

Title:	Safety and Health Best Practices Resource Manual and Instructors Guide for New and Beginning Farmers and Ranchers		
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Non-Technical Summary

Many of the individuals who are classified as new and beginning farmers may not possess the safety and health work and management skills that are needed as they enter into full or part-time farming and/or ranching. They often have minimal experience with powered machinery and equipment used in production agriculture; unpredictable behavior of agricultural livestock; chemicals and fertilizers that are used to improve yields and control pests; environmental hazards such as toxic dust, noise, and slips/trips and falls; and the fickle nature of the farming environment including the weather. A review of abstracts from currently funded new and beginning farmer projects indicate an emphasis on financial planning, marketing strategies and production diversification and sustainability. There is no mention of farm safety and health in most of these funded projects. The adoption of a training component on safety and health management would be justifiable for new and beginning farmers and ranchers since the viability of many new farm business ventures is dependent upon the experience and expertise of the principal farmer/operator. Research conducted among New York state farm families between 1985-1987 found that 67% of farm families were no longer operating the farm within 5 years of the death of a farm family member who contributed significantly to their farm's labor and management. The long-term goals for this proposed project are to provide an effective safety and health best practices resource manual for new and beginning farmers and ranchers; and develop and model hands-on, train-the-trainer workshops for teaching safety and health best practices to new and beginning farmers and ranchers. Project objectives were developed to ensure adoption, utilization, and sustainability of safety and health best practices. Final products will include a Safety and Health Best Practices Resource Manual for New and Beginning Farmers and Ranchers and a separate Instructors Guide. Materials will be placed on a website and widely promoted.

Accomplishments

Major goals of the project

The long-term goals for this proposed project are to: a) provide an effective safety and health best practices resource manual for new and beginning farmers and ranchers; and b) develop and model hands-on, train-the-trainer workshops for teaching safety and health best practices to new and beginning farmers and ranchers. Project objectives to ensure adoption, utilization, and sustainability of the proposed resources for this 3-year safety and health best practices program are: 1. Establish collaborations and conduct a safety and health training needs assessments with new and beginning farmers and ranchers. 2. Develop a Safety and Health Best Practices Manual for New and Beginning Farmers and Ranchers. 3. Develop an Instructor's Guide: Safety and Health Best Practices Manual for New and Beginning Farmers and Ranchers for teaching

workshops on safety & health best practices principles, strategies and techniques to new and beginning farmers and ranchers. 4. Develop, conduct and evaluate statewide train-the-trainer workshops for teaching instructors, the safety & health best practice principles, strategies and techniques for new and beginning farmers and ranchers. 5. Promote use of the Instructor's Guide and the best practices resource manual as an integral part of other new and beginning farmer and safety and health educational programs across the U.S. Outputs will include a Safety and Health Best Practices Resource Manual for New and Beginning Farmers and Ranchers will have been produced and a separate Instructors Guide. Materials will be placed on a website and widely promoted.

What was accomplished under these goals?

The project staff conducted a successful on-line Needs Assessment (NA) assisted by 3 organizations with known populations of new and beginning farmer and rancher members (PASA – Pennsylvania Association of Sustainable Agriculture, PA-WaGN – Pennsylvania Women's Agriculture Network, and Start Farming Pennsylvania). The NA resulted in 93 useable evaluations. A 65-page Safety and Health Management Planning: Beginning Farmers and Ranchers manual was developed, pilot tested, and used in train-the-trainer workshops. The need for instructional guidelines to help farmers and ranchers teach employees and interns about safe tractor operation was also identified, with individual copies developed.

Obj. 1: Establish collaborations and conduct comprehensive safety and health training needs assessments with new and beginning farmers and ranchers.

Activities and Accomplishments:

Three organizations with known populations of new and beginning farmer and rancher members (PASA – Pennsylvania Association of Sustainable Agriculture, PA-WaGN – Pennsylvania Women's Agriculture Network, and Start Farming Pennsylvania). The NA resulted in 93 useable evaluations.

