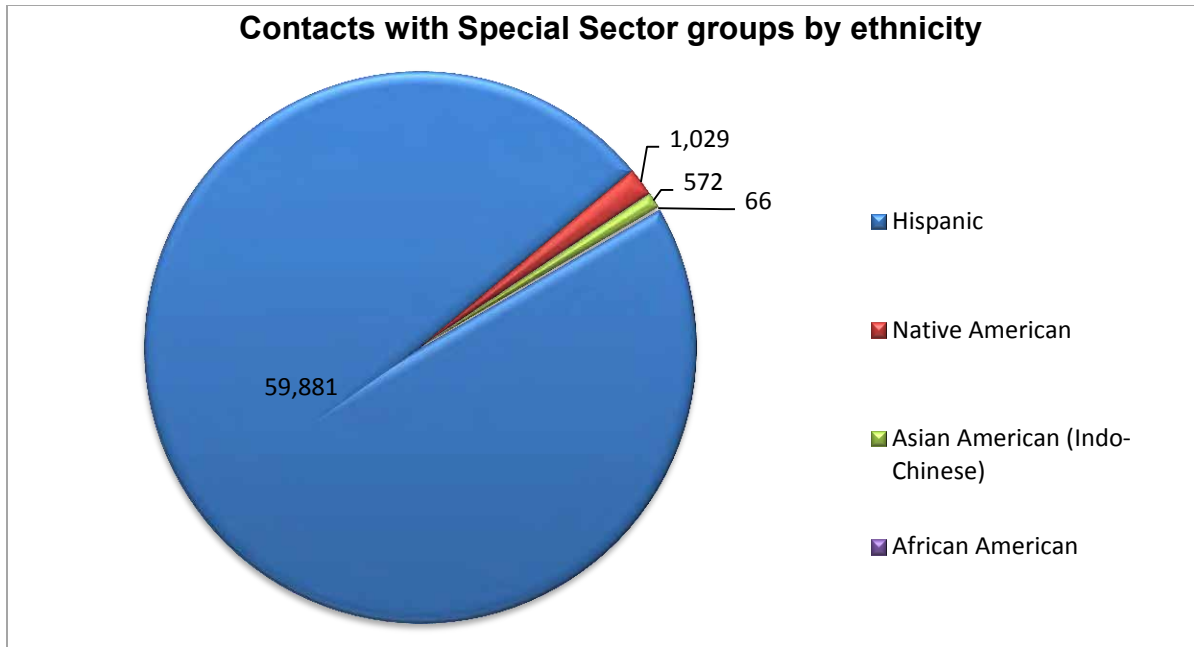
Table 4. Research projects by NORA II strategic goal

2010 NORA strategic goal	Project count
Strategic Goal 1 – Surveillance: Improve surveillance within the Agriculture, Forestry, and Fishing Sector to describe: the nature, extent, and economic burden of occupational illnesses, injuries, and fatalities; occupation hazards; and worker populations at risk of adverse health outcomes.	29
Strategic Goal 2 – Vulnerable Workers: Reduce deleterious health and safety outcomes in workers more susceptible to injury or illness due to circumstances limiting options for safeguarding their own safety and health.	51
Strategic Goal 3 – Outreach, Communications, and Partnerships: Move proven health and safety strategies into agricultural, forestry, and fishing workplaces through the development of partnerships and collaborative efforts.	60
Strategic Goal 4 – Agriculture Safety: reduce the number, rate, and severity of traumatic injuries and deaths involving hazards of production agriculture and support activities.	34
Strategic Goal 5 – Agriculture Health: Improve the health and well-being of agricultural workers by reducing occupational causes or contributing factors to acute and chronic illness and disease.	44
Strategic Goal 6 – Forestry Safety: reduce the number, rate, and severity of traumatic injuries and deaths involving hazards of forestry.	5
Strategic Goal 7 – Forestry Health: Improve the health and well-being of forestry workers by reducing occupational causes or contributing factors to acute and chronic illness and disease.	1
Strategic Goal 8 – Fishing Safety: reduce the number, rate, and severity of traumatic injuries (including death) involving hazards of commercial fishing.	6
Strategic Goal 9 – Fishing Health: to improve the health of commercial fishermen by reducing occupation causes or contributing factors to illness and disease.	6

Note: Projects may report more than one strategic goal

4. What special sector activities has the Center Initiative undertaken during FY 2010?

The Center Initiative continues to focus on activities related to special sector populations. There are multiple ways to look at the data related to special sectors (vulnerable populations) as defined by the Initiative. One way is to consider the contacts with individual special sector population such as children, migrant workers, ethnic minority workers, and low-income individuals. Overall, 62,065 contact counts were identified as special sector and the majority targeted migrant workers (54,300). Another way is identification of a specific ethnicity related to the reported special sector contact (Figure 3). When an ethnicity was identified related to the contact, the majority were identified with the Hispanic population. These contacts were categorized under different special sectors: migrant workers (54,243), ethnic minority worker (4,934), children (465), and low-income (239). While the Centers made a concerted effort to undertake research and provide information, education and services for a variety of ethnic groups working in agricultural production, the vast majority of reported special sector activities targeted migrant workers and the Hispanic population.



Note: 4% did not report a specific ethnicity

Figure 3. Contacts with Special Sector groups by ethnicity

5. What products has the Center Initiative produced in FY 2010?

A total of 389 products were reported developed during the 2010 monitoring period. The majority of the products (63%) reflect efforts of the Centers to disseminate information and educational materials (see Figure 4). Based upon the product type (e.g. published article, newsletter), it is clear that the information and educational materials are reaching a variety of audiences. A number of additional products were reported (e.g. course manual, cartoon, standard, and listserv), but were not represented due to reported numbers being less than 1% of total products. Specific titles for the products are listed by type in the appendix of this report.

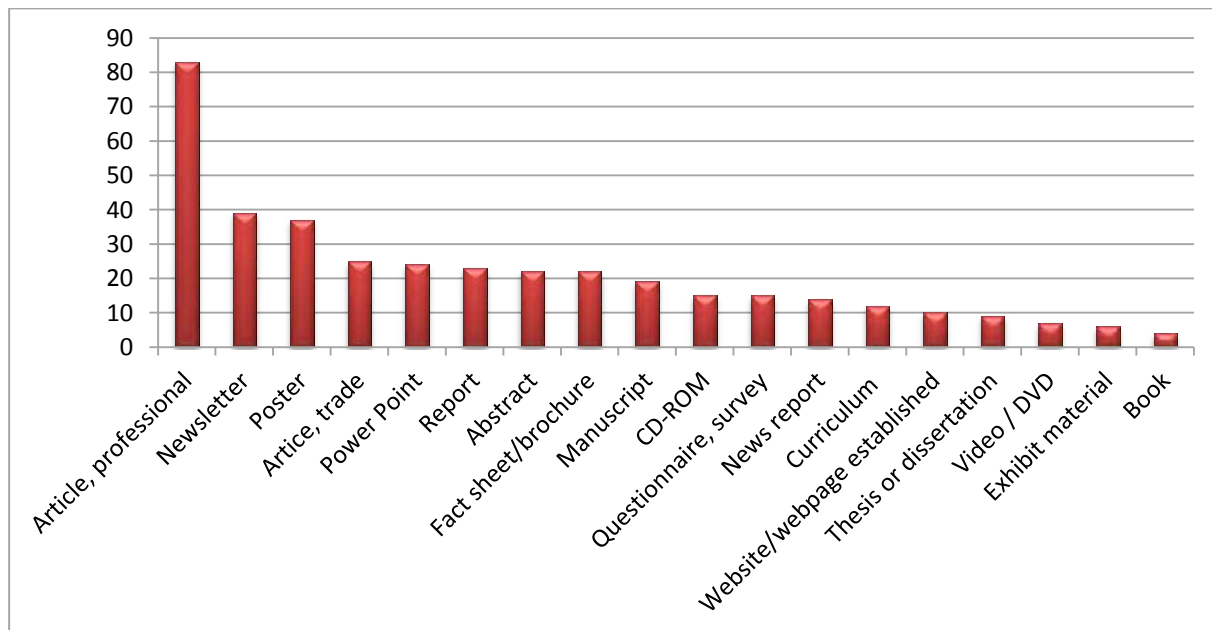


Figure 4. Number of products produced by category (N=389)

6. What collaborative efforts have occurred during FY 2010?

Over 550 collaborative efforts were reported by the Centers this past year. These efforts are related to Centers' projects' activities and/or products. Listed in Table 5 are the types of collaborators which illustrate the extraordinary range of partnerships that the Center Initiative fosters and maintains to address the Initiative's mission. While partnerships within NIOSH and the Agricultural Centers are expected, it is important to highlight the many other collaborators that were developed or maintained outside of the Initiative.

Table 5. Frequency of collaborations by organizational type

Organization Type	Count
Health Care Provider / Organization	76
University, academic department	58
Governmental Agency (other)	50
Agricultural Centers (other than own)	48
Cooperative Extension	48
University, academic research center	35
Agricultural Organizations	32
Agribusiness	31
Producer/Grower	26
University	24
Community Organization	19
NIOSH	19
Trade, Technical, or Professional Association	17
School(s)	16
Multiple types - non-specific	15
University, institute or internal organization	14
Health Department	12
Research organization	8
Equipment Dealer	8
Media	6
Labor / Employee Organization	4
Agricultural Organizations (focus on children)	3
Insurance Company	3
Agricultural Initiatives (other than Ag Centers)	1
TOTAL	573

7. For what degrees and professional disciplines did the Center Initiative provide education during FY 2010?

A total of 18 professional degrees that included an agricultural health and safety component were granted during the 2010 fiscal year. Eight doctoral degrees in Agricultural Safety and Health, Science, Epidemiology, Ergonomics, and Industrial Hygiene and one D.V.M degree

were awarded. Also, five master's degrees in Agricultural Safety and Health, Environmental Health, and Public Health were awarded. In addition, the Initiative helped provide internships for four students and four certificate degrees in Agricultural Safety and Health. The number of degrees granted has varied over the Center Initiative reporting years due to the length of time it takes to enter and graduate from a degreed program of study.

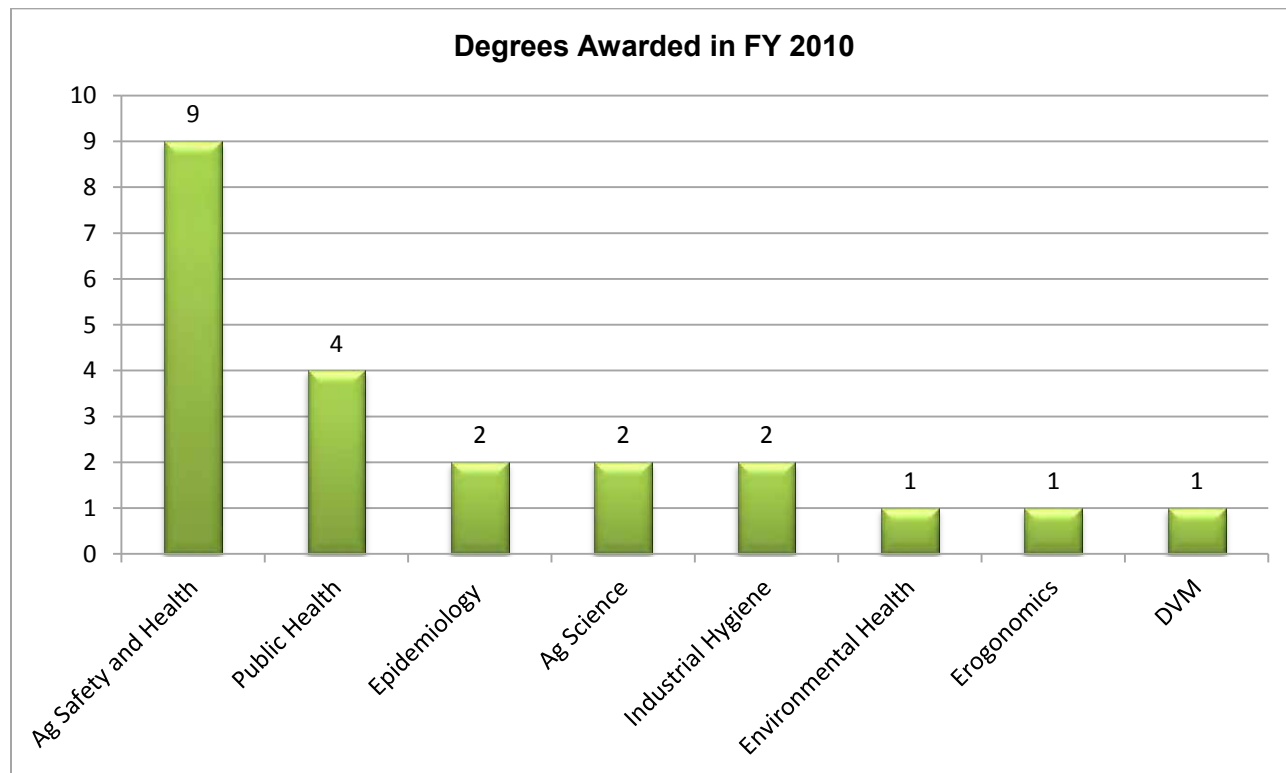


Figure 5. Degrees by discipline FY 2010

8. What was the reported monetary value leveraged by the Center Initiative (in dollars and in-kind support) during FY 2010?

Leveraged dollars come in two ways: actual dollar amount and the amount of services (in-kind) that are provided. The amount of dollars leveraged by the Centers has continued to increase since 2008 with an increase from \$876,400 that year to \$3,161,359.00 for this year. In-kind leveraged dollars decreased slightly this year to \$78,350 as compared to \$85,800 last year. On the whole, the centers leveraged over \$3.2 million dollars beyond NIOSH funding during FY 2010.

9. In which states was Center Initiative active during FY2010?

The Agricultural Center Initiative reported contacts in 44 individual states as well as nationally and internationally last year. Of these contacts 75% were reported as impacting the nation as a whole rather than one specific state. The national contacts involve the reporting of efforts such as article publication and newsletters, which include a national distribution. As with previous years, the majority of contacts are clustered around states where Centers' reside. There are six states that had no reported Center Initiative contacts: HI, IL, IN, MD, MI, and NV. These states are not shaded in Figure 6.

Center Activity by Number of Contacts FY 2010

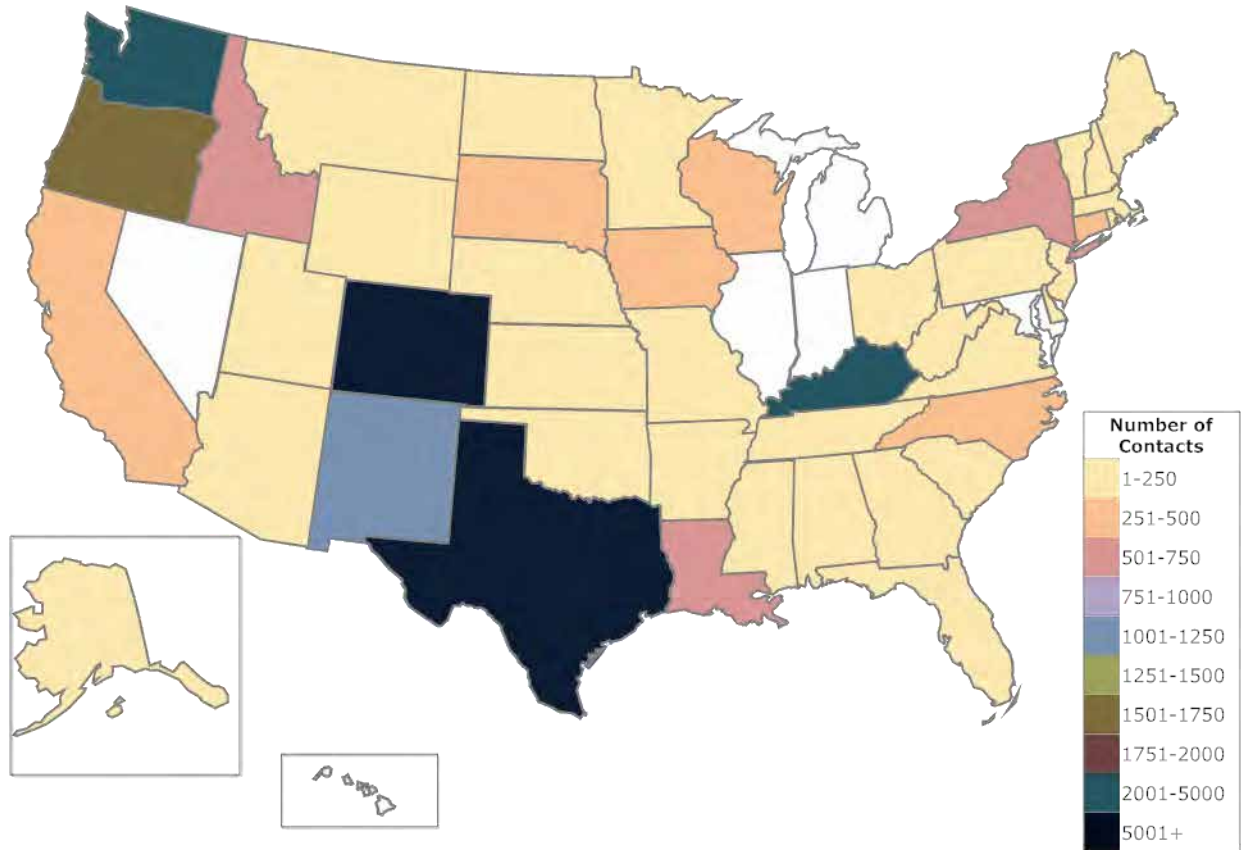


Figure 6. Contacts by State

10. What types of agriculture were addressed nationwide by Center projects?

Of the 134 projects reported during 2010, 36 projects (29%) reported a specific type of agriculture being addressed. An additional 25 projects (17%) reported “all or multiple” types of agriculture were addressed by the project. An example of the “all” designation is an educational effort targeting children may cover multiple types of agriculture. Most of the projects that named a specific type of agriculture identified crop farming or production agriculture related to livestock; however, an encouraging note is that a number of projects are addressing forestry and fishing.

11. What research to practice (*r2p*) accomplishments were undertaken during FY2010?

NIOSH’s Research to practice (*r2p*) concept is designed to focus efforts on translating and disseminating research findings into practices and products that are accepted and used by Center target audiences. With the assistance of NIOSH, the ACE team defined eight categories that illustrate various methods of moving Initiative projects into use by others. Out of a total of 134 Center projects, 88 (66%) were designated as having *r2p* impact which shows the continued commitment of the Centers to the importance of translating research results into

practice for the stakeholders of the Initiative. Figure 7 illustrates the percent of each of the *r2p* categories reported.

