

Youth Outcomes of the Wisconsin Meat Animal Quality Assurance Program

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Abstract

The Wisconsin Meat Animal Quality Assurance (MAQA) program has been conducted in Wisconsin counties since 2003 with youth enrolled primarily in the beef, sheep and swine projects. MAQA focuses on good animal management and good production practices in three areas: Care and Management, Animal Health Products, and Animal Handling. A retrospective evaluation completed in 2013 by 2164 youth showed that MAQA is effective in increasing knowledge and skills in all three focus areas. Specifically, respondents reported the greatest increases in identifying meat quality problems, reading feed and antibiotic labels, giving injections correctly, keeping accurate records, identifying current agriculture issues and communicating production agriculture practices to non-agriculture individuals.

Keywords: youth, agriculture, quality assurance, beef, swine, sheep, meat goats

Situation

Research from National Pork Producers Council (NPPC) and National Cattlemen's Beef Association (NCBA) indicates voluntary on-farm quality assurance practices have a positive effect on the quality and safety of food (NCBA, 2012; NPPC, 2014). Studies document that there has been a decrease in tissue residue, muscle bruising and injection-site lesions since quality assurance programming began. (NCBA, 2012; Honeyman, 1996).

Quality assurance is a pledge or promise to 1) provide a food animal product preferred by consumers, and 2) provide a safe, wholesome food animal product. Food animals are those whose products (meat, milk, and eggs) have the potential to become part of the food chain.

Youth involved in food animal exhibitions, by definition, are considered food animal producers. At the culmination of their project, the youth will sell their animal(s) and food products which are intended for human consumption. It is important that these youth food animal producers also understand and adhere to the quality assurance standards implemented by the livestock industry. In an effort to address quality assurance and ethical issues, many state 4-H and FFA programs have implemented educational efforts for youth (Goodwin, Murphy, & Briers, 2002).

Research does document the value of quality assurance programs for the education of youth exhibitors, leaders and volunteers as well as for consumer perception of animal agriculture. Generally, this research shows that quality assurance programs demonstrate benefits in three areas:

- Improves the consumer perception of youth shows
- Improves youth exhibitors animal management and health practices
- Teaches life skills of record keeping, decision making, general responsibility and care

Research from the University of Nebraska indicates youth change their management behaviors after receiving Quality Assurance instruction and achieve higher scores on management quizzes, Skillathon contests and Premier Exhibitor type contests. (Nold & Hanson, 2001)

Program Implementation and Objectives

The Meat Animal Quality Assurance (MAQA) program in Wisconsin is an extension of other industry programs for adults (Pork Quality Assurance, Beef Quality Assurance) that educate livestock producers how to ensure a safe and wholesome food product from production to consumption. The MAQA program has been conducted in Wisconsin counties since 2003 with youth enrolled primarily in the beef, sheep and swine projects. MAQA focuses on good animal management and good production practices in three areas: Care and Management, Animal Health Products, and Animal Handling.

In Wisconsin, MAQA is the training program that meets the standard of certification and skill level for youth to be able to market their livestock projects annually. The MAQA program provides opportunities for youth to develop and practice positive animal agriculture behaviors, skills and attitudes that improve animal projects and provide the background for agriculture involvement as adults.

Bernie O'Rourke, UW-Extension Livestock Youth Specialist, develops and adapts most of the lessons used in teaching MAQA. The State MAQA planning team, which includes representatives from University of Wisconsin Extension 4-H Youth Development and Agriculture and Natural Sciences, Wisconsin FFA, University of Wisconsin Department of Animal Sciences, Wisconsin Department of Public Instruction and the Wisconsin Pork Association, annually reviews the curriculum and activities used in the Wisconsin MAQA program and adds additional activities as needed. The National Pork Board has approved the Wisconsin MAQA curriculum for Pork Quality Assurance (PQA) completion. The Wisconsin Beef Council, Wisconsin 4-H

Foundation, Wisconsin Pork Association, University of Wisconsin-Extension and Equity

Livestock also provide advice and support to the MAQA program.

The Wisconsin MAQA curriculum is based on 10 Good Production Practices identified by the National Pork Board and follows a three year rotation to avoid duplication and repetitive lessons. Each year focuses on one of the main topic areas: *Care and Management, Animal Health Products, or Animal Handling*. In addition, a lesson on sportsmanship, animal welfare, ethics or communication about agriculture issues is included each year.