Respondents were skewed toward women (majority of the useable responses), small scale/low gross sale operations, organic producers, and farmers/ranchers between 30-59 years of age (78% of respondents). Almost three-fourths of respondents had been farming less than 5 years. Women (42.5%) verses men (24.0%) were more likely to identify children as a considerably dangerous factor on farms. Women were more likely than men to indicate minimal skill levels on routine tractor maintenance, identifying machinery hazards, selecting PPE, connecting hydraulic hoses, and using hand-held and walk-behind power equipment. Men were more likely than women to indicate a greater need for training on how to teach others about safety and health. Most respondents did not prioritize first aid and CPR certification training.

A need to develop a guideline for organizing and conducting safe tractor operations workshops was also identified.

Obj. 2: Develop a Safety and Health Best Practices Manual for New and Beginning Farmers and Ranchers.

Activities and Accomplishments: Using input from the NA conducted under Obj.1 and resources materials from agricultural safety and health curriculum at Penn State, a 65-page "best practices" manual was compiled and reviewed. The manual contains five components, including: 1. Establishing Safety Policies and Procedures; 2. Identifying and Assessing Hazards and Risks; 3. Preventing and Controlling Hazards and Risks; 4. Educating and Training Employees; and 5. Evaluating Training Programs and Resources.

Obj. 3 Develop an Instructor's Guide: Safety and Health Best Practices Manual for New and Beginning Farmers and Ranchers for teaching workshops on safety and health best practices for new and beginning farmers and ranchers in Pennsylvania.

Activities and Accomplishments: The Co-PD visited 7 farm sites to assess their availability and adaptability for training, including: farm site facilities and land assessments; useable farm tractors and machinery; existing farm management and labor conditions; and willingness to host other farmers and interested parties from their region. Each of the 7 farm sites had a unique set of resources available to project trainers, and four sites were selected for Fall 2013 and Spring 2014 training programs. Each site dictated an individualized Instructor's Guide to be used during an all-day training program.

Obj. 4: Develop, conduct and evaluate regional train-the-trainer workshops for teaching instructors about safety and health best practice principles, strategies, and techniques for new and beginning farmers and ranchers.

Activities and Accomplishments: Six workshops for 50 faculty, staff and students were organized and presented with 30 participants providing useable evaluations. A summary of the 30 useable evaluations from the manual orientation workshops follows: Twenty-nine of 30 participants were likely or very likely to use the safety resources provided in the workshops; all 30 participants were likely or very likely to encourage periodic safety and health training workshops for their operations and others; before the conference participants rated their confidence to "understanding the principles that support workplace incident prevention on a scale of 1 (Not confident) to 4 (Very confident) at 1.5 while after the workshop they rated their confidence level at 3.36.

Two one-day training programs on tractor safety for new and beginning farmer educators and farm owners and managers from Maine, Vermont, New Hampshire and New York were conducted in Vermont with 38 participants. Thirty-one of 38 participants submitted useable responses to a post-training evaluation. The evaluation results showed that: Prior to the training, 50% of the trainees were either not prepared, or were minimally prepared to organize and conduct a safe tractor operation workshop. Following the training, 71% felt that they were moderately or significantly prepared to select instructors, 81% felt they were moderately or significantly prepared to select tractors and equipment, 87% were moderately or significantly confident in their ability to set up and facilitate a tractor driving course, and 97% were moderately or significantly confident in their ability to reinforce the use of safe tractors and equipment. In response to the all-important question "Did the training

increase your understanding of how to train and evaluate a new tractor operator", the final analysis indicated that 84% were moderately or significantly confident in their new post-training skills.

Obj. 5: Promote use of the Instructor's Guide and the best practices resource manual as an integral part of other new and beginning farmer and rancher safety and health programs across the U.S.