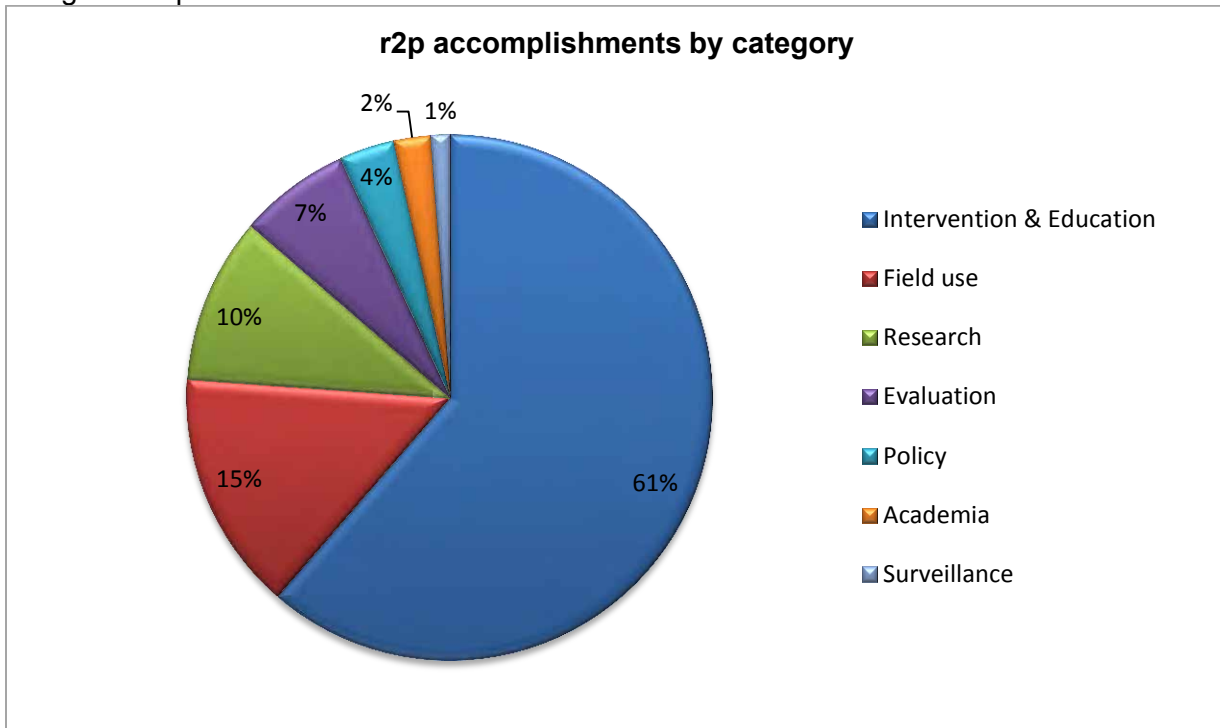


Figure 7. *r2p* accomplishments by category

Summary Data for Fiscal Years 2007-2010

The Center Initiative has entered the fifth and final year of the current funding cycle. For the first time since the ACE project was funded, the team has been able to track progress on NIOSH objectives from the beginning of a five year funding cycle. The current report provides an overview of the first four years (2007-2010) of the current cycle. Eight of the eleven evaluation research questions will be addressed combining the progress of the seven Centers comprising the Center Initiative over the four year period. It is important to note that the number of Centers receiving funding over this time period has dropped from nine at the beginning of the cycle to the current seven.

The limitations that apply to individual year reports are also applicable to this four year review. It is difficult to assess the additional impact of changes that may have occurred in each Center's status as well as the drop in number of funded Centers, but we continue to believe that the measurement errors related to these limitations reflect "under" rather than "over" reporting of the work of the Initiative.

1. What were the cumulative direct contacts of the Center Initiative during FY 2007 – 2010?

The Agricultural Centers have been directed by NIOSH to develop, implement and evaluate educational and outreach programs that promote health and safety in production agriculture, forestry, and fishing which includes farmers, workers and their families. This includes making contacts with these populations which has included consultation and training for researchers, health and safety professionals, graduate/professional students, and agricultural extension agents and others in a position to improve the health and safety of agricultural workers. Contacts with constituents and target populations have been categorized in two ways throughout the Center Initiative:

- Active (direct) contacts and
- Product distribution (indirect) contacts

A total of 2,503,304 contacts have been made by Center personnel over the past four years; this number includes both direct and indirect contacts. Figure 8 illustrates that the Center Initiative has met the mission of directly connecting with target groups and constituents in a variety of ways over the last four years. In comparison with the FY 2009 report, these types of direct contacts reflect more outreach education and communication efforts in the past year, changing the proportions of these categories.

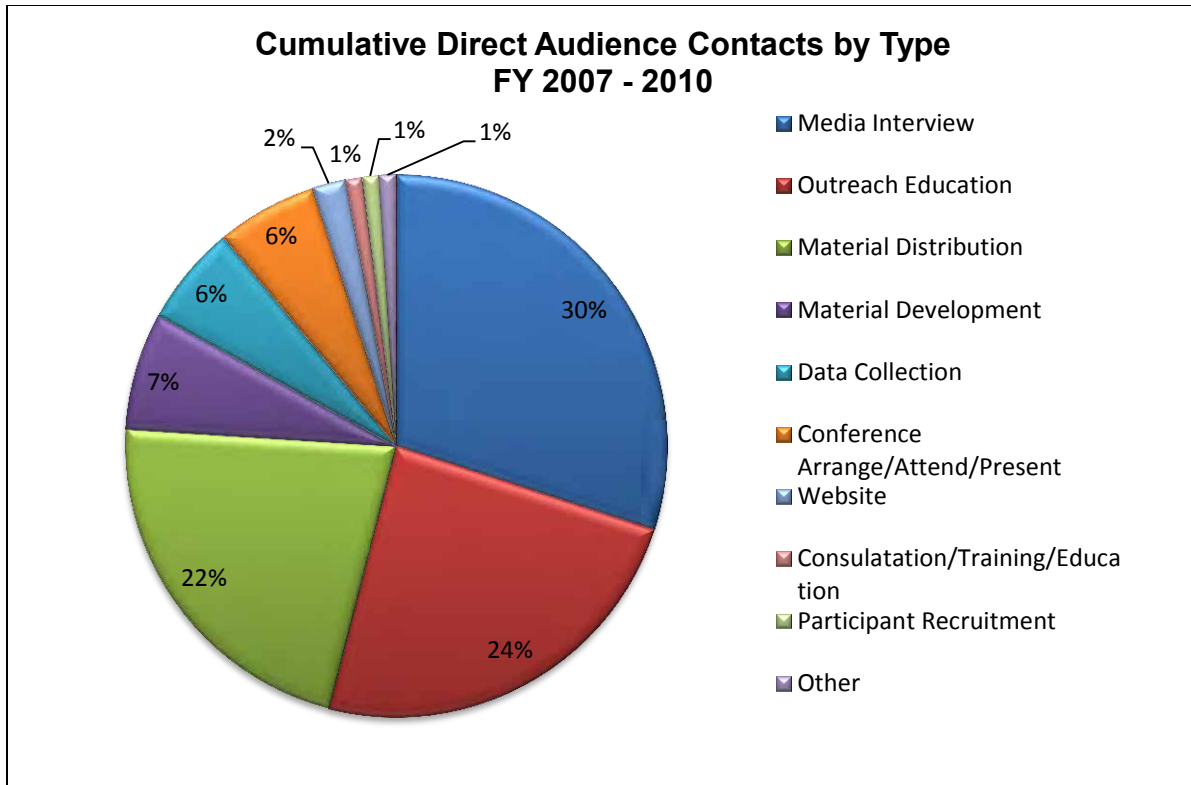


Figure 8. Cumulative Direct Contacts by Type

2. What products has the Center Initiative produced from FY 2007 – FY 2010?

As mentioned previously, another way that the Center Initiative reaches constituents is through product development and product distribution. Figure 9 provides an overview of the primary ways the Centers have taken the information from research, intervention, and education projects and translated the findings into products that can then be utilized by persons working and living in the agricultural, forestry, and fishing settings. These products also include professional articles and reports that can be shared with agricultural organizations, government entities and other researchers interested in improving agricultural health and safety.

At the four year point in the funding cycle, 1,200 products have been developed. The opportunity to examine trends within a funding cycle verifies the hypothesis that the number of products would increase as the major work of the Centers' projects begin to provide the data and knowledge necessary to develop products to share with constituents.

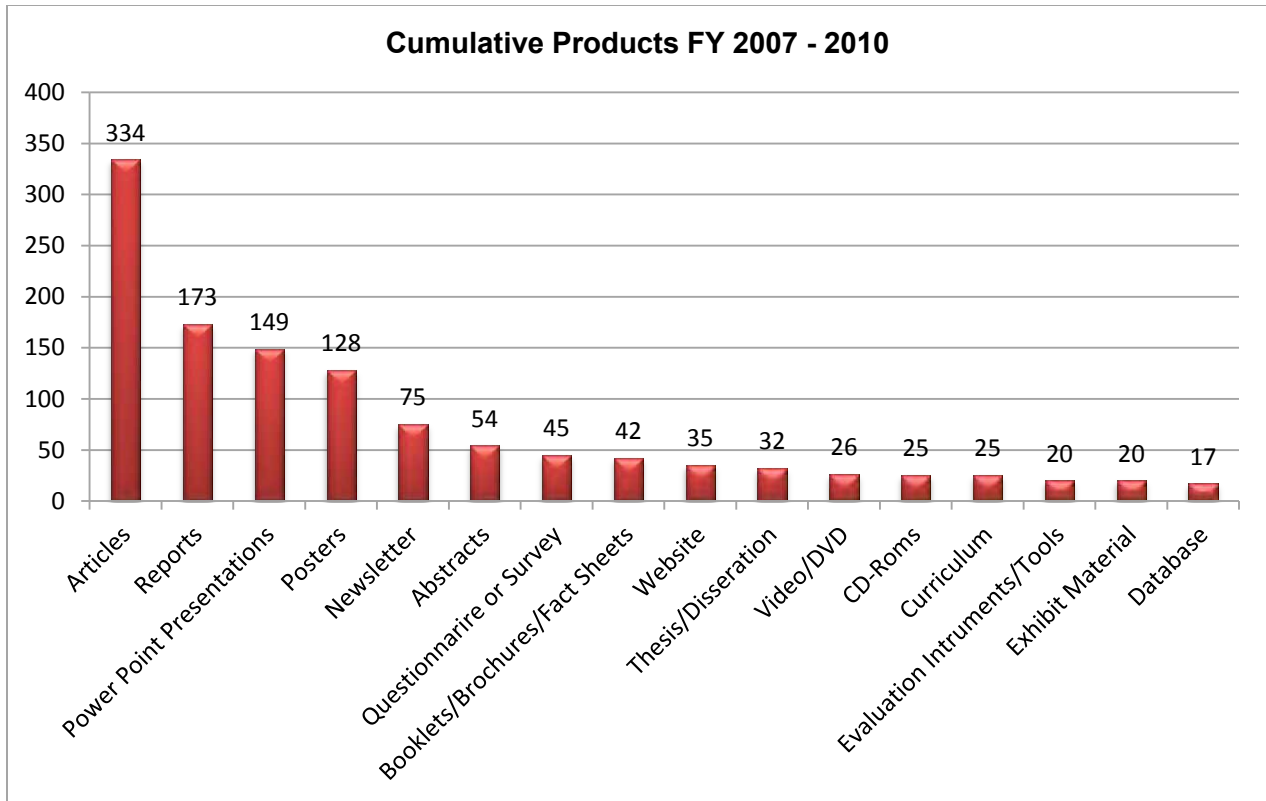


Figure 9. Cumulative Products FY 2007 – 2010

3. For what professional disciplines did the Center Initiative provide for FY 2007 – 2010?

An area where the Center Initiative has clearly responded to the needs of agricultural, forestry, and fishing workers is by providing educational opportunities for multiple disciplines that can continue to provide research, outreach and services to this occupational cohort. Over the past four year period 133 students have graduated in a variety of disciplines supported by the Center Initiative. The advantage of multiple Centers in the Initiative is that each setting offers a unique set of disciplinary choices; each adding to the cumulative potential for the future of sector professional practice. Physicians and nurses have received training specific to an agricultural setting, and health; safety expertise in multiple fields adds needed personnel with knowledge specific to agriculture, forestry and fishing settings.

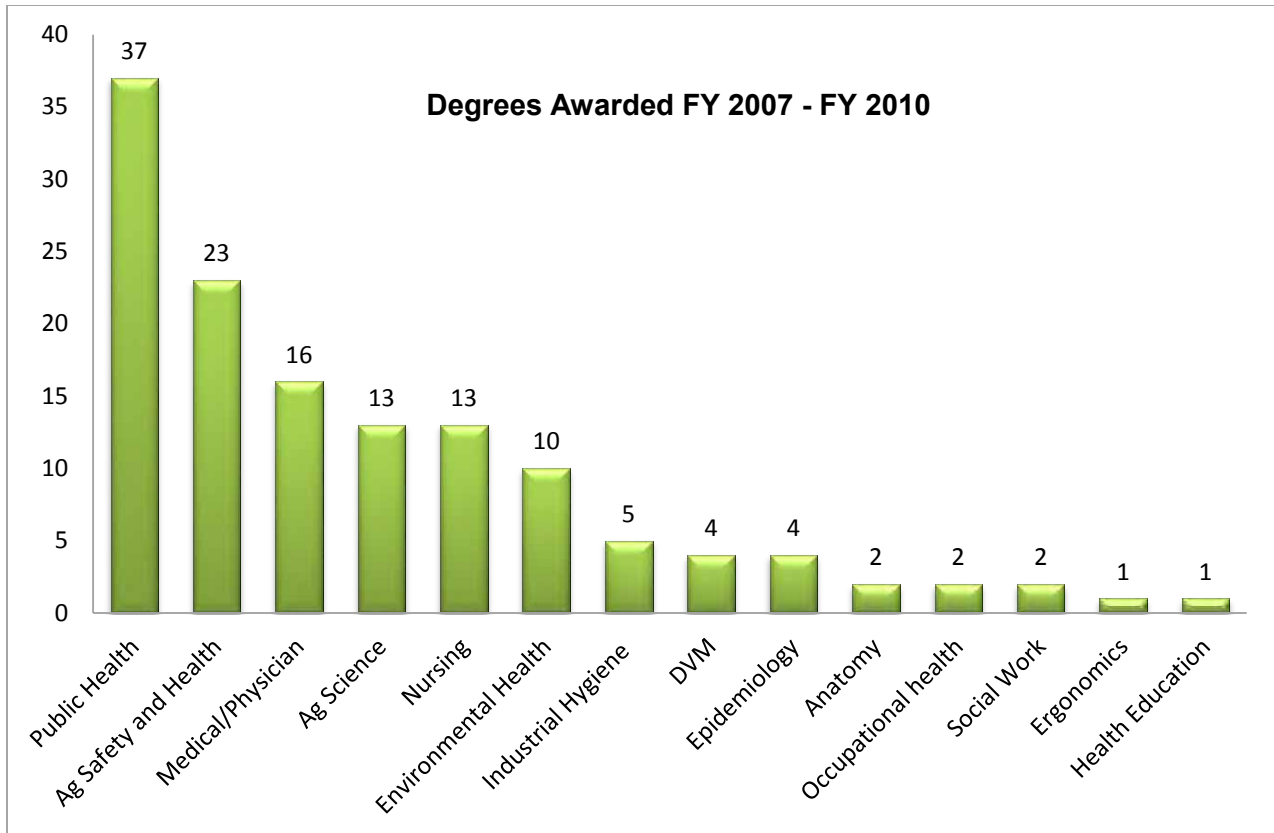


Figure 10. Cumulative degrees by discipline

4. What r2p activities were accomplished by Center personnel between FY 2007 and 2010?

It is very encouraging to provide an overview of the r2p efforts of the Center Initiative over the past four years. Sixty-one percent of all reported research to practice efforts is reported in the Intervention and education category indicating that as the funding cycle nears completion, the Centers are working hard to move research findings to the appropriate target groups. As predicted in last year's report, the category of field use has increased, now representing fifteen percent of research to practice activities. The category of "research to surveillance" activities remains the lowest of the reported r2p efforts, a not surprising finding as the current funding cycle did not have the specific recommendations in this area from either the NORA Sector council or the NAS report, both of which were completed after the cycle began. It is assumed this category will increase during the next Center Initiative funding cycle.

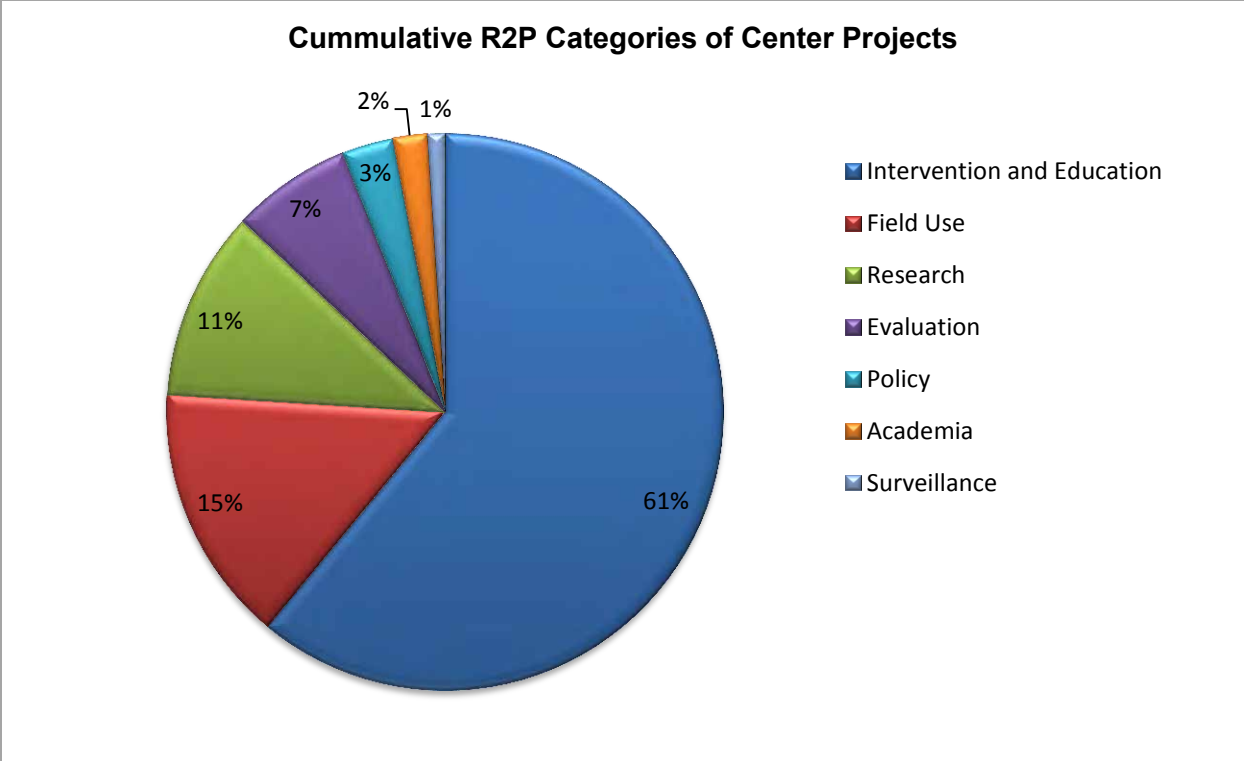


Figure 11. Cumulative *r2p* Accomplishments

5. What research projects did the Center Initiative undertake by NORA research priority for fiscal years 2007 – 2010?

It is important to identify the move from NORA I to NORA II as a framework within which research projects can be categorized. As the sector based framework was adopted at the end of 2008, the ACE team responded by re-categorizing those projects that had been funded since 2007. In this report a special effort was made to re-categorize all feasibility/pilot projects funded by the Centers. Each Center ACE team member was requested to review pilot project sectors; that effort is illustrated in Figure 12. All nine strategic goals are addressed by at least one project; a considerable accomplishment as Forestry and Fishing (Goals 6-9) were not part of the charge to the Centers when the funding cycle began.