Some of the innovative learning strategies and activities that are used in the MAQA program include:

- **Level of Adult Involvement.** Youth “place” themselves under a ‘level’ on the wall reflecting the amount of adult involvement in their livestock project. This is followed by discussion.
- **Animal Identification.** Youth practice reading and applying pig notches and also learn about other types of animal identification.
- **Feed and Water Activity.** Youth determine the appropriate amount of water and feed for animals at different weights on cool and warm days. This activity allows youth to consider how much feed and water their animal should be receiving each day based on species and the time of day and the temperature.
- **Food Supply Chain.** Youth create a chain by placing in order the parts of the food supply chain. This activity provides youth a sense of their role in the production of quality food.
- **Reading Labels.** Youth practice reading Paylean labels to understand both the parts of the label and some characteristics of the Paylean additive that is used by many swine exhibitors. Younger youth do a matching activity that teaches them the parts of a feed label.
- **Injection Sites.** Youth learn about injections and then ‘give’ injections to oranges and bananas to practice subcutaneous and intramuscular shots.
- **Frightened and Flattened Animals.** Using string and pretend animals, youth learn about flight zones and how to safely approach animals.

- **Pig Pen Basics.** Youth build pens for their animals while other youth pretend to be the animals using the pens. Youth also create loading facilities for their animals using toy farm fences and structures.
- **Disease transmission.** Youth worked in small groups in a STEM (Science, Technology, Engineering and Math) activity to match animal disease symptoms with prevention practices.
- **Stress.** Youth are shown pictures of meat cuts that demonstrate the effects of stress and inappropriate animal handling. They are asked to identify the issue in the meat and discuss how to avoid these issues in their animal project.
- **Animal Wellbeing.** Youth learn about proper care and how to create opportunities to educate about how food is produced.
- **Sportsmanship.** Youth play a card game to indicate the feelings of others when actions of entitled, humility and respect are shown in a competitive manner.

After 10 years of conducting MAQA in Wisconsin, the MAQA committee determined that an analysis of the impacts of MAQA education would add to the research knowledge and contribute to changes and improvements in the program. The research would also have value since there is minimal research data available on the benefits of Quality Assurance education for youth. The objectives of the planned evaluation were as follows:

1. Measure impact of Wisconsin's Meat Animal Quality Assurance (MAQA) program
2. Review effectiveness of MAQA curriculum and learning activities in teaching youth animal science skills and knowledge
3. Assist in determining future direction for the MAQA program

Evaluation Methods

Bernie O'Rourke, Extension Youth Livestock Specialist, UW-Madison, Deb Ivey, Iowa County 4-H Youth Development Agent, Alissa Grenawalt, Green County 4-H Youth Development Agent and Pam Hobson, 4-H Youth Development Specialist, UW-Extension worked with Matt Calvert, UW-Extension State Specialist and David Trechter and James Janke from the UW-River Falls Research Center to develop and conduct a Statewide MAQA

Evaluation in 2013. This group also recruited funds from the Wisconsin Pork Association, UW Extension Livestock Team, and the Wisconsin 4-H Foundation to conduct the survey.

A logic model was developed to provide an overview of MAQA program (Appendix A). Based on the logic model, the evaluation planning committee determined that the MAQA program in Wisconsin is focused on the following outcomes:

- 1) Youth demonstrate animal management skills
- 2) Youth demonstrate ethical animal care
- 3) Youth serve as role models for animal care and handling
- 4) Youth keep records for their animal projects
- 5) There is increased meat quality due to improved practices
- 6) Youth are role models for sportsmanship at animal exhibitions and shows
- 7) Youth communicate with consumers and the ag industry about animal agriculture
- 8) Youth explore careers in agriculture

These outcomes were the basis for the 29 question retrospective paper/pencil survey that was created (Appendix B). Discussions with Matt Calvert and UW-River Falls staff assisted the evaluation planning committee in deciding to use this type of evaluation. Lynch (2002) stated that a retrospective pre-test or post-then-pre method of evaluation is described as a self-report measure of program impact where participants serve as their own baseline. Participants are first asked to rate their knowledge and skills gained from the program and then rate how they perceived their knowledge and skills prior to the program (Rockwell & Kohn, 1989).

The survey used a four-point scale measuring youth perception of the extent to which their MAQA education experience contributed to growth in their ability and practices in the areas of Animal Care and Management, Animal Health Products and Animal Handling as well as Sportsmanship, Communication and Agriculture Careers. Youth were instructed to rate their abilities and practices before their participation in MAQA and after MAQA.