Activities and Accomplishments: In cooperation with the PA WAgN program staff, the PD and Co-PD developed and delivered two workshops on safely operating and hitching tractors and implements. The two training sites were The Seed Farm in Lehigh County (eastern Pennsylvania) and Blackberry Meadows Farm in Allegheny County (western Pennsylvania). The owners and operators of the farms agreed to host the all-day training programs. Nine individuals attended the Seed Farm training with seven providing post-training evaluations, while thirteen individuals attended the Blackberry Meadows Farm with nine providing post-training evaluations. When asked about their level of driving experience pre-training (N=16): 7 participants indicated that they had no previous experience; 7 had some previous experience; 1 indicated considerable experience; 1 did not answer the question. The skills covered during the training workshop covered five important areas – pre-operation checklists, tractor component familiarization, tractor driving, hitching an implement to a tractor, and attaching a PTO driveline to a tractor's PTO stub. The evaluation tool was designed to measure the confidence level before and after the workshop based on the participant's self-assessment. The confidence level change before training verses after training on five training areas showed: Pre-operational Items – Before training, 56% were not confident, after training, 81% were mostly or very confident; Tractor Familiarization – Before training, 50% were not confident, after training, 88% were mostly or very confident; Tractor Driving – Before training, 56% were not confident, after training, 75% were mostly or very confident; Hitching Implements – Before training, 69% were not confident, after training, 69% were mostly or very confident; Attaching PTO Driveline – Before training, 63% were not confident, after training, 69% were mostly or very confident.

What opportunities for training and professional development has the project provided?

In addition to the journal article published, access to a pdf of the two manuals produced through this project will be available on the PI's home website (www.agsafety.psu.edu), the farm safety eXtension website (www.extension.org/agsafety), and through the National Agricultural Library. Posters and banners have been prepared for use at national and state professional association meetings. A technical paper was accepted by the International Society of Agricultural Safety and Health (ISASH) for presentation during the 2013 conference in Sandusky, OH. The power point presentation can be found in the Appendix of this document.

How have the results been disseminated to communities of interest?

At sites within Pennsylvania and in Vermont, university personnel working at research stations and on extension assignments were registered and attended the sessions identified as train-the-trainer programs. Their goal was to garner knowledge and resources on effectively developing, delivering and evaluating safety and health training for new hires and summer employees, who would otherwise have little experience in the safe operation and maintenance of farm tractors and machinery.

What do you plan to do during the next reporting period to accomplish the goals?

{Nothing to report}

Participants

Actual FTEs for this Reporting Period

Role	Faculty and Non-Students	Students within Staffing Roles			Computed Total by Role
		Undergraduate	Graduate	Post-Doctorate	
Scientist	1.2	0	0	0	1.2
Professional	0	0	0	0	0
Technical	0	0	0	0	0
Administrative	0.2	0	0	0	0.2
Other	0	0	0	0	0
Computed Total	1.4	0	0	0	1.4

Target Audience

Primary: new and beginning farmers and ranchers; Secondary: farmers, farm families, interns, apprentices, summer hires, and extension educators.

Products

Type	Status	Year Published	NIFA Support Acknowledged
Journal Articles	Published	2013	YES

Citation

Byler L, Kiernan NE, Steel JS, Neiner P, Murphy DJ. 2013. Beginning Farmers: Will They Face Up to Safety and Health Hazards? Journal of Extension, 51(6): Article # 6FEA10. Accessible at: <http://www.joe.org/joe/2013december/a10.php>.

Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2014	YES

Citation

Steel JS, Murphy DF. 2014. Safety and Health Management Planning: Beginning Farmers and Ranchers. Department of Agricultural & Biological Engineering, College of Agricultural Sciences, The Pennsylvania State University, University Park, PA. 65 pp.

Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2013	YES

Citation

Murphy DJ, Harshman WC. 2013. Organizing and Conducting A Safe Tractor Operation Workshop. Department of Agricultural and Biological Engineering, College of Agricultural Sciences, The Pennsylvania State University, University Park, PA. 16 pp.

Other Products**Product Type**

Educational Aids or Curricula

Description

Beginning Farmer and Rancher Instructor's Guide – Individualized instructor's guides based upon pre-workshop farm site inspections and audits conducted by Co-PD Steel.

Product Type

Protocols

Description

Train-the-Trainer workshops for new and beginning farm and ranch owners/managers for training employees on current safety and health best practices using manual on day 1 and individualized instructor's guides on day 2.

Product Type

Protocols

Description

Established collaborations with college and university-operated sustainable agriculture institutes and programs in Pennsylvania.

Product Type

Protocols

Description

Collaborations on safety and health program development among private, family-owned CSA's in Pennsylvania.

Product Type

Protocols

Description

Conducted (7) on-farm site visits to record hazard assessments in conjunction with pre-planning of on-farm workshops in the fall of 2013 and spring/summer of 2014.

Changes/Problems

{Nothing to report}