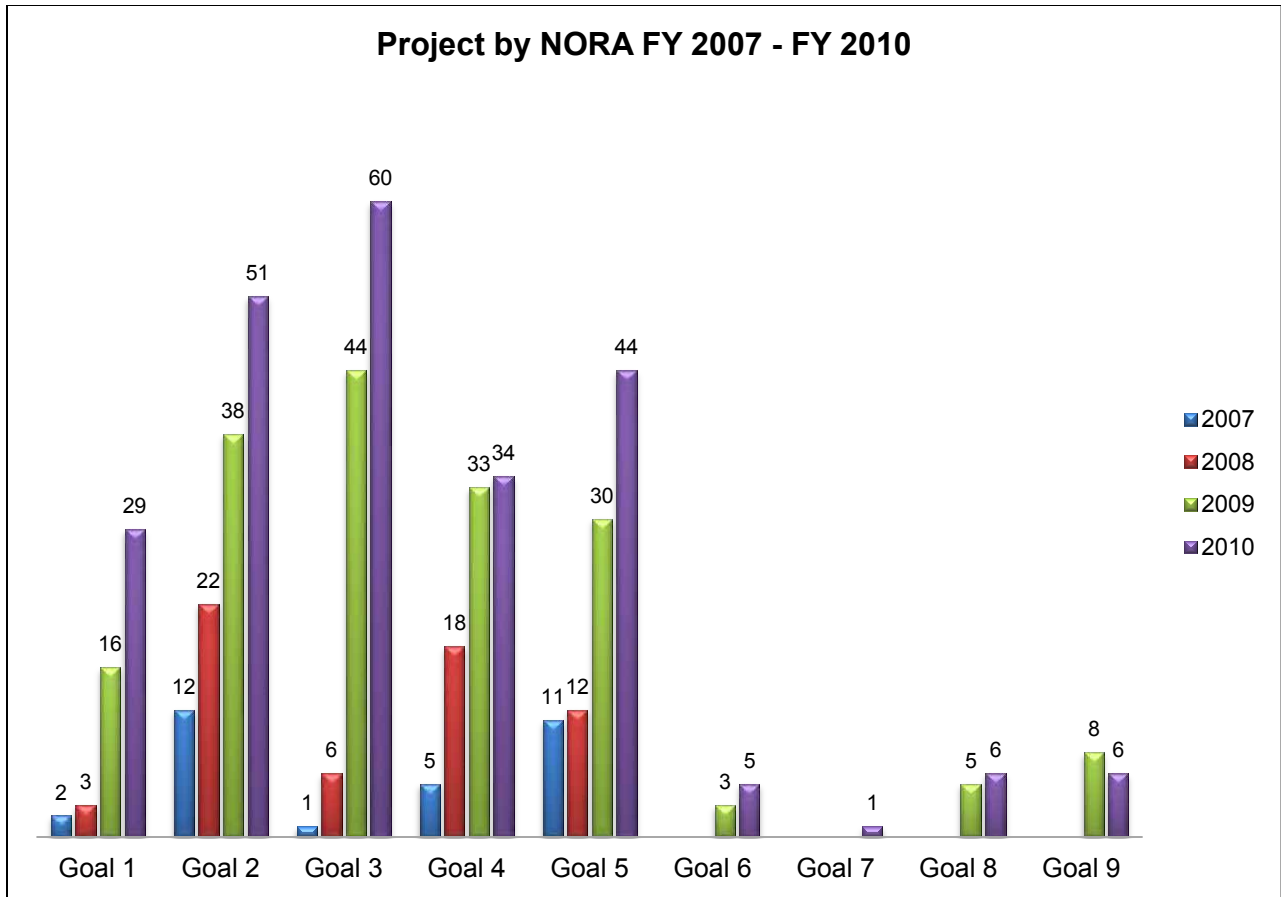


Figure 12. Project by NORA Strategic Goal FYs 2007 – 2010

6. What were the reported actual and in-kind dollars leveraged by the Center Initiative over the last four years?

As indicated in Figure 13, the dollars leveraged by the Centers has increased since 2007. In 2007 and 2008, just under a million dollars per year were leveraged by the Initiative. Just over \$960,00 dollars were leveraged in 2009 and fiscal year 2010 saw the most leveraged dollars with just over \$3.1 million. A total of \$5,122,347 has been reported leveraged over the four year span of this report, adding considerable additional funding to support the work of the Centers. From a funding cycle trend perspective it appears clear that as collaborative efforts have developed and relationships have been formed, the Initiatives' ability to leverage dollars has also grown.

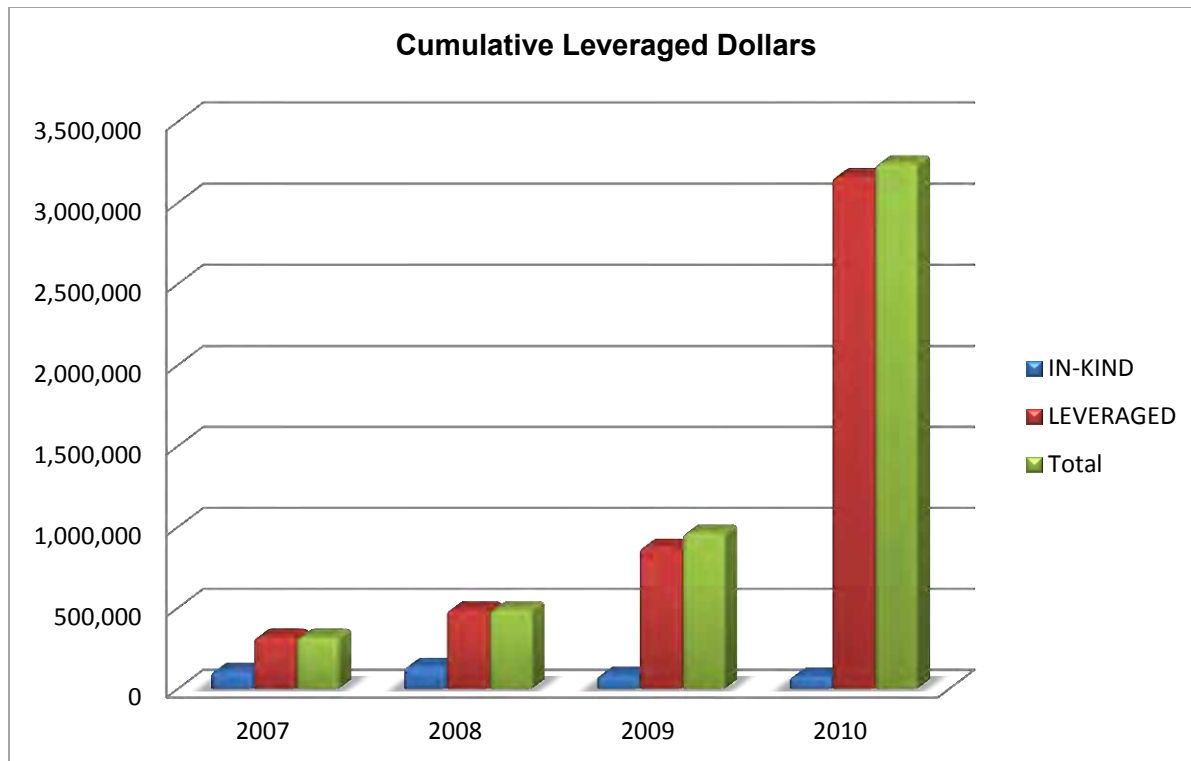


Figure 13. Cumulative Leveraged Dollars FYs 2007 – 2010

7. In which states has the Center Initiative been active between the years 2007-2010?

The Centers have had active contacts in all 50 states over the last four years of the funding cycle, as well as in a number of foreign countries. While the majority of these contacts each reporting year are categorized as applicable to more than one state, or often national in scope, it is also clear (as illustrated in Figure 6) that many are within a Center’s region. The varied types of agricultural production across the United States lend support to the approach NIOSH has taken by providing funding for regional Centers in order to be responsive to this diversity. The international connections that Centers have made provides a mutually beneficial opportunity for collaborative work on testing innovative approaches to reducing occupational disease and injury in agriculture/forestry/fishing that have been developed either in the U.S. or abroad. A number of Centers are addressing the hazards of working in large dairy operations, and collaboration with other countries has provided Center researchers with additional data, tools and possible approaches that may prove useful.

8. What collaborative efforts have occurred in the years 2007-2010?

The fourth objective set forth by NIOSH for the Agricultural Center Initiative (PAR 2006) recommends that Centers develop “linkages and communication” with other groups working in health and safety. This original objective has been greatly strengthened both by the work of the NORA AgFF Sector council and by the National Academy of Science (NAS) evaluation review. The third strategic goal set forth by NORA (2008) is “Outreach, Partnerships and Communications: Move proven health and safety strategies into workplaces through the development of partnerships and collaborative efforts” (NORA II, p. 6). According the NAS review of the Center Initiative, the “ideal” AgFF research program depends upon “partnerships and collaboration with stakeholder groups” (NAS, 2008, p.35).

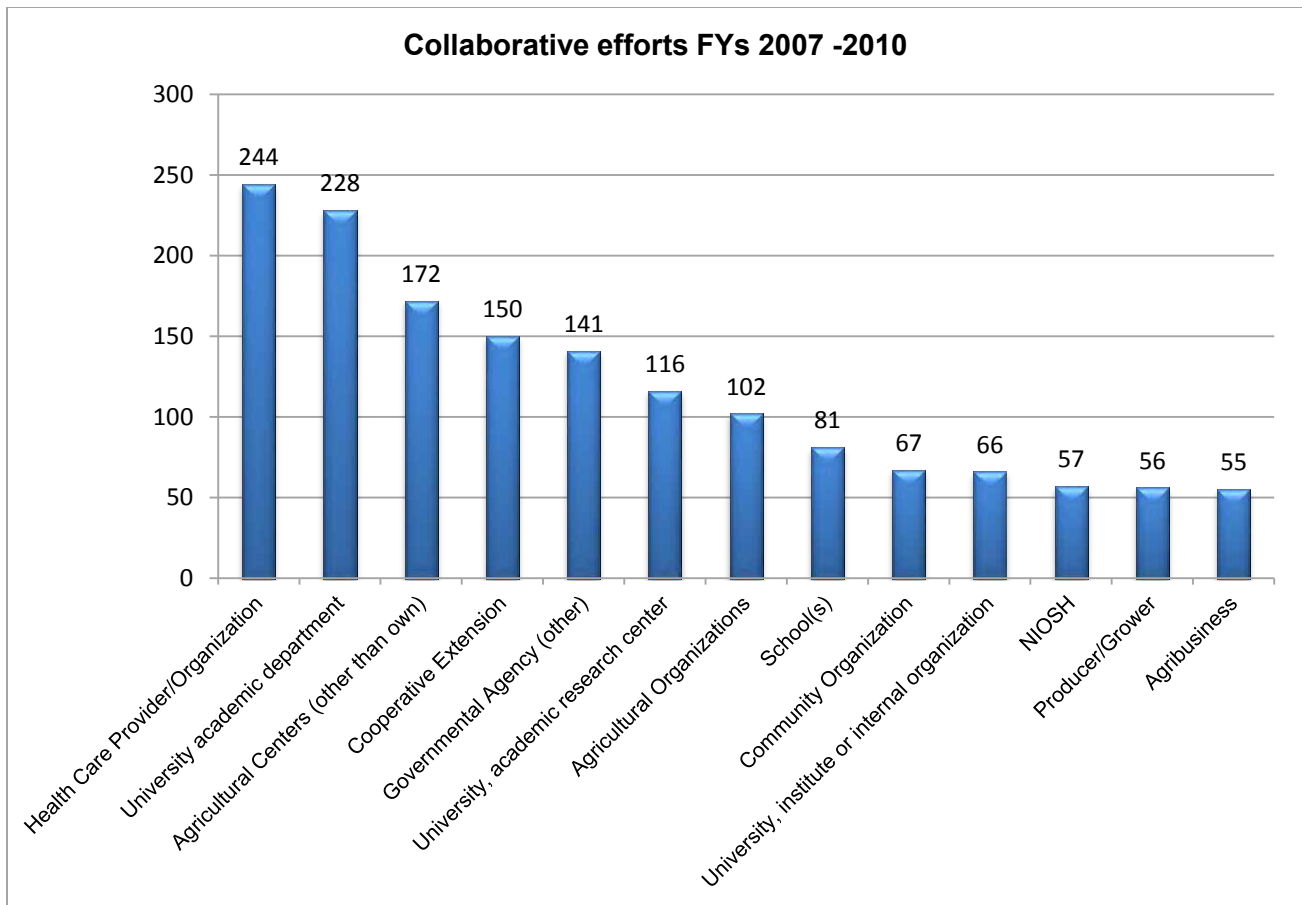


Figure 14. Cumulative Collaborative Efforts by frequency

Figure 14 illustrates the variety and number of collaborations the Centers have undertaken over the last four fiscal years of the current funding cycle. It is again interesting to note, that from a trend perspective, these numbers increase as the funding cycle continues. Over the first four years there was an average of approximately 350-400 such relationships reported each year, for FY 2010 this number increased to over 570; a total of 1,766 have been reported for last four fiscal years. This increase supports the importance that the Centers place on working with multiple types of organizations for assistance with selecting appropriate topics for Center work, participating in research/project design and with translating research results to the intended target audiences.

Summary and Recommendations

Thanks to continued support for evaluation from NIOSH, the AgFF Centers have completed six years of continuous program monitoring since 2004 which is the longest data collection period since the Center Initiative began. The results presented in this ACE report offer several ways to view the work of the Centers: an overview of the current fiscal year (2010) and a cumulative overview of the current funding cycle (2007-2010).

The ACE team chose two additional ways to provide information on Center work in 2009 and decided to continue those reporting efforts in this year's report. The first addition was to report on "r2p success stories" provided by each center as an illustrative example of a project with research to practice success. The second addition was to utilize the new sector based National Occupational Research Agenda (NORA) as a framework for organizing projects. This both illustrates the breadth of Center Initiative activities and provides opportunities for Center personnel to learn more about what others are doing in similar topic areas. One of the hopes of the team is that this information will highlight areas of commonality for potential collaboration as well as areas where gaps may still persist.

Over the years and despite some funding hiatuses, the ACE team has demonstrated remarkable collaboration both in development of the approach to the Center Initiative Evaluation as well as in making the necessary modifications in variable definitions and data collection procedures. NIOSH has also played a very supportive and collaborative role. NIOSH has continued to be responsive to recommendations that have come from previous reports. Because of this responsiveness, the Center Initiative has been able to

- Work as a team since the fall of 1997,
- Improve the usefulness of the ACE database to include both progress and year-end reports,
- Explore both cumulative and trend analysis potential,
- Experiment with various approaches to presenting overviews of the Center Initiative work, and
- Provide some monetary support for each Center representative to the ACE team.

Each of these accomplishments we hope will provide examples of ways that program monitoring can be used to document the work of the AgFF Center Initiative as a new funding cycle begins.

- The primary recommendation of this ACE report is to build upon the experience, knowledge and collaboration the ACE process has provided and continue to pursue a multi-site approach to evaluation with the new funding cycle beginning with fiscal year 2012 (9/15/11-9/14/16).

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***r2p* Project Success Stories**

The Research to Practice concept was proposed by NIOSH administration in the early 2000s to promote the importance of the “supply chain of knowledge” (NAS, p. 124). The Agricultural Centers have the obligation not only to undertake research, but also to address the transfer of knowledge to appropriate stakeholders in the production communities of agriculture, forestry, and fishing. The ACE team, with the assistance of NIOSH personnel, developed measurement categories of this key variable to add to the database enabling each Center to illustrate the *r2p* accomplishments of their research activities. During the 2009 ACE team workshop, it was decided that each Center would submit one example of a successful *r2p* activity. FY 2009 was the first year the report contained this section and the ACE team decided to keep this section in the current FY 2010 report as it illustrates the efforts of each Center to provide knowledge transfer. The knowledge transfer efforts that are based upon Center research illustrate not only the breadth of topics research is addressing, but also the variety of stakeholder groups targeted.

Project title	<i>r2p</i> Category	Center
Enhancing Translation and Dissemination through Partnerships	Intervention & Education	HIC
Blueberry worker ergonomics	Field Use	NEC
Moving from Evidence to Collaboration and Action: Identifying and Addressing Causes of Pesticide Exposure among Washington State Agricultural Workers	Policy	PNC
Aquaculture Safety and Health	Technical Assistance	SEC
First Aid for Rural Medical Emergencies	Evaluation	SWC
Heat Illness Prevention Media Campaign	Intervention & Education	WC
Educational / Translation project, Building Capacity of Safety and Health Professionals (Submission for 2009)	Academia	GPC



Enhancing Translation and Dissemination through Partnerships

Project Description:

The goal of the Enhancing Translation and Dissemination Through Ag Partners project was to boost the regional research to practice (r2p) of new knowledge and technologies in agricultural health and safety. The project built upon a foundation of established agricultural partnerships and a team of cross-disciplinary investigators from occupational health, animal science, technical communication, and occupational health psychology. Knowledge generated from community-initiated health and safety programs and from High Plains Intermountain Center for Agricultural Health and Safety (HICAHS) research projects will be translated into user-specific media and disseminated through a participatory approach with an extensive network of agricultural partnerships. HICAHS personnel have worked directly with key agricultural partners (change agents and end-users) such as Cooperative Extension, agricultural associations, insurance companies, migrant health services, and Farm Safety 4 Just Kids, that have direct access to end-users such as owners, ranch hands, farm families and children, and seasonal and migrant farm workers.

Significance:

The project team collaborated with agricultural organizations that have been awarded community-initiated small grants and with HICAHS researchers involved in prevention and intervention projects, to collectively develop, revise, and execute their respective translation and dissemination activities. This innovative participatory project boosted regional r2p of agricultural health and safety and addressed multiple Healthy People 2010 target areas that contribute to a healthier and more productive nation.



Primary Aims of the project:

A participatory Agricultural Extension Model served as the framework for the project. Within this framework, theories of work behavior, planned behavior, the organization of work model, as well as social marketing principles were incorporated to enhance the effectiveness of translation and dissemination activities. HICAHS personnel worked directly with key agricultural partners (change agents and end-users) such as Cooperative Extension, agricultural associations, insurance companies, migrant health services, and Farm Safety 4 Just Kids that have direct access to end-users such as owners, ranch hands, farm families and children, and seasonal and migrant farm workers. One primary aim of this project was to enhance the translation and dissemination of knowledge developed from agricultural community-initiated small grants and from HICAHS research to agricultural stakeholders.



During the first two phases, the team conducted 47 in-person interviews with farm operators and analyzed archival work safety survey data from 211 farm operators to understand behaviors, perceptions, and barriers related to safety in this unique and hazardous industry. Findings from the archival data and interviews suggested that farm operators did regard safety as important, but had difficulty managing and implementing safety in everyday practice. Difficulty in implementation was due to an overall lack of established safety policies and procedures and minimal communication about safety with employees. In the third and final phase of this

project, educational safety training seminars focused on the everyday application of safety climates on farms were developed, implemented and evaluated.

Research to Practice (r2p) addressed: Research to Intervention and Education

Related Outcomes:

- Packets were created that contained several innovative safety tools in English and Spanish to encourage communication between farmers and employees:
 - Educational safety seminar videos
 - Emergency information cards
 - Interactive safety behavior checklist
- 107 farm operators have attended the educational safety training seminar
- 500 new safety climate tool packets were distributed to farm operators

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The Northeast Center for Agricultural Safety & Health

Blueberry worker ergonomics

Project Description:

Northeast Center researchers used a community-based approach to develop a new rake design in order to reduce pain and increase productivity while harvesting blueberries.

Significance:

Each year approximately 8,000 migrant and seasonal farmworkers participate in the manual harvesting of blueberries in Maine. Manual raking of blueberries can lead to musculoskeletal pain and injury. Farmworkers have traditionally used a rake with a single, short handle. Raking requires consistent bending at the waist and rapid, repeated, forceful motions.

Primary Aim & Approach of the project:

Employing a community based approach to public health intervention targets a community which can help provide resources and serve as an agent of change. The community based approach used in this project created the ability to access the experience of knowledgeable individuals in the selection of potentially effective alternatives to the traditional blueberry rake. This project included both migrant farmworkers and employers which enhanced access to workers, access to work sites and the process of planning the trials.



R₂P addressed:

After a pilot study employing 12 rake designs, the project focused on a comparison between the extended handle modification and the traditional, short handle blueberry rakes. There was increased productivity, greater acceptability, less force used and less pain reported with the extended handle design. The extended handle rake may prove effective in reducing musculoskeletal injury associated with

blueberry harvesting. A community-based approach to migrant farmworker injuries can be effective, particularly if employers participate.

Related Outcomes:

A rake design with 2 long handles was tested and proven to increase productivity, require less force and reduce pain among farmworkers. A two-year follow up showed over 70% of those interviewed had adopted the long-handled rake.



Short- and long-handled blueberry rakes

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PACIFIC NORTHWEST AGRICULTURAL SAFETY & HEALTH CENTER

Moving from Evidence to Collaboration and Action: Identifying and Addressing Causes of Pesticide Exposure among Washington State Agricultural Workers

Project Description

This translation project emerged in response to multiple streams of evidence in Washington state with high potential to inform activities to reduce occupational exposure to agricultural pesticides. PNASH lead the effort under the NIOSH project, Risk Factors for Cholinesterase Depression among Pesticide Handlers, furthering the interpretation, validation and transfer of study results. The Committee on Pesticide Exposure Reduction (COPER) was formed as an inter-agency



Committee on Pesticide Exposure Reduction (COPER)

collaboration to analyze multiple data sets, understand the underlying causes of pesticide exposure within Washington's farm labor community, and share those findings with appropriate audiences. Partners included Pacific Northwest Agricultural Safety and Health Center (PNASH), and Washington State Department of Health (DOH), Department of Agriculture (WSDA) and Division of Occupational Safety & Health (DOSH) at the Department of Labor & Industries (L&I).