Human Subjects approval for both panel members and youth was obtained from the office of the Secretary of the Faculty, University of Wisconsin-Extension.

MAQA certified instructors in each county were sent instructions to conduct the survey. To ensure proper survey scanning, all surveys were sent to counties based on the number requested. Youth completed the survey during an MAQA education session between February and July of 2013.

The survey was completed by youth who were 6th grade or older since they would have participated in at least three years of MAQA instruction. Youth received these instructions prior to completing the evaluation: *“The first column on the left is the section called after the program, your answers should reflect what you know NOW about each statement. Under the column on the right, called before the program, think back to when you came to your very first MAQA meeting or took your first exam, now answer the statements on what you knew then.* County staff in 58 counties then sent completed surveys to UW-River Falls, where data was analyzed by the UW-River Falls Research Center under the leadership of David Trechter and James Janke.

Results/Evidence

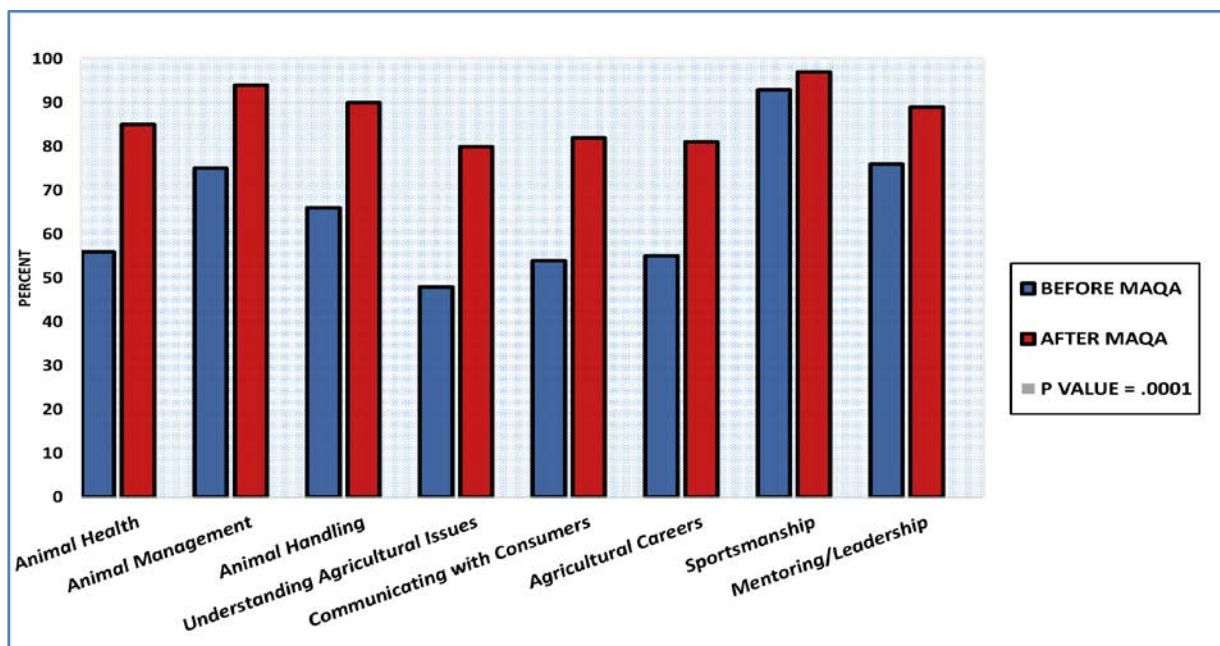
The 2013 questionnaire was completed by 2164 youth in 6th grade and above who had attended at least 3 MAQA programs. There were slightly more females among the youth sample and the largest portion of youth was 12 – 15 years old. When looking at Wisconsin as a whole, about equal numbers of youth were from the East-Metro, Southwest, and Northwest Regions. Fewer surveys were collected from the North Central region. A majority of youth who completed the survey were 4-H members who were enrolled in the swine project followed by the beef project.

As was mentioned earlier, the Wisconsin MAQA program focuses on eight outcomes. An analysis of the overall evaluation results showed that in each outcome area, the post-MAQA

average of good and excellent increased from 56% before MAQA to 85% after MAQA, Animal Management increased from 75% to 94%, Animal Handling increased from 66% to 90%, Understanding Agricultural Issues moved from 48% to 80%, Consumer Communication increased from 54% to 82%, and Knowledge of Agricultural Careers increased from 55% to 81%. Sportsmanship showed the smallest increase going from 93% to 97%. Table 1 illustrates these findings.