Significance

PNASH community surveys have shown that pesticide poisonings are a top concern among farmworkers in Washington. Washington state DOH data identified that between 2003 and 2008, 351 agricultural workers experienced definite, probable or possible acute pesticide-related illness. These 351 cases were distributed among 167 pesticide handlers and 184 other agricultural workers. Since 2004, the Washington State Department of Labor and Industries (L&I) has administered the Cholinesterase (ChE) Monitoring Rule. This program makes baseline and periodic cholinesterase testing available to agricultural workers who handle toxicity class I or II organophosphate (OP) or carbamate (CB) pesticides for 30 or more hours in any consecutive 30-day period. Between 2004 and 2009, L&I identified 346 pesticide handlers with cholinesterase inhibition $\geq 20\%$ of individual baseline level, although none reported pesticide-related symptoms. On average, statistically significant ChE inhibition has been observed in handlers participating in the ChE Monitoring Program compared with individual baseline level. In a study of pesticide handlers participating in the program, greater BuChE inhibition was associated with higher estimated cumulative exposure to OP and CB insecticides. These findings underscore the need to identify and control factors contributing to pesticide exposure. Currently, the PNASH Center is concluding a series of work, the Pesticide Exposure Reduction Projects, with results that identify risk factors for exposure as well as practical workplace-based solutions. Results of this work will be disseminated widely through COPER and other PNASH partnerships.

Primary Aim & Approach

This project's goal was to provide Washington state agencies and the agricultural community with an evidence-base to inform activities intended to reduce occupational exposure to agricultural pesticides. To accomplish this task, The Committee on Pesticide Exposure Reduction (COPER) inter-agency collaboration was formed and met regularly over the course of one year. The project entailed the analysis of data from PNASH and DOH studies regarding risk factors for and circumstances of pesticide poisonings among agricultural workers in Washington

State. Those findings were then compared with two datasets addressing compliance with pesticide-related regulations and cases in Washington: Cholinesterase Monitoring Program and Worker Protection Standard. Through COPER, results were reviewed and interpreted and key messages identified and produced as an educational presentation for target agencies and agricultural audiences. Additional transfer of the risk factor results is taking place through the development of meaningful solutions for the agricultural community.

R₂P addressed

The Committee on Pesticide Exposure Reduction (COPER) formed as an inter-agency collaborative effort analyzing multiple data sets, understanding the underlying causes of pesticide exposure within Washington's farm labor community, sharing those findings with appropriate audiences, and translating to meaningful solutions.

Related Outcomes

The project created a dialogue about these data among the three state agencies with responsibilities related to occupational exposure to agricultural pesticides. It also produced a presentation of the key messages in these datasets. The presentation was disseminated to state agencies and the agricultural community. Major outcomes include:

- ✓ **Education to agency personnel and ag community.** Dissemination to target audiences has included: partnering agency in-service trainings; and the agricultural community through presentations, trade journal articles, and communication of results back to study participants.
- ✓ **Integration into state pesticide applicator training.** Key findings were integrated into the WSDA Farmworker Education Program curriculum, including farmworker hands-on and supervisor hands-on trainings. The new supervisor course was a direct result of needs found through COPER and will be offered in Winter 2011. Over 500 people annually receive WSDA hands-on training.
- ✓ **Translation into meaningful solutions.** WSDA conducted workshops presenting COPER findings and asked pesticide handlers and managers to brainstorm barriers and solutions to the exposure scenarios presented. At least one representative each from DOH, WSDA, DOSH and PNASH participated in all three trainings. The PNASH Center then incorporated findings from both COPER and WSDA into the project, Interventions to Minimize Worker and Family Pesticide Exposures. This project continues to work with COPER and specifically WSDA in the development of Practical Pesticide Safety Solutions (expected release September 2011).

PNASH and COPER will be coming dissemination and evaluation activities over 2011.

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Southeast Center for Agricultural Health and Injury Prevention



Aquaculture Safety and Health

Project Description:

Aquaculture is a fast growing sector of U.S. agriculture, reporting farm-level sales of \$1.1 billion in 2005 (USDA) and employing more than 180,000 people in fish farming and related industries (Myers, 2006). The complexity and diversity of aquaculture operations require thorough understanding of the physical, chemical, biological, and ergonomic hazards to which workers may be exposed. The purpose of this 5-year project is to conduct a systematic study of occupational hazards in aquaculture and to identify and recommend countermeasures to eliminate and/or reduce them.



Significance:

This study aims to identify and to reduce or eliminate hazards as new technologies and fish farming techniques emerge. From its inception, the project has engaged farm operators and managers; many “simple solutions” to hazards have been identified and/or developed by these stakeholders themselves.

Primary Aims & Approach:

Led by Principal Investigator Melvin L. Myers, this study aims to identify and to eliminate work-related hazards in aquaculture. Specific aims include:



Systematic review of OSHA inspection reports to identify risk factors in the aquaculture industry using the Haddon matrix: i.e., pre-event, event, and post-event variables, as well as human, vehicle/vector, and environmental factors.



Operator/manager/employee interviews and walk-through surveys at fish farm sites in Kentucky, Mississippi, North Carolina, South Carolina, West Virginia, and British Columbia to validate and augment the findings of the risk-factor analysis and to identify countermeasures used to reduce risks.



A multi-state telephone survey of fish farms to describe the agricultural population at risk and its exposure to hazards, injuries, and illnesses related to work in aquaculture.

Sensitivity analyses asking “What if” and “How could” questions regarding occupational hazards using a Farm Planning Tool adapted to analyzing low-probability injury events with potentially catastrophic economic consequences for fish farming enterprises; e.g., What if a worker were injured resulting in x costs and y lost work days? How can such an injury and its consequences be prevented?

The design and publication of booklets with “Simple Solutions” – often devised and tested by farmers themselves -- that will help fish farmers to eliminate or reduce exposure to occupational hazards.

Research to Practice (R2P): Simple solutions to common hazards are being identified and disseminated among farmers: e.g., musculoskeletal hazards due to lifting and hoisting (above left) can be eliminated in many instances by engineering controls such as simple pulley systems (middle image). One operator eliminated a serious needle-stick hazard by installing corrugated sheet metal on the fish vaccination table, to limit fish movement (bottom photo). These examples are but two among many.

Together with colleagues at the Auburn University, North Carolina State University, the University of Arkansas, and West Virginia University, Mel Myers and Dr. Robert Durborow of Kentucky State University have co-authored *Aquaculture Safety for Ponds* (catfish farming) and *Aquaculture Safety for Raceways* (trout farming). These booklets feature innovative solutions to safety and health hazards – including controls devised by farmers themselves -- and will be disseminated to stakeholders via Extension offices, aquaculture trade shows and conferences, etc.

- Durborow RM, Myers M, Cole H, Hemstreet W, Thomforde H, Semmens K. *Aquaculture Safety for Ponds*. Lexington: University of Kentucky, 2010.
- Durborow RM, Myers M, Cole H, Semmens K, Thompson S. *Aquaculture Safety for Raceways*. Lexington: University of Kentucky, 2010.

A large exhibit on aquaculture safety and health has been presented by project team members at meetings of the World Aquaculture Society, U.S. Trout Farmers Association, etc.

Related Outputs:

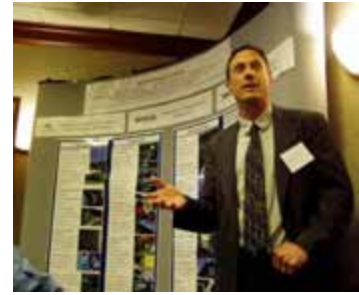
- Myers ML, Westneat SC, Myers JR, Cole HP. Prevalence of ROPS-equipped tractors in U. S. aquaculture. *J Agric Saf Health*. 2009 Apr.15(2):185-194.
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- Ogunsanya TJ, Durborow RM, Myers ML, Cole HP. Work-related safety and health hazards on fish farms. Southeast Regional Aquaculture Center (SRAC) publication. 2010.
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- Stephens WB, Ibendahl GA, Myers ML, Cole HP. Risk analysis of tractor overturns on catfish farms. *J Agromedicine*. 2010;15(4):in press.
- Myers ML, Cole HP, Westneat SC, Stephens WB, Ibendahl GA. Exposure assessment of tractor-related tasks on catfish farms in Mississippi. *J Agric Saf Health*. 2011;17(n):in review.

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Dr. Robert Durborow of the KYSU Aquaculture Research Center describes the project to Southeast Center External Advisory Board Members.



Researchers have obtained direct input from fish farm operators and employees during more than forty walk-through surveys conducted for the study.



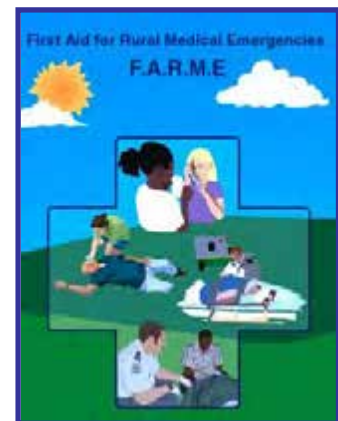
Southwest Center for Agricultural Health, Injury Prevention & Education

First Aid for Rural Medical Emergencies

F.A.R.M.E. is a curriculum of 10 modules comprised of 1) an introduction to the farm hazards, 2) accessing emergency health care in rural/farming communities, 3) first aid content and 4) strategies for risk reduction; all are specific to farm injuries/illness. An additional module presents learning principles. A companion CD provides video clips and photos to reinforce proper actions. Each interactive lesson includes several case scenarios and pre-post questions. The case scenarios were developed to reinforce the association of risk with the actual administration of first aid using the acronym C.A.R.E. which stands for Call, Assess, Render and Eliminate.

Significance

Approximately 1.29 million children reside on farms where their families generate income from agricultural production. According to the U.S. Department of Education (2007) nearly 1 in 5 public school students in this country attends school in a rural area. Though more than 80% of US school districts require health education to be taught in the public school system, fewer than half provide curriculum plans for teachers.



Primary Aim & Approach

This research study was designed to evaluate the educational effectiveness of first aid skill development, increased awareness of safety issues and knowledge of injury prevention principles impacting youth and farm families.

Ag Science students from a Louisiana high school participated in a program to acquire skills needed to act as peer instructors. Then they completed a six week Train The Trainer (TTT) program to become first aid instructors using the C.A.R.E. model to facilitate interactive sessions based on case scenarios. Working in teams with a health care professional coach, TTT graduates prepared content, props, visual aids, and hands-on experiences using the case scenario and C.A.R.E. to teach groups of 8 – 10 high school students about one module from the F.A.R.M.E. curriculum. Approximately 1,100 ag science students representing rural parishes throughout Louisiana participated in the day long program (Federation Day) where they rotated through all ten content stations.

Pre-post test comparisons were made across high school seniors who did not participate in any of the project sponsored activities and TTT students using a 43 question knowledge and anticipatory action survey. No significant differences were found between groups at pre-test. However, at post-test, the anticipatory action scores of the peer-teaching group were significantly higher ($t=2.23$, $p=.03$) than for the non-teaching group.

r2p Addressed

- Evaluation of educational effectiveness

Related Outcomes

- Peer instructors participated in one of two focus groups after Federation Day; four themes emerged:
 - Although anxious about teaching 1,000 of their peers, most students indicated the process, especially watching EMTs demonstrate administering first aid, helped their skill acquisition and confidence.
 - High school students prefer being taught by peers; facilitators felt they could relate to peers and non-instructors felt more comfortable asking questions.
 - Trainers reflected pride in pulling together as a team and appreciated multiple opportunities for feedback before, during and after the Federation Day.
 - Peer instructors reported that applying the C.A.R.E. acronym to the case scenario made them more aware of injury risk. They were able to state their intentions to change work behaviors to decrease injury risk.
- Platform presentation for National Association of Agriculture Educators annual conference, November 2010.
- The curriculum guide has been translated into Spanish in response to stakeholder requests.
- Peer-reviewed publication:
 - Evaluation of a school-based train-the-trainer intervention program to teach first aid and risk reduction among high school students, 2010 Sept; J School Health 80(9):453-460. Carruth-AK; Pryor-S; Cormier-C; Bateman-A; Matzke-B; Gilmore-KH.

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C.A.R.E.: Call 911

When calling for help have the following information:

- Chemical Name (not brand name)
- Toxicity Level (Caution, Warning, Danger)
- EPA Registration Number
- Active Ingredients
- Label: First Aid and Medical Information
- Be prepared to describe the victim by name, weight, age, sex, how the person was exposed and how long ago did the exposure occur.

Suspect Chemical Overexposure If You Note:

- Unusual stains/odors on clothing
- Unusual odor to the breath
- Sudden onset of symptoms such as drowsiness, stomach pain, vomiting, drooling, sweating, irritability, or signs of fear.
- Drug/chemical containers that are open and/or out of place.

Western Center for Agricultural Health & Safety



Heat Illness Prevention Media Campaign

Project Description:

- A multilevel outreach and education campaign aimed to help employers reduce heat-related fatalities and illnesses among their low-wage, non-English speaking outdoor worker in the inland, desert and Central Valley areas in California. The campaign was a Cal/DIR collaborative effort with the WCAHS, the Labor Occupational Health Program (UC, Berkeley); and the Labor Occupational Safety and Health (UCLA). WCAHS lead the efforts in the Northern and Central Valley, focused mainly on the Hmong and Punjabi growers and farmworkers, but serving also Spanish speaking farmworkers. The goals of the campaign were: (1) Develop and implement educational resources to reach outdoor workers in the targeted areas, instructing employers about the requirements of the standard, providing tools to train workers and promoting practical solutions for compliance; (2) Promote adoption of heat illness prevention measures by non-English speaking outdoor workers, especially in agriculture, landscaping, and construction; (3) Involve community based organizations, government agencies and others who serve as good access points for the target worker populations in heat prevention activities; (4) improve Department of Industrial Relations' access to hard to reach populations and provide recommendations and lessons learned about working with these groups that can be implemented in the future by DIR.

Significance:

- Heat Illness related illness and deaths are preventable. A 2008 report from the Centers for Disease Control shows farmworkers in California have been at particular high risk for death due to heat stroke, and the majority of these deaths were among foreign born farmworkers (CDC 2008). California data 2005-2006 indicates that the industries with the highest number of reported heat related illnesses are agriculture and construction. (DOSH, 2007).

Primary Aim & Approach of the project:

- Social marketing principles guided our efforts, thus a media and social marketing firm was contracted to support our efforts. This involved the application of commercial marketing techniques to the analysis, planning, execution and evaluation of the program, designed to influence the behavior of the targeted audiences, with the main goal of improving their personal welfare. The Western Center for Agricultural Health and Safety was responsible for:
- In the planning phase we conducted key informant interviews with selected community partners to identify the campaign core messages and materials – what works best/reaches your populations? Once the sample messages were developed, we conducted focus groups with representatives of the targeted communities to refine the materials and messages. The marketing firm assisted us to develop a brand identity that was used throughout all the elements the campaign, including outdoor advertising (billboards, posters, etc), and giveaway items. (key chains, decals, posters/factsheets, DVDs, etc.).

- Assisting DIR to develop a webinar for employers with an emphasis on practical solutions and best practices for implementing standard requirements.
- Developing a plan for community engagement in outreach and education, including: dissemination of posters at local stores, participate in radio interviews (3), distribute factsheets, DVD, giveaways to workers, employers and community at large. Venues: farmers' markets, health fairs and community presentations.
- Conducting train-of –trainer workshops (4) reaching 75 representatives of diverse community based agencies such as: migrant health education, community clinics, city government, farm bureau, housing agencies, lay health works network, etc. An additional workshop reached 6 Punjabi farmworkers. Each trainer received a flipchart with visual aids on the front and discussion guide on the back. The easy to use flipchart included all information and visuals the trainer would need to conduct a 45 minutes presentation.
- Participants created individual implementation plans and received Certificates of Completion.

R₂P addressed:

→ Data from the multiple community partner interviews and the focus groups was used to develop campaign strategies and targeted messages. Examples include Highway/thoroughfare billboards; Train-the-Trainer flipcharts in multiple languages; Educational DVD, Posters, Factsheets; and Bandanas with important information imprinted in Hmong, Punjabi, Spanish, Mixtec; and English

Related Outcomes:

→ Developed important relationships and new contacts within the targeted communities and with their leaderships, for which we continue to provide educational materials and training after the project ended.

→ As a result of the trust developed new potential research partnerships and collaborations have been established.

→ Strengthened the WCAHS image as a source of health and safety information and training in the Central Valley.



24 Community Representatives Participated in the TOT Workshop in Davis, CA on July 22, 2010.

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GREAT PLAINS CENTER FOR AGRICULTURAL HEALTH

Educational / Translation project, Building Capacity of Safety and Health Professionals (submitted in 2009)

The GPCAH research project, the *Keokuk County Rural Health Study (KCRHS)* which has followed approximately 1,000 rural Iowa families for over 15 years, has provided evidence of the association between rural life exposures and risk factors for respiratory disease, injuries, mental illness, and hearing loss. For example, findings show associations between increased asthma prevalence and agricultural exposures, such as raising swine. Likewise, hearing tests on participants ages 8-92 showed that nearly everyone (99%) had hearing thresholds significantly poorer than normal and that noise-induced hearing loss was evident even for young children. Similar findings included results indicating inconsistent use of personal protective equipment (among KCRHS farmers only 5% usually wore respirators, 12% wore hearing protectors, and 15% wore safety glasses when exposed to hazards). Overall the evidence demonstrates the need for interventions which would provide for the occupational health and safety needs of the agricultural work force and at the same time attempt to improve the safety culture within rural communities. The shortage of agricultural occupational health and safety professionals has threatened the implementation of interventions however.

BACKGROUND / SIGNIFICANCE

The GPCAH Educational/Translation project, *Building Capacity of Safety and Health Professionals*, has addressed this critical shortage of agricultural occupational health and safety researchers, program leaders and health care providers with the establishment and recent expansion of the Agricultural Health and Safety Certificate Training (AHS-CT) program, the development of a series of introductory lectures for health care professions students, and the support and establishment of AgriSafe Network Clinics. The AgriSafe Network of clinics, established in 1987, is the first and only comprehensive agricultural occupational health service delivery program in the U.S. Training through courses developed and taught by experts from the AHS-CT program is required for nurses, nurse practitioners, physicians and physician assistants interested in becoming AgriSafe providers.

During the past fiscal year (FY2009) the AHS-CT program has provided the 40 hour Agricultural Medicine course in Iowa, Illinois, and Vermont. In Fy10 it will be offered in Wisconsin, Vermont, North Carolina, North Dakota, and Iowa. Enthusiasm for the program was expressed recently by program participant and project leader Dr. Greg Cope, associate professor and campus coordinator for agromedicine at North Carolina State University; "This is the kind of program that we have envisioned all along for agromedicine in North Carolina," said Cope. "We are excited to see it take shape at the community level."

A major activity of the North Carolina project will be the course, "Agricultural Medicine: Occupational and Environmental Health for Rural Health Professionals," held Nov. 30 - Dec. 4, 2010 in Greenville, N.C. Taught by experts from the University of Iowa, along with faculty and partners of the N.C. Agromedicine Institute, the course will address diagnosis, treatment and prevention of agricultural health conditions. It will be required for nurses, nurse practitioners, physicians and physician assistants interested in becoming AgriSafe providers.

Robin Tutor, interim director of the North Carolina Agromedicine Institute, says, "Right now, there is little if any agricultural occupational safety and health preparation for nurses, doctors and allied health professionals in North Carolina, We are excited to collaborate with Dr. Kelley Donham of the University of Iowa, a recognized expert in agricultural medicine, and Natalie Roy, executive director of the AgriSafe Network."

This GPCAH Education/Translation project has been received with great enthusiasm among state collaborators nationwide. Several states have repeated the program. It is our hope that other states will have a similar successful experience and will want to continue offering the program.

RESULTS / R2P

Our research results have demonstrated evidence of need for interventions which would provide for the occupational health and safety needs of the agricultural work force. Implementation of interventions has been threatened however, by a shortage of trained agricultural occupational health and safety professionals. This GPCAH Education/Translation project provides a research to practice approach by training the agricultural occupational health and safety professionals – researchers, program leaders and health care providers critically needed to change the culture of healthcare provision and safety in rural communities nationwide.

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Initiative Research Projects by NORA Strategic Goals

This first appendix of the ACE Report for fiscal year 2010 provides an overview of Initiative research projects using the framework provided by the National Agriculture, forestry and Fishing Agenda section of the National Occupational Research Agenda (NORA). This second version of NORA was released in December of 2008 and the ACE team revised the database to reflect the move from NORA I to NORA II. All projects are now reported under the Strategic Goals and by Intermediate Goals developed by the sector council. The ACE team suggested that it might be useful to develop a section of the report that illustrated the work of each of the Centers by these goals in order to facilitate the potential for collaboration as well as to indicate areas for building upon previous work. It is encouraging that this overview illustrates that the Centers have adapted to a broader occupational responsibility with projects illustrating not only cross sector relationships, but the expansion of work into both forestry and fishing.

Cross Sector Programs	NIOSH Code	Cross Sector Programs	NIOSH Code
Authoritative Recommendations	AD	Nanotechnology	NT
Cancer, Reproductive, and Cardiovascular Disease	CD	Occupational Health Disparities	HD
Communications and Information Dissemination	CI	Personal Protective Technology	PP
Economics	EC	Prevention Through Design	PD
Emergency Preparedness and Response	ER	Radiation Dose Reconstruction	RX
Engineering Controls	EN	Respiratory Disease	RD
Exposure Assessment	EA	Small Business Assistance and Outreach	SB
Global Collaborations	GL	Surveillance	SU
Health Hazard Evaluation	HE	Training Grants	TR
Hearing Loss Prevention	HL	Traumatic Injury	TI
Immune and Dermal Disease	ID	Worklife Initiative	WL
Musculoskeletal Disorders	MD	Work Organization & Stress-Related Disorders	OW

On the following pages those research projects with a cross sector relationship are identified by the two letter NIOSH code in superscript.

NORA Goal

Strategic Goal 1 – Surveillance -Improve surveillance within the Agriculture, Forestry, and Fishing Sector to describe: the nature, extent, and economic burden of occupational illnesses, injuries, and fatalities; occupation hazards; and worker populations at risk of adverse health outcomes.

NORA Goal

Intermediate Goal 1.1 - Improve national and state-level illness, injury, hazard, and exposure surveillance by utilizing existing data systems or creating new databases to identify injuries, illnesses, hazards, and exposures within the AgFF sector.

Center	Project Title
GPC	Keokuk County Rural Health Study: The Epidemiology of Agricultural Disease & Injury
GPC	*Injury Risk in Part Time Farming - Linkage of 2007 Ag Census and New Injury Survey Data in Iowa and Mississippi
GPC	*Prevalence of Methicillin-Resistant Staphylococcus Aureus (MRSA) Colonization in Rural Iowa
NEC	Statewide Surveillance of New York State Farm Injuries ^{SU}
NEC	Estimating Commercial Fishing Injury Rates with an Emphasis on Musculoskeletal Disorders
PNC	Research 2: Neurobehavioral Assessment of Pesticide Exposure in Children ^{HD, WL}
PNC	*Pilot 9: FFA Community Mobilization for Safe Agricultural ATVs and Tractor ROPS Use ^{CI, TI}
SEC	Economics of Preventing Agricultural Injuries to Adolescents and Adult Farmers ^{EC, HL, PP, SU, TI}
SWC	Model Farmers Dissemination Project ^{CI, EC, EA}
SWC	*Assessment of Pesticide Exposure Prevention Programs in Border Region NM
WSC	Respiratory Health and Exposures on Large California Dairies
WSC	Education and Outreach
WSC	AgHealth Monthly Seminar Series

Intermediate Goal 1.2 - Improve worker demographic information at the national and state level by enhancing existing employment demographic data or creating new systems to better characterize the workforce within each AgFF sub-sector.

NEC	*Assessing the Farm Safety Needs of Farmers and Farm Workers in Maine
PNC	*Pilot 9: FFA Community Mobilization for Safe Agricultural ATVs and Tractor ROPS Use ^{CI, TI}
SWC	Worker Health Protection Among Shrimp Fishermen of the Gulf Coast ^{CI, EA, HL, HD, TI}
SWC	*Worker Safety & Health Exposures Among Agricultural Aviators ^{EA, WL}
WSC	AgHealth Monthly Seminar Series

Intermediate Goal 1.3 – Ensure that occupational illness, injury, and fatality surveillance data for the AgFF sectors are readily available to workers, employers, intramural and extramural research scientists and the public in a timely manner.

PNC	Research 1: Risk Factors for Cholinesterase Depression Among Pesticide Handlers ^{HP, PP}
PNC	*Pilot 1: Skills Retention in Fishing Safety Training
PNC	*Pilot 6: Further Skills Retention in Commercial Fishing Safety Training
PNC	*Pilot 9: FFA Community Mobilization for Safe Agricultural ATVs and Tractor ROPS Use ^{CI, TI}

* Pilot project

NORA Goal

Intermediate Goal 1.3

Center Project Title

SEC	Teaching Public Health Students about Agricultural Safety and Health	CI, ER, EN, EA, MD, PD, SU, TI
SEC	Nurse Agricultural Education Project	CD, CI, ER, EA, ID, PP, PD, RD, TI
SWC	Worker Health Protection Among Shrimp Fishermen of the Gulf Coast	CI, EA, HL, HD, TI
WSC	Rapid Assay for Human and Environmental Exposure Assessment	
NEC	Pesticide Record Keeping Education for Restricted Use Pesticide Applicators	

Strategic Goal 2 – Vulnerable Workers - Reduce deleterious health and safety outcomes in workers more susceptible to injury or illness due to circumstances limiting options for safeguarding their own safety and health.

Intermediate Goal 2.1 - Define and indentify “vulnerable workers” in each sector – agriculture, forestry and fishing.

SEC	Nurse Agricultural Education Project	CD, CI, ER, EA, ID, PP, PD, RD, TI
SEC	Sustained Work Indicators of Older Farmers	
SEC	*Proyecto de Salud de los Trabajadores de Campo: Latino Farm Worker Health Project	EA, WL
SEC	Strategies for Safety of Older Adult Farmers	EN, EA, PP, TI, OW
SWC	*Assessment of Pesticide Exposure Prevention Programs in Border Region NM	
WSC	Farm Worker Health Research Program (MICASA)	

Intermediate Goal 2.2 - Identify the deleterious health and safety outcomes of vulnerable workers in each sector – agriculture, forestry and fishing.

GPC	Keokuk County Rural Health Study: The Epidemiology of Agricultural Disease & Injury	
NEC	Estimating Commercial Fishing Injury Rates with an Emphasis on Musculoskeletal Disorders	
SEC	Nurse Agricultural Education Project	
SEC	Sustained Work Indicators of Older Farmers	
SEC	*Proyecto de Salud de los Trabajadores de Campo: Latino Farm Worker Health Project	EA, WL
SEC	Strategies for Safety of Older Adult Farmers	EN, EA, PP, TI, OW
SWC	Worker Health Protection Among Shrimp Fishermen of the Gulf Coast	CI, EA, HL, HD, TI
SWC	Model Farmers Dissemination Project	CI, EC, EA
WSC	Health Effects of Airborne Ag Particles from the Sacramento/San Joaquin Valley	
WSC	Education and Outreach	
HIC	High Plains and Mountain Region Dairy Workshop	
HIC	Feasibility of Analyses of Non-Therapeutic Agent Fate within Northern High Plains Calcareous Soil Zones and Implications for Agricultural Worker Health	

* Pilot project

NORA Goal

Center Project Title

Intermediate Goal 2.3 - Improve data collection and existing databases to provide information on safety and health disparities among vulnerable workers.

- NEC Visual Impairment and Eye Symptoms In Latino Farm Workers
- NEC Estimating Commercial Fishing Injury Rates with an Emphasis on Musculoskeletal Disorders
- PNC Research 1: Risk Factors for Cholinesterase Depression among Pesticide Handlers ^{HD, PP}
- PNC Research 2: Neurobehavioral Assessment of Pesticide Exposure in Children ^{HD, WL}
- SEC Economics of Preventing Agricultural Injuries to Adolescents and Adult Farmers ^{EC, HL, PP, SU, TI}
- SEC *Proyecto de Salud de los Trabajadores de Campo: Latino Farm Worker Health Project ^{EA, WL}
- SWC Model Farmers Dissemination Project ^{CI, EC, EA}
- WSC Worker Occupational Safety & Health Training & Education Project
- WSC Farm Worker Health Research Program (MICASA)
- WSC AgHealth Monthly Seminar Series

Intermediate Goal 2.4 - Use innovative and proven communication, education, training, and marketing techniques to tailor workplace safety and health programs to be responsive to the unique needs of vulnerable workers.

- NEC Community Collaboration for Farm Worker Health
- NEC Evaluation of Farm Worker Health Care Utilization Survey
- NEC Reducing Occupational Injuries and Illness in Migrant Seasonal Tobacco Farm Workers through Coalition of a Community Health Program and a Research Team ^{EA, WL}
- NEC Community Collaboration for Farm Worker Health and Safety Project: Assessing the Capacity and Needs
Within Maine's Broccoli Harvest
- NEC Safety Training Tools for Vermont Dairy Producers
- NEC Estimating Commercial Fishing Injury Rates with an Emphasis on Musculoskeletal Disorders
- NEC Ergonomic Design of Pruners for Women in Agriculture ^{PD}
- NEC Preventing Logging Injuries among Upstate New York Agricultural Workers through the Dissemination of Educational Materials and Provisions of Hands-On Safety Training ^{CI, TR, TI}
- PNC Fluorescent Tracer Component for Hands-on Pesticide Handler Training
- PNC Prevention 1: Interventions to Minimize Worker and Family Pesticide Exposures ^{EA, HD, PP, PD, OW}
- PNC *Pilot 7: Responding to Uncertain Results in Research: A Pilot Study of Pesticide Handlers Responses to PON1 Status ^{CI, HD}

* Pilot project

NORA Goal

Intermediate Goal 2.4

Center	Project Title
PNC	*Pilot 10: Reducing Workloads for Older Loggers in Physically Demanding Logging Tasks with Synthetic Rope ^{HD, OW}
SEC	Partnerships for Preventing Farm Injuries to Rural Youth (PFIRY)
SEC	Nurse Agricultural Education Project ^{CD, CI, ER, EA, ID, MD, RD, TI}
SEC	Developing and testing Interactive CD Health and Safety Curricula for 4H Youth ^{CI, TI}
SEC	Refinement and Enhancement of Agricultural Safety Curricula for Children (REACCH) ^{CI, TI}
SEC	Strategies for Safety of Older Adult Farmers ^{EN, EA, TI, OW}
SWC	Promoviendo Farm worker Safety ^{CI, EA, HD}
SWC	Model Farmers Dissemination Project ^{CI, EC, EA}
SWC	Developing and testing interactive CD health and safety curricula for 4-H youth
SWC	*Animal Handling Safety for Dairy Workers ^{CI, HL}
WSC	Worker Occupational Safety & Health Training & Education Project
WSC	Respiratory Health and Exposures on Large California Dairies
WSC	AgHealth Monthly Seminar Series
HIC	*Pilot on Dairy Worker Stress
HIC	Developing and Testing Interactive CD Health and Safety Curricula for 4-H Youth
HIC	Enhancing Translation and Dissemination through Agricultural Partnerships ^{HD, TR}

Strategic Goal 3 – Outreach, Communications and Partnerships - Move proven health and safety strategies into agricultural, forestry and fishing workplaces through the development of partnerships and collaborative efforts.

Intermediate Goal 3.1 - Form collaborative efforts with key stakeholders to: 1) biennially assess current and emerging major occupational health and safety concerns and solutions; and 2) prioritize interventions for implementation.

GPC	Administrative Planning and Outreach Core
PNC	Administrative Planning and Outreach Core
SEC	Administrative Core ^{CI}
SWC	Administrative Core – SW Center for Agricultural Health Injury Prevention, and Education ^{CI, TR}
WSC	Administration Core
NEC	Administrative Planning and Core ^{AD, CI}
NEC	Community Collaboration for Farmworker Health
NEC	Migrant Farmworker Health Care Utilization Survey
	Community Health and Intervention with Yakima Agricultural Workers

* Pilot project

NORA Goal

Intermediate Goal 3. 1

Center Project Title

- NEC Reducing Occupational Injuries and Illness in Migrant Seasonal Tobacco Farmworkers through Coalition of a Community Health Program and a Research Team^{EA, WL}
- NEC Community Collaboration for Farmworker Health and Safety Project: Assessing the Capacity and Needs Within Maine's Broccoli Harvest
- PNC Community Health and Intervention with Yakima Agricultural Workers
- PNC Prevention 1: Interventions to Minimize Worker and Family Pesticide Exposures^{EA, HD, PP, PD, OW}
- SEC Partnering with Stakeholders for Prevention
- SWC ACE Team Collaboration and Data Collection^{CI}
- SWC Agricultural Center Outreach and Education Projects^{CI, HL, MD, TI}
- SWC Worker Health Protection Among Shrimp Fishermen of the Gulf Coast^{CI, EA, HL, HD, TI}
- SWC Worker Safety & Health Exposures Among Agricultural Aviators^{EA, WL}
- SWC Social Networking: Feasibility Study of Communication Patterns Among Vietnamese Shrimp Fishermen^{CI}
- WSC Worker Occupational Safety & Health Training & Education Project
- WSC Farm Worker Health Research Program (MICASA)
- WSC Respiratory Health and Exposures on Large California Dairies
- WSC Education and Outreach
- WSC Rapid Assay for Human and Environmental Exposure Assessment
- WSC AgHealth Monthly Seminar Series
- NEC *Community Collaboration for Farmworker Health and Safety Project: Assessing the Capacity and Needs Within Maine
- HIC Center Administration – General
- HIC ACE Project
- HIC High Plains and Mountain Region Dairy Workshop

Intermediate Goal 3. 2 - Identify practical and proven occupational safety and health interventions, then encourage new studies to meet needs where proven strategies do not exist.

- NEC Migrant Farmworker Health Care Utilization Survey
- PNC Community Health and Intervention with Yakima Agricultural Workers Model
- PNC Research 3: Enhancements to Cholinesterase Monitoring: Oxime Reactivation & OP-ChE Adducts^{ER, EA}
- PNC Prevention 1: Interventions to Minimize Worker and Family Pesticide Exposures^{EA, HD, PP, PD, OW}

- PNC Education 1: Introducing a Cholinesterase Test Kit into Clinical Practice^{EA, SB}

NORA Goal

Center Project Title

* Pilot project

Intermediate Goal 3. 2

PNC	*Pilot 7: Responding to Uncertain Results in Research: A Pilot Study of Pesticide Handlers Responses to PON1 Status ^{CI, HD}
SEC	Developing a Smart ROPS Decision-Making Guide ^{AD, CI, EN, PD}
SWC	Strategies for Safety of Older Adult Farmers
SWC	Worker Health Protection Among Shrimp Fishermen of the Gulf Coast ^{CI, EA, HL, HD, TI}
SWC	Promoviendo Farmworker Safety ^{CI, EA, HD}
SWC	Model Farmers Dissemination Project ^{CI, EC, EA}
SWC	Worker Safety & Health Exposures Among Agricultural Aviators ^{EA, WL}
WSC	Worker Occupational Safety & Health Training & Education Project
WSC	Farm Worker Health Research Program (MICASA)
WSC	Education and Outreach
WSC	Rapid Assay for Human and Environmental Exposure Assessment
HIC	ACE Project

Intermediate Goal 3. 3 - Use innovative and proven communication, education and social marketing techniques to influence knowledge, attitudes and practices of agricultural workers, loggers and commercial fishermen.

NEC	Safety Training Tools for Vermont Dairy Producers
NEC	Preventing Logging Injuries among Upstate New York Agricultural Workers through the Dissemination of Educational Materials and Provisions of Hands-On Safety Training ^{CI, TR, TI}
NEC	Vermont Farm Safety Program
PNC	Community Health and Intervention with Yakima Agricultural Workers
PNC	Research 1: Risk Factors for Cholinesterase Depression among Pesticide Handlers ^{HD, PP}
PNC	Research 2: Neurobehavioral Assessment of Pesticide Exposure in Children ^{HD, WL}
PNC	Prevention 1: Interventions to Minimize Worker and Family Pesticide Exposures ^{EA, HD, PP, PD, OW}
PNC	Education 1: Introducing a Cholinesterase Test Kit into Clinical Practice ^{EA, SB}
PNC	Education 2: Reality Tales: Storytelling to Translate Agricultural Health and Safety Research ^{CI, ER, II}
PNC	*Pilot 5: Safety and Health of Immigrant Forest workers on the Olympic Peninsula
HIC	Enhancing Translation and Dissemination through Agricultural Partnerships ^{HD, TR}
PNC	*Pilot 7: Responding to Uncertain Results in Research: A Pilot Study of Pesticide Handlers Responses to PON1 Status ^{CI, HD}
SEC	Partnerships for Preventing Farm Injuries to Rural Youth (PFIRY)
SEC	Engaging High School Students in Activities to Prevent Tractor-Related Injuries (Stakeholder's Project Supplemental)

NORA Goal

Intermediate Goal 3. 3

Center	Project Title
SEC	TSI: Tractor Safety Initiative: Designing Community-based Social marketing Programs for Tractor Safety

* Pilot project

(1 R25-04-008542-01)

- SEC Economics of Preventing Agricultural Injuries to Adolescents and Adult Farmers ^{EC, HL, PP, SU, TI}
- SEC Developing and testing Interactive CD Health and Safety Curricula for 4H Youth ^{CI, TI}
- SEC Refinement and Enhancement of Agricultural Safety Curricula for Children (REACCH)
- SEC Kentucky Migrant Farmworkers Outreach: Kentucky Children’s Health Insurance Program ^{CI}
- SWC Agricultural Center Outreach and Education Projects ^{CI, HL, MD, TI}
- SWC Worker Health Protection Among Shrimp Fishermen of the Gulf Coast ^{CI, EA, HL, HD, TI}
- SWC Promoviendo Farmworker Safety ^{CI, EA, HD}
- SWC Animal Handling Safety for Dairy Workers ^{CI, KL}
- WSC Health Effects of Airborne Ag Particles from the Sacramento/San Joaquin Valley
- WSC Education and Outreach
- GPC * Expansion of the Rural Health Initiative: Incorporating Occupational Health Interventions in a Community Based

Intermediate Goal 3. 4 - Use innovative educational techniques and certification programs to improve the safety practices of agricultural workers, loggers and commercial fishermen.

- GPC Building Capacity of Health and Safety Professionals
- NEC Preventing Logging Injuries among Upstate New York Agricultural Workers through the Dissemination of Educational Materials and Provisions of Hands-On Safety Training ^{CI, TR, TI}
- PNC Fluorescent Tracer Component for Hands-on Pesticide Handler Training
- PNC Education 2: Reality Tales: Storytelling to Translate Agricultural Health and Safety Research ^{CI, ER, TI}
- SEC Teaching Public Health Students about Agricultural Safety and Health ^{CI, ER, EN, EA, MD, PD, RD, SU, TI}
- SEC Nurse Agricultural Education Project ^{CD, CI, ER, EA, ID, MD, RD, TI}
- SEC Economics of Preventing Agricultural Injuries to Adolescent and Adult Farmers ^{EC, HL, PP, SU, TI}
- SEC Agricultural Safety and Health Training for Public Health Graduate Students (HAP-TPG) ^{TR}
- SEC An Analysis of Timber Harvesting Injuries and Prevention Mechanisms in the Southeastern US, 1996-2006 ^{EA, TI}
- SWC Agricultural Center Outreach and Education Projects ^{CI, HL, MD, TI}
- WSC AgHealth Monthly Seminar Series

Strategic Goal 4 – Agriculture Safety - Reduce the number, rate and severity of traumatic injuries and deaths involving hazards of production agriculture and support activities.