The T-test results show that the difference of means increased for all 29 pairs of questions (Appendix C). In addition, all were statistically significant at the .0001 level. Almost all questions showed increased knowledge of more than (50%) after they attended MAQA educational sessions. The greatest changes were recorded for these questions: identify meat quality problems caused by stress (84%), read antibiotic and feed labels (83%), give injection in correct location (82%), practice appropriate withdrawal times (82%), keep written, accurate records (77%), identify current issues in animal agriculture (74%), identify reputable sources for animal agriculture information (74%), and explain production agriculture practices to non-agriculture individuals (72%).

Table 1: Before and After Responses in 8 Outcome Areas



Specific results in each of the 8 outcome areas from Table 1 are highlighted in the following text. For more information on question responses, Appendix D lists the quantitative summary of responses by question.

Animal Health

The survey asked youth to rate their ability with respect to six animal health practices. Answer choices were poor, fair, good and excellent.

More than nine in ten youth rated their post-MAQA ability to contact a veterinarian and to ask a veterinarian about animal health as good or excellent. In all questions, there was an increase in the ability to practice these activities. Prior to the program, about three-fourths of youth rated their abilities as good or excellent.

With respect to reading antibiotic and feed labels and keeping written records of feed and antibiotics, a large majority reported their ability as good or excellent after MAQA. This represents a substantial increase, since only about half of youth said their abilities in these activities were good or excellent before MAQA.

About three-fourths of youth rated their ability to give injections as good or excellent after the MAQA compared to less than half before MAQA. The largest gain among this group of questions was for the ability to read labels.

Animal Management Practices

When youth were asked to rate their animal management practices, large majorities of youth gave relatively high marks to their pre-MAQA abilities to provide appropriate feed and water and to observe animals daily. Nevertheless, the MAQA program further increased these abilities, and nearly all youth rated their post-MAQA abilities as good or excellent.

Youth reported lower initial abilities to use approved identification methods and to monitor weight gain of their animals. About two-thirds said they were good or excellent. The MAQA program helped them increase those abilities and nine in ten rated their abilities as good or excellent after MAQA. The largest increase within this group was for monitoring weight gain.

Animal Handling Skills

A group of eight questions addressed skills related to animal handling. Over 90% percent of youth said their post-MAQA skills were good or excellent in the following: appropriate moving, handling, and transporting of animals, providing appropriate space and ventilation, ensuring animals do not transport disease, and identifying stress situations for their animals.

Large majorities also rated their post-MAQA ability level as good or excellent in the following: identify and understand flight zones and blind spots (85%) and to identify meal quality problems caused by stress (80%). Their pre-MAQA ratings were 55% and 44% respectively. The largest increase among animal handling skills was for identifying stress problems.

Understanding Agricultural Issues

Responses to these three questions were almost identical. About half of youth rated their pre-MAQA abilities as good or excellent in the following: identifying different segments of the food supply chain, identifying current issues in animal agriculture, and identifying reputable sources for animal agriculture information. About 80% said their post-MAQA abilities were good or excellent in these three categories, indicating about a 30% increase.

Communicating with Consumers about Animal Agriculture

When asked about their ability to communicate to consumers about animal agriculture, sixty percent rated their ability to communicate with individuals from a non-agricultural background as good or excellent before MAQA, rising to 85% after MAQA. Similarly, MAQA participants said their ability to explain production agriculture practices increased as well. Less than half rated themselves as good or excellent before MAQA, but this rose to 79% after MAQA.

Agricultural Careers

With respect to identifying career opportunities, 85% of youth rated themselves as good or excellent after MAQA compared to 59% before MAQA. Prior to their participation in MAQA, half of youth said they were good or excellent at exploring career opportunities through methods such as job sharing. Three-fourths of youth rated themselves as good or excellent after MAQA.

Sportsmanship

Large majorities of youth rated themselves quite high on four scales of sportsmanship before their MAQA experience. However, the respondents did indicate that their sportsmanship had increased after MAQA. Ninety-five percent of youth said they often or almost always followed the rules and treated fellow exhibitors with respect before MAQA compared to 98% after MAQA. Similarly about 90% said they often or almost always respected the decisions of judges before MAQA, and this increased to about 97% after MAQA.

Mentoring/Leadership

With respect to sharing knowledge with others and helping others with animal care, about nine in ten youth said they did so often or almost always after MAQA compared to three-fourths of youth who said they did so before MAQA.

Implications/Conclusions

This evaluation supports Quality Assurance evaluations that were conducted almost a decade earlier. It echoes the earlier results that quality assurance training has an impact on youth's knowledge of quality assurance practices. While most youth reported some knowledge about these quality assurance practices before completing the MAQA program, the quality assurance training served to increase their practices in quality assurance. These youth are also better prepared to raise public awareness about the importance of proper animal handling, care and welfare.

This evaluation is also significant in that it is the first Quality Assurance evaluation to ask the youth for their perceptions. Earlier research asked parents for their perceptions of the increases in knowledge and abilities of their children.

Organizing content using a hands-on focus and establishing a relationship between content and real life experience are the first two essential elements that the National Science Foundation has recommended in development of science based curriculum (Horton & Hutchinson, 1999). The significant increase in quality assurance abilities and behaviors for all

the ages of youth demonstrated through this evaluation provides strong support for the value of hands-on educational experiences.

In the long term, educating youth about quality assurance will also benefit the livestock industry. The youth will likely implement their increased behaviors and abilities and produce safe and wholesome food products. This will contribute to the livestock industry's standards for producing safe and wholesome food products, both currently and in the future. While some of these youth will not be directly involved with production in the future, all of the youth in the MAQA program will be consumers. The increased behaviors and abilities provide youth with a general understanding of food safety and will, in the long term, increase the confidence level of consumers toward a safe, wholesome food supply.

The results of this evaluation indicate that participation in MAQA had a positive impact on participants' self-assessment of their abilities and increased their sportsmanship and leadership/mentoring behaviors. When placed in situations requiring sportsmanship, leadership or mentoring behaviors, the youth will have the abilities to respond appropriately and assist others.

Youth development professionals have evidence that 4-H animal science programs benefit participants by helping them develop valuable life skills. This evaluation shows the value of quality assurance programs and adds some research to this current topic. There would be value in conducting additional and more extensive studies to further investigate quality assurance programming.

As youth become more technologically literate and dependent, the MAQA program is exploring a move to an online, interactive program that youth would complete individually. This change may test the ability of the MAQA program to continue to increase animal management and care behaviors and abilities.

Since the results show that MAQA had a positive impact on the ability of youth to identify career opportunities in agriculture and to explore agricultural career opportunities, it might be

advisable to insert career information and exploration into more 4-H project activities. The opportunity to directly apply career information while learning about a topic would appear to enhance retention.

MAQA also had a positive impact on the frequency of mentoring and leadership behaviors by project participants. Providing more opportunities to learn and practice mentoring and leadership with animal projects could be explored.

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Wisconsin Meat Animal Quality Assurance Committee: Bonnie Borden, Adam Hady, Mark Zimmerman, Tammy Vaassen, Jeff Hicken

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Appendix

Appendix A: Logic Model: Wisconsin Meat Animal Quality Assurance Program

Program: 4-HYD Meat Animal Quality Assurance (MAQA) Logic Model

Situation: Wisconsin benefits from a strong agriculture industry that often spans generations. 4-HYD, through the MAQA program, provides youth opportunities to develop and practice positive animal agriculture behaviors, skills, and attitudes that improve animal projects and provide the background for agriculture involvement as adults.