NORA Goal

Center Project Title

* Pilot project

Intermediate Goal 4.1 - Reduce number of fatalities due to overturns of tractors in agricultural by 50%, through the use of Roll-Over Protective Structures or similar technologies, by 2018.

NEC	The Social Marketing of Tractor Rollover Protective Structures in New York ^{TI}
NEC	The Social Marketing of ROPS: A Multistate Expansion ^{TI}
PNC	Education 2: Reality Tales: Storytelling to Translate Agricultural Health and Safety Research ^{CI, ER, TI}
SEC	Partnerships for Preventing Farm Injuries to Rural Youth (PFIRY)
SEC	Engaging High School Students in Activities to Prevent Tractor-Related Injuries (Stakeholder's Project Supplemental)
SEC	TSI: Tractor Safety Initiative: Costs of tractor Operator Injuries from Overturns and Highway Collisions
SEC	TSI: Tractor Safety Initiative: Designing Community-based Social marketing Programs for Tractor Safety (1 R25-04-008542-01)
SEC	Economics of Preventing Agricultural Injuries to Adolescent and Adult Farmers ^{EC, HL, PP, SU, TI}
SEC	TSI: National Agricultural Tractor Safety Initiative
SEC	Developing a Smart ROPS Decision-Making Guide ^{AD, CI, EN, PD}
WSC	Rapid Assay for Human and Environmental Exposure Assessment
HIC	TSI – Ag Center Tractor Initiative

Intermediate Goal 4.2 - Reduce number and rate of fatalities in production agriculture and support activities due to runovers by agricultural field and farmstead machinery by 50% by 2018.

NEC	*A Bilingual Skid Steer Loader Safety training Tool for Vermont dairy Producers
NEC	Ergonomic Design of Pruners for Women in Agriculture ^{PD}
PNC	Education 2: Reality Tales: Storytelling to Translate Agricultural Health and Safety Research ^{CI, ER, TI}
PNC	*Pilot 9: FFA Community Mobilization for Safe Agricultural ATVs and Tractor ROPS Use ^{CI, TI}
SEC	TSI: Tractor Safety Initiative: Costs of tractor Operator Injuries from Overturns and Highway Collisions
SEC	TSI: Tractor Safety Initiative: Designing Community Based Social Marketing Programs for Tractor Safety (1 R25-04-008542-01)
SEC	TSI: National Agricultural Tractor Safety Initiative
WSC	Rapid Assay for Human and Environmental Exposure Assessment
GPC	*Rural Roadway Safety Optional Drivers Education Module

NORA Goal

Intermediate Goal 4.3 - Reduce the number and rate of fatalities in production agriculture and support activities involving agricultural field and farmstead equipment, not covered in 4.1

Center	Project Title
NEC	A Bilingual Skid Steer Loader Safety training Tool for Vermont dairy Producers
NEC	*Safety Training Tools for Vermont Dairy Producers
NEC	Research to Practice for Safe Entry into Confine-Space Manure Storages ^{EN, PD}

* Pilot project

and 4.2 by 25% by 2018.

NEC	The Winch Survey ^{EA}
PNC	Education 2: Reality Tales: Storytelling to Translate Agricultural Health & Safety Research ^{CI, ER, TI}
PNC	*Pilot 9: FFA Community Mobilization for Safe Agricultural ATVs and Tractor ROPS Use ^{CI, TI}
SEC	TSl: National Agricultural Tractor Safety Initiative
SEC	*Characteristics of All-Terrain Vehicles and Their Operators on Kentucky Farms (2007-2009 Feasibility Study) ^{CD, EA}

Intermediate Goal 4.4 - Reduce the number rate and severity of non-fatal injuries (OSHA recordable type) in production agriculture and support activities involving agricultural field and farmstead equipment by 25% by 2018.

PNC	Education 2: Reality Tales: Storytelling to Translate Agricultural Health and Safety Research ^{CI, ER, TI}
SEC	TSl: Tractor Safety Initiative: Costs of tractor Operator Injuries from Overturns and Highway Collisions
SEC	TSl: Tractor Safety Initiative: Designing Community-based Social marketing Programs for Tractor Safety (1 R25-04-008542-01)
SEC	Economics of Preventing Agricultural Injuries to Adolescent and Adult Farmers
SEC	Characteristics of All-Terrain Vehicles and Their Operators on Kentucky Farms (2007-2009 Feasibility Study) ^{CD, EA}

Intermediate Goal 4.5 - Reduce the number, rate and severity of non-fatal injuries (OSHA recordable type) and the number and rate of fatalities in production agriculture and support activities not covered in 4.1, 4.2, 4.3 and 4.4 by 25% by 2018.

GPC	Keokuk County Rural Health Study: The Epidemiology of Agricultural Disease & Injury
NEC	Assessing Hearing hazards in Farm Youth
NEC	Characterizing WMSD's through Direct Postural Measurements in a Nursery Population
NEC	Assessing the Farm Safety Needs of Farmers and Farmworkers in Maine
PNC	Prevention 1: Interventions to Minimize Worker and Family Pesticide Exposures ^{EA, HD, PP, PD, OW}
SEC	TSl: Tractor Safety Initiative: Costs of tractor Operator Injuries from Overturns and Highway Collisions
SEC	TSl: Tractor Safety Initiative: Designing Community Based Social Marketing Programs for Tractor Safety (1 R25-04-008542-01)
SEC	Nurse Agricultural Education Project ^{CD, CI, ER, EA, ID, PP, PD, RD, TI}
SEC	Aquaculture Safety and Health
SEC	TSl: National Agricultural Tractor Safety Initiative
SWC	Model Farmers Dissemination Project ^{CI, EC, EA}
WSC	Health Effects of Airborne Ag Particles from the Sacramento/San Joaquin Valley

Strategic Goal 5 – Agriculture Health - Improve the health and well-being of agricultural workers by reducing occupational causes or contributing factors to acute and chronic illness and disease.

* Pilot project

NORA Goal

Intermediate Goal 5.1 - Reduce the incidence and prevalence of musculoskeletal disorders (MSD) associated with work practices and production agriculture.

Center Project Title

NEC	*Pilot Testing Direct Postural Measurement Instrumentation in a Nursery Population
NEC	*Horticulture Ergonomics and Safety Training Program
NEC	Characterizing WMSD's through Direct Postural Measurements in a Nursery Population
NEC	Ergonomic Design of Pruners for Women in Agriculture ^{PD}
PNC	Education 2: Reality Tales: Storytelling to Translate Agricultural Health and Safety Research ^{CI, ER, TI}
SWC	Model Farmers Dissemination Project ^{CI, EC, EA}
SEC	Efficient Measurement and Representation of Postural Stress Time Profiles ^{EA, MD}
HIC	Injury Risk Analysis in Large-Herd Dairy Parlors ^{CI, EN, MD, HD, PD, TI}

Intermediate Goal 5.2 - Reduce acute and chronic respiratory disease caused, or exacerbated by, agricultural exposures including asthma, chronic obstructive pulmonary disease, and interstitial and infectious diseases of the respiratory system.

GPC	Keokuk County Rural Health Study: The Epidemiology of Agricultural Disease & Injury
GPC	Determinants of Gas and Dust Exposures Among Swine Workers
HIC	*Feasibility of Analyses of Non-Therapeutic Agent within Northern High Plains Calcareous Soil Zones and Implications
NEC	Occupational Risk of Infection among Poultry Workers
NEC	*Assessment of Occupational Respiratory Exposure to Human Pathogens in Airborne Dust Among Workers of a Large Commercial Cattle Farm on Eastern Shore of Maryland
NEC	*Increasing the Use of Personal Protective Equipment for Reducing Occupational Eye Injuries and Preventing Noise-Induced Hearing Loss among Workers in U.S. Landscaping Services Sector
SWC	*Evaluation of Novel Molecular DNA Techniques for the Characterization of Bioaerosols ^{EA, RD}
SWC	*Dairy Parlor Worker Exposure to Organic Dust, Endotoxin, and Bacteria ^{EA, RD}

NORA Goal

Intermediate Goal 5.2

Center Project Title

SWC	*Investigation of the Effects of Poultry Dust Extract on Inflammatory Responses in Lung Epithelial Cells and Monocytic Cells ^{EA, RD}
HIC	*Evaluating the Presence of CTX-M ESBLs in Colorado Dairy Workers
HIC	*Inflammatory Relationship of Gram Positive & Gram Negative Bacteria in Occupational & Agricultural

* Pilot project

Environments

NEC	*Occupational Risk of Infection Among Poultry Workers
HIC	Evaluating the Presence of CTX-M ESBLs in Colorado Dairy Workers
HIC	Prospective Study of Occupational Lung Disease and Endotoxin Exposure in Naïve (New) Dairy Workers ^{EA, HD, RD, SU, WL}

Intermediate Goal 5.3 - Reduce acute and chronic illnesses associated with exposure to pesticides and other agrochemicals.

NEC	Assessing Hearing hazards in Farm Youth
PNC	Research 1: Risk Factors for Cholinesterase Depression among Pesticide Handlers ^{HD, PP}
PNC	Research 2: Neurobehavioral Assessment of Pesticide Exposure in Children ^{HD, WL}
PNC	Research 3: Enhancements to Cholinesterase Monitoring: Oxime Reactivation & OP-ChE Adducts ^{ER,EA}
PNC	*Pilot 3: Inhibition of Cholinesterase by Pharmacological and Dietary Agents
PNC	*Pilot 8: Investigation of the Apparent Discrepancy between Observed Cholinestrase Depression among Pesticide handlers ^{EA, HD}
SEC	*Linkage of Atrazine Exposure and Birth Data in Kentucky: Assessment of Data Sources and Needs (2007-2009 Feasibility Study) ^{CD, EA}
SEC	*Characterizing the Health Risk Associated with Domestic Well Water Use in Rural Western Kentucky (2008-2009 Feasibility Study) ^{CD, EA}
SEC	*Pesticide Biomonitoring in Florida Agricultural Workers ^{EA, PP}
WSC	Rapid Assay for Human and Environmental Exposure Assessment
GPC	*Individual Variation in Paraoxonase 1 Activity in Human Serum Over Time
GPC	*Neurobehavioral Effects of Organic Solvent Exposure Among Farmers
HIC	*Elucidate the Cellular and Molecular Effects of the ATRA on the HPG Axis
HIC	*Use of Pesticides and Other Chemicals on Colorado Dairy Farms
HIC	Elucidate the Cellular and Molecular Effects of ATRA on the HPG Axis

NORA Goal

Intermediate Goal 5.4 - Reduce illness and disease due to environmental and infectious exposures in agriculture such as ultraviolet radiation, heat and cold, noise and zoonosis.

Center	Project Title
GPC	Development of a Task Based Noise Exposure Database for Agricultural Grain Farming Operations.
GPC	*Development of a Task Based Noise Exposure Database for Agricultural Grain Farming Operations
GPC	*Evaluating Noise Exposures of Rural Youth

* Pilot project

NEC	Assessing Hearing hazards in Farm Youth
NEC	*Assessing the Noise Induced Hearing Loss of Maine Potato Farmers
NEC	Assessment of Occupational Respiratory Exposure to Human Pathogens in Airborne Dust Among Workers of a Large Commercial Cattle Farm on Eastern Shore of Maryland
NEC	*Task based Assessment of Occupation Noise Exposures in Migrant and Seasonal Agricultural Workers
PNC	Research 5: Assessment of Job Related Exposures for Diarrheal Illness in Farmworker Families
SWC	Evaluation of Novel Molecular DNA Techniques for the Characterization of Bioaerosols ^{EA, RD}

Intermediate Goal 5.5 – Develop and promote adoption of effective interventions to enhance psychological well-being of workers and to minimize the adverse effects of stressful agricultural working conditions.

GPC	*Do Farm Crisis Services Affect Farmer Suicide: A Comprehensive Evaluation
SEC	Sustained work indicators of old farmers
SEC	Proyecto de Salud de los Trabajadores de Campo: Latino Farmworker Health Project ^{EA, WL}

Strategic Goal 6 – Forestry Safety – Reduce the number, rate and severity of traumatic injuries and deaths involving hazards of forestry

Intermediate Goal 6.1 – Reduce logging-related deaths and traumatic injuries by 50% by 2018, through collection and analysis of injury data and evidence-based safety improvements

NEC	Preventing Logging Injuries among Upstate New York Agricultural Workers through the Dissemination of Educational Materials and Provisions of Hands-On Safety Training ^{CI, TR, TI}
PNC	*Pilot 4: Point-Of-View Video Analysis of the Impact of a Faller Safety Training Program
PNC	*Pilot 5: Safety and Health of Immigrant Forest workers on the Olympic Peninsula
SEC	*An Analysis of Timber Harvesting Injuries and Prevention mechanisms in the Southeaster US, 1996-2006 ^{EA, TI}

NORA Goal

Intermediate Goal 6.3 – Identify factors (e.g. risk-taking behaviors, workers compensation vs. self-insurance) that limit the adoption of safe logging practices...

Center	Project Title
NEC	Preventing Logging Injuries among Upstate New York Agricultural Workers through the Dissemination of Educational Materials and Provisions of Hands-On Safety Training ^{CI, TR, TI}

* Pilot project

Intermediate Goal 6.4 – Establish a Forestry Sector Partnership to Develop New Techniques (e.g., synthetic rope, “smart” clothing) that reduce workloads and injury risk associated with logging and forest operations.

PNC *Pilot 10: Reducing Workloads for Older Loggers in Physically Demanding Logging Tasks with Synthetic Rope ^{HD, OW}

Strategic Goal 7 – Forestry Health - Improve the health and well-being of forestry workers by reducing occupational causes or contributing factors to acute and chronic illness and disease.

Intermediate Goal 7.1 – Develop and Implement interventions to minimize the frequency and causes of work-related musculoskeletal diseases (MSDs) and other acute and chronic illnesses leading to premature disability

PNC *Pilot 10: Reducing Workloads for Older Loggers in Physically Demanding Logging Tasks with Synthetic Rope ^{HD, OW}

Strategic Goal 8 – Fishing Safety - Reduce the number, rate and severity of traumatic injuries (including deaths) involving hazards of commercial fishing.

Intermediate Goal 8.1 - Reduce the vessel sinking and fatality rate due to vessel sinking by 50% by 2018.

NEC *Estimating Commercial Fishing Injury Rates with an Emphasis on Musculoskeletal Disorders ^{MD}
 SWC Worker Health Protection Among Shrimp Fishermen of the Gulf Coast ^{CI, EA, HL, HD, TI}

Intermediate Goal 8.2 – Reduce fatal falls overboard events and rates by 50% by 2018.

PNC *Pilot 1: Skills Retention in Fishing
 PNC *Pilot 6: Further Skills Retention in Commercial Fishing Safety Training

NORA Goal

Center Project Title

Intermediate Goal 8.4 – Make commercial fishing vessel safety an interagency effort/priority.

NEC *The Winch Survey ^{EA}

* Pilot project

Strategic Goal 9 – Fishing Health - To improve the health of commercial fishermen by reducing occupation causes or contributing factors to illness and disease.

Intermediate Goal 9.1 - Measure and reduce work – related musculoskeletal disease due to acute and chronic exposures and ergonomic factors.

NEC Estimating Commercial Fishing Injury Rates with an Emphasis on Musculoskeletal Disorders
 SEC Aquaculture Safety and Health

Intermediate Goal 9.2 - Measure and reduce illnesses and disease due to exposures to physical factors such as noise, cold, heat and ultraviolet radiation.

SEC Aquaculture Safety and Health
 SWC Worker Health Protection Among Shrimp Fishermen of the Gulf Coast ^{CI, EA, HL, HD, TI}
 SWC Social Networking: Feasibility Study of Communication Patterns Among Vietnamese Shrimp Fishermen ^{CI}

Center Projects by Core

Core	Project Title	Center	Contact
Administrative and Planning	ACE Project	HIC	Vicky Buchan
	ACE Team Collaboration and Data Collection	GPC	Patricia Ramstad
	ACE Team Collaboration and Data Collection	SWC	Sara Shepherd
	Administration-Core	WC	Sandra Freeland
	Administrative and Planning Core	NEC	John May
	Administrative Core	SEC	Robert H. McKnight
	Administrative Core - SW Center for Agricultural Health, Injury Prevention, and Education	SWC	Jeffrey L. Levin
	Administrative Planning and Outreach Core	GPC	Fredric Gerr
	Administrative, Planning and Outreach Core	PNC	Marcy Harrington
	Agricultural Center Outreach and Education Projects	SWC	Amanda Wickman
	An analysis of timber harvesting injuries and prevention mechanisms in the southeastern US, 1996-2006	SEC	Chad Bolding (PI, 2009 Pilot Study)
	Animal Handling Safety for Dairy Workers	SWC	Molly Smith
	Assessment of Pesticide Exposure Prevention Programs in the Border Region of NM	SWC	Stephanie Moraga-McHaley
	Center Administration	HIC	Vicky Buchan
	Center Administration - General	HIC	Steve Reynolds
	Characteristics of All-Terrain Vehicles and Their Operators on Kentucky Farms (2007-2009 feasibility study)	SEC	Jessica Wilson, MSN, ARNP
	Characterizing the health risks associated with domestic well water use in rural Western Kentucky (2008-2009 feasibility study).	SEC	Karen Arrowood

Core	Project Title	Center	Contact
Administrative and Planning	Dairy Parlor Worker Exposure to Organic Dust, Endotoxin and Bacteria	SWC	Aika Hussain
	Developing and Testing Interactive Agricultural Health and Safety Curricula for 4-H Youth (sub award through CSU-HICAHS)	SEC	Teresa Donovan, MPH
	Development of a Task-Based Noise Exposure Database for Agricultural Grain Farming Operations	GPC	Michael Humann
	Development of a Task-based Noise Exposure Database for Agricultural Grain Farming Operations	GPC	Michael Humann
	Do Farm Crisis Services Affect Farmer Suicide: A Comprehensive Evaluation	GPC	Michael Rosmann
	Elucidate the cellular and molecular effects of ATRA on the HPG axis	HIC	Steve Reynolds
	Evaluating Noise Exposures of Rural Youth	GPC	Michael Humann
	Evaluating the Presence of CTX-M ESBLs in Colorado Dairy Workers	HIC	Larry Goodridge
	Evaluation of novel molecular DNA techniques for the characterization of bioaerosols.	SWC	Matthew Nonnenmann
	Expansion of the Rural Health Initiative: Incorporating Occupational Health Interventions in a Community Based Participatory Preventative Health Program for Farm Families	GPC	Lisa Schiller
	Feasibility of analyses of non-therapeutic agent fate within northern High Plains calcareous soil zones and implications for agricultural worker health	HIC	Steve Reynolds
	High Plains and Mountain Region Dairy Workshop	HIC	Vicky Buchan
	Individual Variation in Paraoxonase 1 Activity in Human Serum Over Time	GPC	Laura Badtke
	Inflammatory relationship of gram positive & gram negative bacteria in occupational & agricultural environments	HIC	Jill Poole

Core	Project Title	Center	Contact
Administrative and Planning	Injury Risk in Part Time Farming - Linkage of 2007 Ag Census and New Injury Survey Data in Iowa and Missouri	GPC	Risto Rautiainen
	Investigation of the effects of poultry dust extract on inflammatory responses in lung epithelial cells and monocytic cells	SWC	Vijay Boggaram
	Kentucky Migrant Farm workers Outreach: Kentucky Children's Health Insurance Program (KCHIP)	SEC	Victoria Davis, B.A.
	Linkage of Atrazine Exposure and Birth Data in Kentucky: Assessment of Data Sources and Needs (2008-2009 feasibility study)	SEC	Claudia Hopenhayn
	Neurobehavioral Effects of Organic Solvent Exposure among Farmers	GPC	Sarah Starks
	NIOSH Agricultural Disease and Injury Research, Education and Prevention Centers: Agricultural Centers Evaluators (ACE) Multi-Site Evaluation Project - sub award through CSU-HICAHS	SEC	Teresa Donovan, MPH
	Pesticide Biomonitoring in Florida Agricultural Workers	SEC	Giffe T. Johnson
	Pilot 6: Further Skills Retention in Commercial Fishing Safety Training.	PNC	Jerry Duzgan
	Pilot on Dairy Worker Stress	HIC	Steve Reynolds
	Prevalence of Methicillin-resistant Staphylococcus Aureus (MRSA) Colonization in Rural Iowa	GPC	Tara Smith
	Proyecto de Salud de los Trabajadores del Campo: Latino Farmworker Health Project	SEC	Jennifer E. Swanberg
	Publications from Previously Funded Projects	HIC	Steve Reynolds
	Rural Roadway Safety Optional Drivers Education Module	GPC	Dan Neenan
	Social Networking: Feasibility Study of Communication Patterns among Vietnamese Shrimp Fishermen	SWC	Ann K. Carruth
Education and Outreach	TSI - Ag Center Tractor Initiative	HIC	Steve Reynolds
	Use of Pesticides and Other Chemicals on Colorado Dairy Farms	HIC	Noa Roman-Muniz