INPUTS	OUTPUTS		OUTCOMES -- IMPACT		
	ACTIVITIES	PARTICIPATION	SHORT	MEDIUM	LONG
<p>STAFF & VOLUNTEER TIME (AG, 4-H, FFA)</p> <p>YOUTH TIME & COMMITMENT</p> <p>FUNDING FOR PROGRAM EXPERIENCES/OPPORTUNITIES</p> <p>POSITIVE RELATIONSHIPS WITH AGRICULTURE INDUSTRY</p> <p>CURRICULUM REGARDING MAQA TOPICS (I.E. CONSUMER PERCEPTION, ANTIBIOTICS, ANIMAL HANDLING, FEED AND WATER, LABEL READING, INJECTIONS, RESIDUE, BIOSECURITY, ANIMAL IDENTIFICATION, ANIMAL ENVIRONMENT, NEEDLE USE, MEAT QUALITY, FOOD CHAIN)</p> <p>SPACE/ENVIRONMENT TO DELIVER TRAINING AND OPPORTUNITIES</p> <p>RESEARCH ON BEST PRACTICES IN ANIMAL AGRICULTURE</p>	<p>SKILL BUILDING EXPERIENCES AND OPPORTUNITIES:</p> <p>EDUCATION/OPPORTUNITIES TO PRACTICE ANIMAL MANAGEMENT SKILLS INCLUDING INJECTIONS, ANIMAL ID, LABEL READING, RESIDUES, ETHICAL ANIMAL PRACTICES</p> <p>OPPORTUNITIES TO EXPLORE INDIVIDUAL STRENGTHS AND SKILLS AND IMPROVE SPORTSMANSHIP</p> <p>OPPORTUNITIES TO LEARN ABOUT AND/OR PRACTICE ANIMAL CARE, BIOSECURITY, RECORDKEEPING</p> <p>TRAINING ON HOW TO COMMUNICATE WITH CONSUMERS ABOUT ANIMAL PROJECTS</p> <p>PRACTICE AND REFLECTION EXPERIENCES AND OPPORTUNITIES:</p> <p>CONTACT AND INTERACTION WITH LOCAL AG LEADERS</p> <p>PLAN AND/OR ACT TO CHANGE SOMETHING IN THE MANAGEMENT OF ANIMAL PROJECT</p> <p>OPPORTUNITY FOR YOUTH TO MAKE MEANINGFUL DECISIONS REGARDING ANIMAL PROJECTS</p> <p>INTRODUCTION TO AGRICULTURE CAREERS</p>	<p>YOUTH 6TH-13TH GRADE</p> <p>INVOLVED AT LEAST THREE YEARS IN THE MAQA PROGRAM</p> <p>FOCUS GROUP—</p> <p>YOUTH OUT OF 4-H AND FFA</p>	<p>CHANGES AT INDIVIDUAL LEVEL: KNOWLEDGE(K), SKILLS (S), ATTITUDES (A), SELF-EFFICACY (S-E)</p> <p>MASTERY</p> <ul style="list-style-type: none"> • INCREASED ANIMAL HEALTH SKILLS, K,S, S-E • INCREASED ANIMAL CARE AND MANAGEMENT SKILLS K,S,S-E • IMPROVED SPORTSMANSHIP K,S, S-E • INCREASED RECORDKEEPING SKILLS K,S,S-E • IMPROVED ANIMAL HANDLING SKILLS • INCREASED UNDERSTANDING OF ANIMAL AGRICULTURE ISSUES K • INCREASED ABILITY TO COMMUNICATE ABOUT ANIMAL PROJECTS K,A, S,S-E <p>INDEPENDENCE</p> <ul style="list-style-type: none"> • INCREASED SELF-RESPONSIBILITY K,A, S,S-E • INCREASED AWARENESS OF CAREERS IN AGRICULTURE 	<p>CHANGES AT INDIVIDUAL LEVEL: BEHAVIORS</p> <ul style="list-style-type: none"> • YOUTH DEMONSTRATE ANIMAL MANAGEMENT SKILLS • YOUTH SERVE AS POSITIVE ROLE MODELS FOR ANIMAL CARE AND HANDLING • YOUTH KEEP RECORDS FOR THEIR ANIMAL PROJECTS • YOUTH COMMUNICATE WITH CONSUMERS AND THE AG INDUSTRY ABOUT ANIMAL AGRICULTURE • INCREASED MEAT QUALITY DUE TO IMPROVED PRACTICES • YOUTH ARE ROLE MODELS FOR SPORTSMANSHIP AT ANIMAL EXHIBITIONS AND SHOWS • YOUTH DEMONSTRATE ETHICAL ANIMAL CARE • YOUTH EXPLORE CAREERS IN AGRICULTURE 	<p>AS YOUTH, THEY ARE:</p> <ul style="list-style-type: none"> • SUCCESSFUL IN ANIMAL AGRICULTURE • LEADERS IN AGRICULTURE • CONTRIBUTING MEMBERS TO AG LIFE <p>AS ADULTS, THEY ARE:</p> <ul style="list-style-type: none"> • EDUCATED, PRODUCTIVE CITIZENS • ACTIVE IN AGRICULTURE AFFAIRS • COMMITTED TO THEIR COMMUNITIES

Self-efficacy = confidence; personal perception of capabilities; ability to perform, etc. Often, linked more directly with behavioral change than knowledge, attitude, or skills.

Appendix B: Wisconsin Meat Animal Quality Assurance Evaluation Survey



Meat Animal Quality Assurance Program Survey

Using blue or black ink, please fill the circle that most closely matches your response on the following questions.