Core	Project Title	Center	Contact
Education and Outreach	Work Safety & Health Exposures Among Agricultural Aviators	SWC	Tim Struttman
	A Bilingual Skid Steer Loader Safety Training Tool for Vermont Dairy Producers	NEC	Louise Waterman
	AgHealth Monthly Seminar Series	WC	Sandra Freeland
	Agricultural Safety & Health Training for Public Health Graduate Students (HAP-TPG)	SEC	Robert H. McKnight
	Assessing the Noise-Induce Hearing Loss of Maine Potato Farmers	NEC	Steven Johnson
	Building Capacity of Health and Safety Professionals	GPC	Kelley Donham
	Developing and testing interactive CD health and safety curricula for 4-H youth	SWC	Karen Gilmore
	Developing and Testing Interactive CD Health and Safety Curricula for 4-H Youth	HIC	Vicky Buchan
	Education 1: Introducing a Cholinesterase Test Kit into Clinical Practice	PNC	Matthew Keiffer
	Education 2: Reality Tales: Storytelling to Translate Agricultural Health and Safety Research	PNC	Helen Murphy-Robinson
	Education and Outreach	WC	Stephen McCurdy
	Engaging High School Students in Activities to Prevent Tractor-Related Injuries (Stakeholder's Project supplemental)	SEC	Henry Cole, EdD
	Fluorescent Tracer Component for Hands-on Pesticide Handler Training	PNC	Kit Galvin
	Health and Safety Awareness for Working Teens - Agricultural Curriculum Evaluation Project	PNC	Darren Linker
	Health of Agricultural Populations	SEC	Robert H. McKnight
	Increasing the Use of Personal Protective Equipment for Reducing Occupational Eye Injuries and Preventing Noise-Induced Hearing Loss among Workers in the U.S. Landscaping Services Sector (NAICS 561730)	NEC	Sam Steel
	Model Farmers Dissemination Project	SWC	Deborah Helitzer
	Nurse Agricultural Education Project	SEC	Deborah Reed, PhD, RN, C,MSPH

Core	Project Title	Center	Contact
Education and Outreach	Pesticide Record Keeping Education for Restricted-Use Pesticide Applicators	NEC	Kay Moyer
	Pilot 7: Responding to Uncertain Results in Research: A pilot study of pesticide handlers responses to PON1 status	PNC	Kelly Fryer-Edwards
	Preventing Logging Injuries among Upstate New York Agricultural Workers through the Dissemination of Educational Materials and Provision of Hands-On Safety Training	NEC	Julia Zhu
	Refinement and Enhancement of Agricultural Safety Curricula for Children (REACCH)	SEC	Deborah Reed, PhD, RN, C, MSPH
	Safety Training Tools for Vermont Dairy Producers	NEC	Louise Waterman
	Teaching Public Health Students about Agricultural Safety and Health	SEC	Robert H. McKnight
	Theses/Dissertations	HIC	Steve Reynolds
	Tractor Safety Initiative project- Designing Community Based Social Marketing Programs for Tractor Safety	WC	Stephen McCurdy
	Vermont Farm Safety Program	NEC	George Cook
	Visual Impairment and Eye Symptoms in Latino Farm workers	NEC	Tom Arcury
	Worker Occupational Safety & Health Training & Education Project	WC	Teresa Andrews
Multi-Disciplinary Research	Assessing Hearing Hazards in Farm Youth	NEC	Melissa Perry
	Assessing the Farm Safety Needs of Farmers and Farm Workers in Maine	NEC	Richard Brzozowski
	Assessment of Occupational Respiratory Exposure to Human Pathogens in Airborne Dust Among Workers of a Large Commercial Cattle Farm on the Eastern Shore of Maryland	NEC	Thaddeus Graczyk
	Characterizing WMSD's through Direct Postural Measurements in a Nursery Population	NEC	Donald Peterson
	Community Collaboration for Farm worker Health and Safety Project: Assessing the Capacity and Needs Within Maine's Broccoli Harvest	NEC	Mike Rowland
	Community Health Intervention with Yakima Agricultural Workers	PNC	Matthew Keifer

Core	Project Title	Center	Contact
Multi-Disciplinary Research	Developing a Smart ROPS Decision-Making Guide	SEC	Mark Purschwitz, PhD
	Enhancing Translation and Dissemination through Agricultural Partnerships	HIC	John Rosecrance
	Ergonomic Design of Pruners for Women in Agriculture	NEC	Andris Freivalds
	Estimating Commercial Fishing injury rates with an Emphasis on Musculoskeletal Disorders	NEC	Bryan Buchholz
	Farm Worker Health Research Program (MICASA)	WC	Marc Schenker
	Health Effects of Airborne Ag Particles from the Sacramento/San Joaquin Valley	WC	Kent E Pinkerton
	Horticulture Ergonomics and Safety Training Program	NEC	Andris Freivalds
	Keokuk County Rural Health Study: The Epidemiology of Agricultural Disease & Injury	GPC	James Merchant
	Migrant Adolescent Health Research Study	SWC	Sharon Cooper
	Migrant Farm worker Health Care Utilization Survey	NEC	Melissa Brower
	Occupational Risk of Infection among Poultry Workers	NEC	Peter Rabinowitz
	Pilot 2: Characterization of Bioaerosols in Washington Dairy Barns	PNC	John Scott Meschke
	Pilot 3: Inhibition of Cholinesterase by Pharmacological and Dietary Agents	PNC	Chris Simpson
	Pilot 5: Safety and Health of Immigrant Forest Workers on the Olympic Peninsula	PNC	Matthew Keifer
	Pilot 8: Investigation of the Apparent Discrepancy between Observed Cholinesterase Depression among Pesticide Handlers in Washington and Regulatory Estimates of Exposure.	PNC	John Kissel
	Pilot 9: FFA Community Mobilization for Safe Agricultural ATVs and Tractor ROPS Use	PNC	Helen Murphy-Robinson
	Pilot Testing Direct Postural Measurement Instrumentation in a Nursery Population	NEC	Nick Warren
	Poison Center Surveillance of Agricultural Poisonings	SEC	Robert H. McKnight

Core	Project Title	Center	Contact
Multi-Disciplinary Research	Prospective Study of Occupational Lung Disease and Endotoxin Exposure in Narve (New) Dairy Workers	HIC	Steve Reynolds
	Rapid Assays for Human and Environmental Exposure Assessment	WC	Bruce Hammock
	Reducing Occupational Injuries and Illnesses in migrant and seasonal tobacco farm workers through Coalition of a Community Health Program and a Research Team	NEC	Sherry Wyckoff
	Research 1: Risk Factors for Cholinesterase Depression among Pesticide Handlers	PNC	Matthew Keifer
	Research 2: Neurobehavioral Assessment of Pesticide Exposure in Children	PNC	Diane Rohlman
	Research 3: Enhancements to Cholinesterase Monitoring: Oxime Reactivation & OP-ChE Adducts	PNC	Chris Simpson
	Research to Practice for Safe Entry into Confined-Space Manure Storages	NEC	Harvey Manbeck
	Statewide Surveillance of New York State Farm Injuries	NEC	Erika Scott
	Sustained Work Indicators of Older Farmers	SEC	Deborah Reed, PhD, RN, C, MSPH
	Task Based Assessment of Occupation Noise Exposures in Migrant and Seasonal Agricultural Workers	NEC	Martin Cherniak
	TSI: National Agricultural Tractor Safety Initiative	SEC	Henry Cole, EdD
	Worker Health Protection Among Shrimp Fishermen of the Gulf Coast	SWC	Jeffrey L. Levin
Prevention-Intervention	Aquaculture Safety and Health	SEC	Mel Myers, MPA
	Community Collaboration for Farm worker Health	NEC	Lynae Hawkes
	Determinants of Gas and Dust Exposures Among Swine Workers	GPC	Patrick O'Shaughnessy
	Economics of Preventing Agricultural Injuries to Adolescent and Adult Farmers	SEC	Joan Mazur, PhD
	Evaluation of an Ergonomically Improved Apple Bag	NEC	Suzanne Stack

Core	Project Title	Center	Contact
Prevention-Intervention	Injury Risk Analysis in Large-Herd Dairy Parlors	HIC	John Rosecrance
	Partnering with Stakeholders for Prevention	SEC	Henry Cole, EdD
	Partnerships for Preventing Farm Injuries to Rural Youth (PFIRY)	SEC	Henry Cole, EdD
	Pilot 1: Skills Retention in Fishing Safety Training	PNC	Jerry Duzgan
	Pilot 10: Reducing Workloads for Older Loggers in Physically Demanding Logging Rasks with Synthetic Rope	PNC	John Garland
	Pilot 4: Point-of-view Video Analysis of the Impact of a Faller Safety Training Program	PNC	Gary Rischitelli
	Prevention 1: Interventions to Minimize Worker and Family Pesticide Exposures	PNC	Richard Fenske
	Promoviendo Farm worker Safety	SWC	Sylvia Partida
	Research 5: Assessment of Job-related Exposures for Diarrheal Illness in Farm worker Families	PNC	John Scott Meschke
	Respiratory Health and Exposures on Large Californian Dairies	WC	Frank Mitloehner
	Strategies for Safety of Older Adult Farmers	SEC	Deborah Reed, PhD, RN, C, MSPH
	The 2010 Winch Survey	NEC	Ann Backus
	The Social Marketing of ROPS: A Multistate Expansion	NEC	Julie Sorensen
	The Social Marketing of Tractor Rollover Protective Structures in New York	NEC	Julie Sorensen
	TSI: Tractor Safety Initiative: Costs of Tractor Operator Injuries from Overturns and Highway Collisions	SEC	Henry Cole, EdD
	TSI: Tractor Safety Initiative: Designing Community-based Social Marketing Programs for Tractor Safety (1 R25-04-008542-01)	SEC	Chike Anyaegbunam

2010 Product List

Product Type	Product Title	Center
Abstract	Acute change in FEV1 and FVC associated with work in large-scale dairies	WC
	An ATV injury simulation exercise based on principles of narrative psychology and the Haddon injury phase by factors matrix [poster and abstract]	SEC
	Bryden PA, McKnight RH, Spiller H, Westneat SC. Poison center surveillance of agricultural poisonings.	SEC
	Case-control study of risk factors for all-terrain vehicle injuries on Kentucky Farms	SEC
	Case-control study of risk factors for all-terrain vehicle injuries on Kentucky farms [Poster and abstract]	SEC
	Cost analysis of ATV-related head injuries [poster and abstract]	SEC
	Economics of preventing injuries to adolescent and adult farm workers: Surveillance, exposure, and intervention effectiveness data that supports an intervention model for teachers as safety advocates in rural schools.	SEC
	Farm work-related injuries in a cohort of older farmers in Kentucky and South Carolina	SEC
	Innovative Partnership Approaches to Reach Vulnerable Agricultural Workers	SWC
	Learn podcasting! Skills and products for instruction and assessment	SEC
	Lessons learned in conducting rigorous evaluation research on agricultural health and safety CD curricula for youth: practical challenges faced, met, and remaining [CSU-HICAHS product]	SEC
	Modification of poison control center software to identify agricultural pesticide exposures	SEC
	Modification of poison control center software to identify agricultural pesticide exposures.	SEC
	Obstructive sleep apnea indicators and injury in older farmers [poster and abstract]	SEC
	Organization of crop and horse breeding work in Central Kentucky and its impact on occupational health outcomes for Latino farm workers.	SEC
	Pedro's Problems: A bilingual interactive story that teaches injury risk and hazard reduction to Hispanic tobacco workers [poster and abstract]	SEC
	Preparing rural high school teachers and extension agents to become advocates for preventing injuries to adolescent and adult farm community members: analysis of intervention effectiveness	SEC
	Promoviendo Farm worker Safety; An Intervention Designed to Increase Farm Safety Practices among Migrant and Seasonal Farm workers	SWC
	Public health and safety in public schools: Training pre-service teachers in the economics of injury prevention in rural areas	SEC

Product Type	Product Title	Center
Abstract	Safeguarding older farmers [abstract]	SEC
	Safeguarding Older Farmers [poster and abstract]	SEC
	Signaling and Mayday Simulation in Vietnamese Shrimp Fishermen on the Gulf Coast	SWC
Annual Report	r2p Success: Navigation Simulation for Vietnamese Commercial Shrimp Fishermen	SWC
Article published, feature (trade publication)	Amanda's Story Revisited	GPC
	Celebrating the 20th year of Iowa's Center for Agricultural Safety and Health	GPC
	Engaging stakeholders to improve commercial fishing safety	SWC
	Fostering strategic partnerships to reach Latino shrimp fishermen on the Gulf Coast.	SWC
	Healthcare providers' role in strengthening regulations and preventing pesticide-related illness in farm workers	PNC
	Healthcare providers' role in preventing pesticide related illness	PNC
	Inter-Agency Collaboration in WA State to prevent pesticide exposures	PNC
	Makeup of External Advisory Board Expands Opportunities	SWC
	Methicillin Resistant Staphylococcus Aureus (MRSA): A bacterium common to animals and humans	GPC
	Migrant Adolescent Health Research in South Texas	SWC
	Neurobehavioral effects of pesticide exposure in children	PNC
	New Yarders... Old Yarders	PNC
	Novel H1N1 influenza virus: Over-hype or appropriate protection?	GPC
	Novel Training Program Introduces Doctors to Community/Migrant Health Center Practice	SWC
	Project FRESCO: A Fresh Approach to Farmworker Heat and Sun Safety Education	SWC
	Safe Winch Operation: Where's Your Shutoff?	NEC
	Surveillance study findings to date	NEC
	Survey of residents of a northwest orchard community shows high levels of perceived pesticide risk and lack of pesticide training	PNC
	Survey of residents of northwest orchard community shows high levels of perceived pesticide risk and lack of training	PNC
	SW Center for Agricultural Health, Injury Prevention and Education: National Initiative - Regional Focus	SWC
	The Cost of an Overturn	NEC
	The Kentucky ROPS guide retrofit ROPS for agriculture tractors	SEC
	Tractor Safety Certification	SWC
	Training the Trainers	SWC
	Work-related safety and health hazards on trout farms	SEC

Product Type	Product Title	Center
Article published, professional (juried publication)	A clomazone immunoassay to study the environmental fate of the herbicide in rice (Oryza sativa) agriculture.	WC
	A global perspective of migration and occupational health	WC
	A pilot binational study of health behaviors and immigration	WC
	A Pilot Study of Symptoms of Neurotoxicity and Injury among Adolescent Farmworkers in Starr County, Texas	SWC
	A Spanish language narrative simulation to prevent horseback riding head injury among rural youth.	SEC
	A task-based assessment of swine worker exposure to airborne dust	GPC
	Aerosols in the Agricultural Setting	WC
	Aerosols in the Agricultural Setting	HIC
	Alveolar macrophage from cigarette smoke-exposed mice inhibits B lymphocyte stimulated with LPS	WC
	An interview with Vietnamese fishermen of Louisiana in the wake of the oil spill	SWC
	An overview of livestock-associated MRSA in agriculture. J Agromedicine	GPC
	Analysis of learning in children participating in community safety sessions	SEC
	Analysis of learning in children participating in community safety sessions.	SEC
	Biomarkers of sensitivity and exposure in Washington state pesticide handlers	PNC
	California wildfires of 2008: coarse and fine particulate matter toxicity	WC
	Central neuroplasticity and decreased heart rate variability following particulate matter exposure in mice	WC
	Certified Safe Farm: Identifying and removing hazards on the farm	GPC
	Chronic back pain and associated work and non-work variables among farmworkers from Starr County, Texas	SWC
	Comparison of Noise Exposure among farm and Non-Farm Youth	NEC
	Cost-effectiveness of a ROPS Social Marketing Campaign	NEC
	Cost-effectiveness of wearing head protection on ATVs	SEC
	Cultural effectiveness in research: a summary report of a panel session entitled "Engaging Populations at Risk"	SWC
	Cultural influences on safety and health education among Vietnamese fishermen	SWC
	Culture-Independent Characterization of Bacteria and Fungi in a Poultry Bioaerosol Using Pyrosequencing	SWC
	Dairy Farm Worker Exposure to Awkward Knee Posture during Milking and Feeding Tasks	SWC
	Dealing with Pre-ROPS tractors: Is a Trade-in Program the Solution	NEC

Product Type	Product Title	Center
Article published, professional (juried publication)	Development of a computer-based survey instrument for Organophosphosphate and N-methyl-carbamate exposure assessment among agricultural pesticide handlers	PNC
	Development of a noncompetitive phage anti-immunocomplex assay for brominated diphenyl ether 47.	WC
	Endotoxin Exposure and Inflammation Markers among Agricultural Workers in Colorado and Nebraska	HIC
	Engaging a Hard-to-Reach Population in Research: Sampling and Recruitment of Hired Farm Workers in the MICASA Study	WC
	Environmental tobacco smoke effects on lung surfactant film organization.	WC
	Epidemiology, surveillance, and prevention of farm tractor overturn fatalities	SEC
	Ergonomics in industrialized dairy operations.	SWC
	Evaluation of a school-based train-the-trainer intervention program to teach first aid and risk reduction among high school students.	SWC
	Evaluation of the Limulus Amebocyte Lysate and Recombinant Factor C Assays for Assessment of Airborne Endotoxin	HIC
	Evaluation of the Limulus Amebocyte Lysate and recombinant factor C assays for assessment of airborne endotoxin	GPC
	Exposure of mice to concentrated ambient particulate matter results in platelet and systemic cytokine activation	WC
	Exposure risks and tetanus immunization status in farmers ages 50 and over	SEC
	Exposure to environmental tobacco smoke during pregnancy in rats yields less effect on indices of brain cell number and size than does postnatal exposure	WC
	Eye health and safety among Latino farmworkers (under review)	NEC
	Factors influencing safety among a group of commercial fishermen along the Texas Gulf Coast	SWC
	Farm Youth Exposure to Noise	NEC
	Health effects of inhaled engineered and incidental nanoparticles	WC
	Health, medication use, and agricultural injury: a review.	SEC
	Immigrant workers deserve equal workplace health and safety*	WC
	Inorganic agricultural dust exposure causes pneumoconiosis among farmworkers	WC
	Intervening to improve health indicators among Australian farm families.	SEC
	Is there an agrarian imperative?	SEC
	Jungle honey enhances immune function and antitumor activity	WC
	Magnetic bead-based phage anti-immunocomplex assay (PHAIA) for the detection of the urinary biomarker 3-phenoxybenzoic acid to assess human exposure to pyrethroid insecticides.	WC
	Mechanisms of particulate matter toxicity in neonatal and young adult rat lungs	WC
	Migration and occupational health: shining a light on the problem	WC