Like this: ● Not like this: ✓ ✗ /

Please rate your ability with respect to the following:

After the Program				Animal Health	Before the Program			
Poor	Fair	Good	Excellent		Poor	Fair	Good	Excellent
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	1. Read antibiotic and feed labels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	2. Give injections in correct location of an animal with proper needles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	3. Practice appropriate withdrawal times	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	4. Keep written, accurate records of feed and medications	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	5. How to contact a veterinarian	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	6. Asking a veterinarian about animal health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Poor	Fair	Good	Excellent	Animal Management	Poor	Fair	Good	Excellent
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	7. Provide appropriate feed and water to animals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	8. Identify animals using approved methods (notches, tags, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	9. Observe animals daily	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	10. Monitor weight gain of animal projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Poor	Fair	Good	Excellent	Animal Handling Skills	Poor	Fair	Good	Excellent
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	11. Identify and understand flight zones and blind spots	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	12. Provide appropriate space and ventilation for animals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	13. Move, handle and transport animals appropriately	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	14. Ensure animals do not transport disease to or from "farm"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	15. Identify situations that can cause stress to project animals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	16. Identify meat quality problems caused by stress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	17. Identify current issues in animal agriculture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	18. Identify reputable sources for animal agriculture information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please continue to page 2 ►

Please rate your ability with respect to the following:

After the Program					Before the Program			
Poor	Fair	Good	Excellent		Poor	Fair	Good	Excellent
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Understand Agriculture Issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	19. Identify different segments of the food supply chain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Poor	Fair	Good	Excellent	Communicate with Consumers About Animal Agriculture	Poor	Fair	Good	Excellent
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	20. Explain production agriculture practices to non-agriculture individuals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	21. Communicate clearly with non-agriculture individuals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Poor	Fair	Good	Excellent	Agricultural Careers	Poor	Fair	Good	Excellent
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	22. Identify career opportunities in agriculture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	23. Explore ag career opportunities (job shadow, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How often do you practice the following?

After the Program					Before the Program			
Rarely	Sometimes	Often	Almost Always		Rarely	Sometimes	Often	Almost Always
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Sportsmanship	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	24. Play fair	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	25. Follow the rules of the contest/show	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	26. Treat fellow exhibitors with respect	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	27. Respect the decisions of judges and officials	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Never	Sometimes	Often	Almost Always	Mentoring/Leadership	Never	Sometimes	Often	Almost Always
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	28. Share knowledge with others (e.g. help younger members)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	29. Help others with animal care and management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

30. What is your gender?	Male	Female	<input type="radio"/>	<input type="radio"/>					
31. What is your age as of Jan 1, 2013?	11 yrs	12 yrs	13 yrs	14 yrs	15 yrs	16 yrs	17 yrs	18 yrs	19 yrs
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
32. Projects enrolled in (•mark all that apply)	Beef	Dairy	Goats	Poultry	Rabbits	Sheep	Swine	Beef	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
33. I am a member of the following: (•mark all that apply)	4H	FFA	Breed Association	Other					
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>					

An EEO/AA employer, University of Wisconsin-Extension provides equal opportunities in employment and programming, including Title IX and ADA requirements.

Appendix C: Wisconsin Meat Animal Quality Assurance Evaluation T-Test Results by Question

Group Statistics

Question	Time	Mean	Diff	Sig 2-tailed
1 Read antibiotic and feed labels	After	3.24	0.83	<0.0001
	Before	2.41		
2 Give injection in correct location	After	3.04	0.82	<0.0001
	Before	2.22		
3 Practice appropriate withdrawal	After	3.09	0.82	<0.0001
	Before	2.26		
4 Keep written, accurate records	After	3.27	0.77	<0.0001
	Before	2.50		
5 How to contact a vet	After	3.54	0.46	<0.0001
	Before	3.08		
6 Asking a vet about animal health	After	3.48	0.56	<0.0001
	Before	2.92		
7 Provide appropriate feed and water to animals	After	3.79	0.38	<0.0001
	Before	3.41		
8 Identify animals using approved methods	After	3.53	0.63	<0.0001
	Before	2.90		
9 Observe animals daily	After	3.65	0.44	<0.0001
	Before	3.21		
10 Monitor weight gain of animal	After	3.40	0.68	<0.0001
	Before	2.72		
11 Identify and understand	After	3.26	0.73	<0.0001
	Before	2.53		
12 Provide appropriate space	After	3.58	0.51	<0.0001
	Before	3.07		
13 Move, handle and transport animals appropriately	After	3.63	0.48	<0.0001
	Before	3.14		
14 Ensure animals do not transport disease	After	3.46	0.61	<0.0001
	Before	2.85		
15 Identify situations that can cause stress to animal	After	3.42	0.67	<0.0001
	Before	2.74		
16 Identify meat quality	After	3.12	0.84	<0.0001
	Before	2.28		
17 Identify current issues in animal ag.	After	3.11	0.74	<0.0001
	Before	2.37		
18 Identify reputable sources for animal ag. info	After	3.08	0.74	<0.0001
	Before	2.34		
19 Identify different segments of food supply chain	After	3.09	0.69	<0.0001
	Before	2.39		
20 Explain production agriculture	After	3.05	0.72	<0.0001