Product Type	Product Title	Center
Article published, professional (juried publication)	Muramic Acid, Endotoxin/3-OHFA, and Ergosterol Explain Monocyte and Epithelial Cell Inflammatory Responses to Agricultural Dusts.	HIC
	Neurobehavioral testing in human risk assessment	PNC
	Noise exposures of rural adolescents	GPC
	Noise exposures of rural adolescents	SEC
	Obstructive sleep apnea indicators and injury in older farmers	SEC
	Occupational determinants of serum cholinesterase inhibition among organophosphate-exposed agricultural pesticide handlers in Washington State.	PNC
	Oxidative injury in the lungs of neonatal rats following short-term exposure to unltrafine iron and soot particles	WC
	Pesticides and other chemicals: minimizing worker exposures	PNC
	Pneumoconiosis from agricultural dust exposure among young California farmworkers	WC
	Recombinant Factor C (rFC) assay and gas chromatography/mass spectrometry (GC/MS) analysis of endotoxins in four agricultural dusts.	HIC
	Respiratory Symptoms of California's Dairy Workers	WC
	Respiratory symptoms of California's dairy workers	WC
	Results from Inspections of Farmer-installed Rollover Protective Structures	NEC
	Retrofitting tractors with rollover protective structures: perspective of equipment dealers [Great Plains Center product]	SEC
	Retrofitting tractors with rollover protective structures: perspective of equipment dealers.	SEC
	Risk Factors for Musculoskeletal Symptoms among Crawfish Farmers in Louisiana	SWC
	Study finds self-report valid for assessing hearing loss incidence in farm population	NEC
	Symptoms of heat illness among Latino farmworkers(in press)	NEC
	The agricultural safety and health challenge. Resource: Engineering and Technology for a Sustainable World	SEC
	The Social Marketing of Safety Behaviors: A Quasi-randomized Controlled Trial of Tractor Retrofitting•	NEC
	Tractors and Rollover Protection in the United States	NEC
	Unintentional Needlestick Injuries in Livestock Production: A Case Series and Review	GPC
	Urinary Biomarker, Dermal, and Air Measurement Results for 2,4-D and Chlorpyrifos Farm Applicators in the Agricultural Health Study	HIC
	Vision examinations and self-reported vision among migrant farmworkers (under review)	NEC
	Vulnerabilidad y salud deficiente cobertura para migrantes mexicanos en Estados Unidos*	WC
	Work of "retired" farmers over age 50.	SEC

Product Type	Product Title	Center
Book	Chapter 10: Airborne particles and structural remodeling of the lung	WC
	Effects of nanoparticles on the pulmonary vasculature	WC
	Particle Toxicities	WC
	Toxicity of Anticholinesterase Pesticides in Neonates and Children.	PNC
Booklet	How to Build a Pesticide/Chemical Look a Like Display	SWC
Brochure	Brochure-FRESCO: an Occupational Heat and Sun Safety Education Program for Farmworkers	SWC
	KCHIP Back to School enrollment flyer*	SEC
	NY ROPS Update	NEC
Cartoon	ROPS Assessment Cartoon	NEC
CD-ROM	20th Anniversary Video 1990-2010	WC
	Ag injury stories told by survivors or relatives - Three minute segments	PNC
	Agricultural Engineering Developments	WC
	California Dept of Pesticide Regulation's Air Monitoring Network	WC
	Community Exposure to Agricultural Fumigants	WC
	Considering Human and Animal Safety - Dairy Safety Training*	SWC
	Farmworker Exposure to Zoonotic Cryptosporidium Parvum	WC
	Four "radionovelas" on pesticide exposure, air pollution/asthma, water pollution, and workplace abuse*	PNC
	Four radio novelas on heat related illness*	PNC
	Harvesting Aids for Reducing Ergonomic Risk Factors in Fruit Orchards	WC
	Napa Valley Vineyard Safety Training and the Agricultural Safety Research Alliance	WC
	New Media and Agricultural Health & Safety: Is my space really our space?	WC
	Occupational Health & Safety in California Agriculture: A Regulatory Perspective	WC
	Una visita a la clinica. Que son cholinesterasa y pon1? (A visit to the clinic. What is cholinesterase and pon1?)*	PNC
	WCAHS Graduate Student Presentation	WC
Checklist	On-Site farm observation checklist*	NEC
Conference presentation	Narrative psychology and the Haddon injury phase by factors matrix.	SEC
Conference technical paper	Chores at time of fatal and non-fatal injuries from overturns of non-ROPS and ROPS equipped tractors	SEC
Course manual	Agriculture Safety Management Using Lean Six Sigma	HIC
	Promotoras Component development*	WC
	What You Need to Know About OSHA Before OSHA Needs to Know About You	HIC
Curriculum (short course)	Combining Qualitative with Quantitative Research for Public Health	NEC

Product Type	Product Title	Center
Curriculum (short course)	Making Behavior Change Possible: Social Marketing and Injury Prevention	NEC
	Pasos Saludables Materials & Sessions Development	WC
	Safe lifting practices*	NEC
Curriculum (training)	FarmInsure Worker's Comp Safety Group Safety Information Packet - Safety Behavior checklist*	HIC
	FarmInsure Worker's Comp Safety Groups Safety Information Packet - Emergency information card*	HIC
	Making Behavior Change Possible: Social Marketing and Injury Prevention	NEC
	Past and Current Research for the Migrant Farmworkers*	NEC
	Presentation scripts and instruction manuals for the mobile demonstration unit	NEC
	see above	NEC
	Simulations, Podcasts and Digital Documentaries-New Tools for New Approaches and Collaboration in Standards Based Agricultural Education	SEC
	WOSHTEP Safety Specialist Certificate Training	WC
Database	2010 ACE Database Template	SWC
	Farm and Agricultural Injury Monitoring Systems (FAIMS) press clippings	GPC
	Online Data Collection Tool www.otisonline.org > Rural Safety. Web-based online data collection system for pre- and posttest measures: relational database constructed in MySQL and PHP hosted on a secure server at UK	SEC
Directory listing	The Kentucky ROPS Guide	SEC
Evaluation instrument / tool	NIOSH Agricultural Center Initiative Evaluation Project	WC
	Safe Workplace, Safe Home/Sitio de Trabajo Seguro, Hogar Seguro: Computer-based training on pesticide safety at work and home	PNC
	SOP: ChE Test Kit Protocol	PNC
	SOP: Incorporating Oxime-mediated reactivation of Butyrylcholinesterase into the TestMate Cholinesterase activity kit.	PNC
	Web-based program that enables the quick calculation of blood pressure percentiles for adolescents.	SWC
	Exhibit material	Aquaculture Safety and Health. [Exhibit].
	Chemical and Pesticide Look A Like Display	SWC
	Mobile unit for demonstrating how proper ventilation reduces entry risks into manure storage units	NEC
	PNASH Center Health Fair	PNC
	Promotional messages for marketing to farmers	NEC
	Simple solutions for safety [exhibit]	SEC
Fact Sheet	VT Stakeholder Fact Sheet	NEC

Product Type	Product Title	Center
Fact Sheet	PA Stakeholder Fact Sheet	NEC
	30 Two-page practical solution summary/instruction sheets	PNC
	Occupational Health and Safety	SWC
	r2p Success Story: Navigation Simulation for Vietnamese Commercial Shrimp Fishermen	SWC
	Respiratory Symptoms of California's Dairy Workers	WC
	Summary of Noise Exposures on the Farm	NEC
Listserv	NEC listserv	NEC
Manuscript	An Educational Program to Reduce Risk When Entering Confined-Space Manure Storages	NEC
	An Educational Program to Reduce Risk When Entering Confined-Space Manure Storages	NEC
	Aquacultural hazards identified by governmental reports in the United States. Paper 10-02, Annual Meeting of the National Institute for Farm Safety; Wilmington, NC; 2010	SEC
	Determinants of work hours among a cohort of male and female farmers 50 years and older in Kentucky and South Carolina (2002-2005).	SEC
	Exposure assessment of tractor-related tasks on catfish farms in Mississippi [in review]	SEC
	Farmwork-related injury among older farmers in Kentucky and South Carolina: A Cohort Study, 2002-2005.	SEC
	La Flora Caliente*	WC
	Review of occupational hazards associated with aquaculture.	SEC
	Risk analysis of tractor overturns on catfish farms	SEC
	Rollover protection past and present	SEC
	Rollover protection past and present. Resource [ASABE magazine]. 2010 Jul: submitted.	SEC
	Safety on North Carolina and Kentucky trout farms: Avoiding safety hazards	SEC
	Systematic review of occupational hazards associated with aquaculture	SEC
	Utilizing United States Coast Guard (USCG) data to calculate incident rates and identify risk-factors for occupational fishing injuries in New Jersey	SEC
	Work organization, occupational health and injury among crop and horse production workers.	SEC
News report	Guide helps farmers locate rollover structures for tractors	SEC
	Online guide simplifies retrofitting	SEC
	Online guide simplifies retrofitting tractors for rollover protection	SEC
	Online guide simplifies retrofitting tractors for ROPS	SEC
	Online guide simplifies ROPS retrofitting	SEC
	Online Guide Simplifies Tractor Safety	SEC
	The Kentucky ROPS Guide	SEC
Newsletter	AgHealth News Fall 2009	WC

Product Type	Product Title	Center
Newsletter	Cultivation	SWC
	Dairy Farms Benefit from Ergonomic Analysis of Milking Processes	HIC
	El Melon Rondero*	WC
	Heat Illness	SWC
	Injury Prevention and Education	SWC
	Inter-Agency Collaboration in WA State to prevent pesticide exposures	PNC
	Monthly Blast: Agritourism	SWC
	Monthly Blast: ATV Safety	SWC
	Monthly Blast: ATVs-Work Smart- Ride Smart	SWC
	Monthly Blast: Cold Weather for Pets and Livestock	SWC
	Monthly Blast: Ergonomics in Ag	SWC
	Monthly Blast: Farm Equipment Road Safety	SWC
	Monthly Blast: Farm Pond Safety	SWC
	Monthly Blast: Hearing Safety in Ag	SWC
	Monthly Blast: Heat Related Illness	SWC
	Monthly Blast: Pediatric Pesticide Exposure	SWC
	Monthly Blast: Safe Play Areas	SWC
	Monthly Blast: ROPS Retrofit Guide	SWC
	New Yarders... Old Yarders	PNC
	NIOSH Ag Centers : AgConnections [volume 5, issues 1, 2, and 3]	SEC
	Northwest Forest Worker Safety Review - Issue 9	PNC
	SMART strategy: Partnering with the Colorado Corn Growers Association	HIC
	Spring 2010 AgHealth News	WC
	Stakeholder collaboration as a prerequisite to effective education	HIC
	Study update for community surveillance contacts	NEC
	Summer 2010 AgHealth News	WC
	Surveillance Study Update	NEC
	Winter 2010 AgHealth News	WC
Newsletter article	Online guide simplifies retrofitting tractors for rollover protection	SEC
	Online guide simplifies retrofitting tractors for ROPS	SEC
	Online guide simplifies ROPS retrofit	SEC
Paper	Agricultural Traumatic Amputations in Children: Epidemiology and Current Prevention Strategies	SEC
	Exposures Causing Chronic Bronchitis among Farm Populations	SEC
	Traumatic Injuries as a Result of Livestock	SEC
Paper and Powerpoint	Chores at time of fatal and non-fatal injuries from overturns of non-ROPS and ROPS equipped tractors	SEC
Poster	A Case of Brucellosis: An Opportunity to Train Family Medicine Residents	SWC

Product Type	Product Title	Center
Poster	Adherence to pesticide safety and wage regulations for farmworkers in eastern N.C.	NEC
	Aquaculture safety and health. [poster]	SEC
	Aquaculture safety in Kentucky. [Poster]	SEC
	Atrazine exposure and rates of preterm births in Kentucky. [Poster]	SEC
	Atrazine exposure and rates of preterm births in Kentucky. [poster]	SEC
	Back Pain among Adolescents: Examining Farm Work Exposures	SWC
	Bilingual narrative simulation exercises for risk/hazard reduction and surveillance*	SEC
	Characteristics of US farms at high risk for tractor overturn deaths. [poster].	SEC
	Chronic Low Back Pain among Adolescents: Examining Farm Work Exposures	SWC
	Dealing with Pre-ROPS Tractors: Exploring the Viability of a Tractor Trade-in Program	NEC
	Dealing with Pre-ROPS Tractors: Exploring the Viability of a Tractor Trade-in Proposal	NEC
	Fresh from the Orchard: Practical Solutions for Preventing Pesticide Exposure	PNC
	Lifetime eye injuries and current eye symptoms among North Carolina migrant Latino Farmworkers	NEC
	Migrant Adolescent WorkLife Study	SWC
	NYS Surveillance Project	NEC
	Observations from forestry and logging stakeholder meeting in the southwest region	SWC
	Obstructive sleep apnea indicators and injury in older farmers. Poster won 1st place in clinical and translational research category [\$250 prize]. Work funded through NAEP Fellowship: Karen Heaton, PhD, CEN, FNP-BC.	SEC
	Occupational heat illness among Latino farmworkers in North Carolina	NEC
	Organization of crop and horse breeding work in Central Kentucky and its impact on occupational health outcomes for Latino farmworkers	SEC
	Over age 50 and still in the field. [poster]	SEC
	Pedro's Problems: A bilingual interactive story that teaches risk and hazard reduction to Hispanic tobacco workers*	SEC
	Pesticide Exposure Estimates Based on Carpet Dust Samples From the Homes of Agricultural and Non-Agricultural Workers	PNC
	PNASH Center Display Poster*	PNC
	Poison center surveillance of agricultural poisonings [poster].	SEC
	Practical Solutions for Minimizing Agricultural Worker and Family Exposure to Pesticides	PNC

Product Type	Product Title	Center
Poster	Preparing rural high school teachers and extension agents to become advocates for preventing injuries to adolescent and adult farm community members.	SEC
	Prevalence, exposure, and perceived risk of all-terrain vehicles on Kentucky farms [poster]	SEC
	Promoviendo Farmworker Safety: An Intervention Designed to Increase Farm Safety Practices Among Migrant and Seasonal Farmworkers	SWC
	Rapid immunoassays for the pentabrominated diphenyl ether BDE-47 banned in polyurethane foam	WC
	Signaling and Mayday Simulation in Vietnamese Shrimp Fishermen on the Gulf Coast	SWC
	Simple solutions for safety. [Exhibit]	SEC
	The high plains and mountain region dairy health and safety workshop: A participatory approach to identify research and outreach needs in the dairy industry	HIC
	The Kentucky ROPS Guide	SEC
	The Kentucky ROPS Guide [poster]	SEC
	Update on the Nurse Agriculture Education Project (NAEP).	SEC
	Using data to identify and address causes of pesticide over-exposure in WA state agricultural employees	PNC
PowerPoint Presentation (for distribution)	ACE workshop 2010 power point & handouts	HIC
	Adolescent Work Life Study - Year 3 Preliminary Findings	SWC
	Data Summarizing Synthesis of COPER and Risk Factors data	PNC
	Health and Safety in Industrialized Dairy Parlors	HIC
	Migrant Adolescent Health Research Study	SWC
	Model Farmers Dissemination Project	SWC
	Multi-State ROPS Project	NEC
	Multi-State ROPS Project	NEC
	Preventing Heat Stress	SWC
	Project FRESCO: An Occupational Heat and Sun Safety Education Program for Farmworkers	SWC
	Project goals and interventions	NEC
	Put a ROPS on every Tractor: Yes You Can!	NEC
	Put a ROPS on Every Tractor: Yes You Can!	NEC
	Reducing the Individual Cost of Behavior Change: The Evaluation of a Tractor Safety Social Marketing Intervention	NEC
	Social Marketing in Public Health: An Ethical Approach	NEC
	Social Marketing in Public Health: An Ethical Approach	NEC
	Soluciones y Practicas Creativas para el Uso Sefuo de Pesticidas*	PNC
	SW Ag Center Overview	SWC
	The Adolescent WorkLife Study	SWC

Product Type	Product Title	Center
PowerPoint Presentation (for distribution)	Traumatic injuries from farm machines and storage structures, with commentary on rescue procedures.	SEC
	Worker Health Protection Among Shrimp Fishermen of the Gulf Coast	SWC
	Worklife Assessment of Agricultural Aviators	SWC
Questionnaire or survey instrument	Motivators/Barriers Survey	NEC
	Intervention target Survey	NEC
	Data collection instruments Year 4	SWC
	Farm Safety Needs	NEC
	Farm Safety Needs	NEC
	Hearing Assessment of Farm Noise Exposure to Youth	NEC
	Leader Survey Instrument 4H CDII	HIC
	Pesticide Use Survey	SWC
Report (unpublished)	ACE report 2009	NEC
	Adolescent WorkLife Study MOP	SWC
	CO OHS Surveillance Program Strategic Planning Document	HIC
	Commonsense reasons for maintaining the National Agricultural Safety Database (NASD). 2010 Feb 19	SEC
	Community Collaborations Project Update*	NEC
	Diary Workshop minutes and discussion group results	HIC
	Mission and Objectives for HICAHS	HIC
	NIOSH Agricultural Center Initiative Evaluation Project FY 2009	HIC
	NIOSH Agricultural Center Initiative Evaluation Project, January 2010 (FY 2009 report)	SEC
	Pesticide Exposure Prevention Training Inventory-New Mexico/Mexico Border Region - Final Report	SWC
	Supporting a distributed research infrastructure: A Web-based online data collection system that supports R2P for researchers and instructors in a multi-state NIOSH grant.	SEC
Report to NIOSH (year end or continuation)	Continuation report (midyear) to NIOSH	GPC
	Migrant Adolescent Health Research Study 2590 Report	SWC
	Migrant Adolescent Health Research Study annual Report	SWC
	Model Farmers Dissemination Project 2590 Report	SWC
	Model Farmers Dissemination Project Annual Report	SWC
	NIOSH Ag Center Grant 2006-2010	WC
	Promoviendo Farmworker Safety 2590 Report	SWC
	Promoviendo Farmworker Safety Annual Report	SWC
	Southwest Center for Agricultural Health, Injury Prevention and Education 2590 Report	SWC

Product Type	Product Title	Center
Report to NIOSH (year end or continuation)	Southwest Center for Agricultural Health, Injury Prevention and Education Annual Report	SWC
	Worker Health Protection Among Shrimp Fishermen of the Gulf Coast 2590 Report	SWC
	Worker Health Protection Among Shrimp Fishermen of the Gulf Coast Annual Report	SWC
Standard	ASABE/ANSI X607 Revised Draft Standard	NEC
Thesis or dissertation	A longitudinal investigation of farm work practice and work-related injury predictors among male and female farmers age 50 years and older in Kentucky and South Carolina from 2002 to 2005	SEC
	A longitudinal investigation of farm work practice and work-related injury predictors among male and female farmers age 50 years and older in Kentucky and South Carolina from 2002 to 2005 [Capstone/DrPH]	SEC
Thesis or dissertation	Comparison of ammonia and particulate matter air sample concentrations at task-locations within swine confinement buildings	SEC
	Contribution of exposure and genetics to the development of beryllium sensitization and chronic beryllium disease	HIC
	Dairy parlor worker exposure to organic dust, endotoxin and bacteria	SWC
	Improving access to health care: Using a promotora model in rural Eastern Kentucky	SEC
	Influences of family structure on violence and substance abuse among Kentucky adolescents using the 2007 Kentucky Youth Risk Behavior Surveillance System	SEC
	Minimizing Pesticide Handler Pesticide Exposure: Practical Solutions Fresh from the Orchard	PNC
	Moving from evidence to collaboration and action: Identifying and addressing causes of pesticide exposure among WA state agricultural workers	PNC
Tool	Prototype pruner	NEC
Video / DVD	A Farm Accident can happen to anyone of us*	NEC
	Animal Handling Safety	SWC
	Bilingual Skid Steer Safety*	NEC
	FarmInsure Worker's Comp safety Group Safety Information packet - Safety video	HIC
	Power Takeoff Safety: A way of life*	NEC
	Tractor Accidents Can happen to anyone*	NEC
	We're going to hound you about winter safety*	NEC
Website or webpage established	Fluorescent tracer: An educational tool for pesticide safety educators	PNC
	http://EOPonline.org	SEC
	http://itssharepoint.uhc.edu *	NEC

Product Type	Product Title	Center
Website or webpage established	Kentucky ROPS Guide: http://www.ca.uky.edu/rops	SEC
	Multi-State ROPS Program Website	NEC
	Nurse Agricultural Education Project (NAEP)	SEC
	NYCAMH/NEC website	NEC
	PNASH Center Website - Updated with featured resources	PNC
	Project website presenting results of home dust samples to study participants and to provide information on reducing potential pesticide exposure in the home.	PNC
	www.ropsr4u.com	NEC
Year-End Report to NIOSH	2008-2009 PNASH Center Annual Report	PNC
	NEC Annual Report	NEC

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