	Before	2.33		
	After	3.19		
21 Communicate clearly with non-ag	Before	2.56	0.63	<0.0001
	After	3.18		
22 Identify career opportunities in ag	Before	2.58	0.61	<0.0001
	After	3.01		
23 Explore ag career opportunities	Before	2.37	0.64	<0.0001
	After	3.68		
24 Play fair	Before	3.40	0.28	<0.0001
	After	3.77		
25 Follow the rules	Before	3.56	0.21	<0.0001
	After	3.75		
26 Treat fellow exhibitors with respect	Before	3.55	0.20	<0.0001
	After	3.65		
27 Respect the decisions of judges	Before	3.41	0.24	<0.0001
	After	3.38		
28 Share knowledge with others	Before	2.99	0.39	<0.0001
	After	3.40		
29 Help others with animal care	Before	3.03	0.37	<0.0001

Appendix D - Quantitative Summary of Responses by Question



Meat Animal Quality Assurance Program Survey

Please rate your ability with respect to the following:

After the Program					Before the Program			
Poor	Fair	Good	Excellent	Animal Health	Poor	Fair	Good	Excellent
2%	10%	47%	40%	1. Read antibiotic and feed labels	18%	33%	37%	13%
7%	17%	39%	37%	2. Give injections in correct location of an animal with proper needles	31%	26%	27%	15%
6%	15%	40%	38%	3. Practice appropriate withdrawal times	28%	27%	30%	15%
3%	13%	38%	46%	4. Keep written, accurate records of feed and medications	17%	31%	35%	18%
2%	5%	28%	65%	5. How to contact a veterinarian	7%	16%	33%	44%
1%	7%	32%	59%	6. Asking a veterinarian about animal health	8%	20%	38%	34%
Poor	Fair	Good	Excellent	Animal Management	Poor	Fair	Good	Excellent
0%	1%	17%	81%	7. Provide appropriate feed and water to animals	2%	8%	32%	58%
2%	7%	29%	63%	8. Identify animals using approved methods (notches, tags, etc.)	12%	21%	31%	36%
0%	4%	25%	71%	9. Observe animals daily	4%	15%	33%	48%
1%	9%	37%	53%	10. Monitor weight gain of animal projects	11%	26%	38%	25%
Poor	Fair	Good	Excellent	Animal Handling Skills	Poor	Fair	Good	Excellent
4%	12%	38%	47%	11. Identify and understand flight zones and blind spots	18%	28%	36%	19%
1%	4%	31%	65%	12. Provide appropriate space and ventilation for animals	5%	16%	42%	37%
0%	3%	29%	68%	13. Move, handle and transport animals appropriately	4%	15%	40%	41%
1%	6%	36%	57%	14. Ensure animals do not transport disease to or from "farm"	10%	21%	38%	31%
2%	7%	37%	54%	15. Identify situations that can cause stress to project animals	10%	24%	42%	24%
5%	15%	42%	38%	16. Identify meat quality problems caused by stress	24%	32%	31%	12%
4%	17%	42%	37%	17. Identify current issues in animal agriculture	19%	34%	33%	14%
5%	16%	42%	37%	18. Identify reputable sources for animal agriculture information	21%	32%	34%	13%

Please continue to page 2 ►

Please rate your ability with respect to the following:

After the Program					Before the Program			
Poor	Fair	Good	Excellent		Poor	Fair	Good	Excellent
3%	15%	46%	37%	Understand Agriculture Issues	16%	33%	37%	14%
				19. Identify different segments of the food supply chain				
Poor	Fair	Good	Excellent		Poor	Fair	Good	Excellent
				Communicate with Consumers About Animal Agriculture				
4%	17%	43%	37%	20. Explain production agriculture practices to non-agriculture individuals	19%	34%	34%	13%
2%	13%	41%	45%	21. Communicate clearly with non-agriculture individuals	13%	27%	40%	20%
Poor	Fair	Good	Excellent		Poor	Fair	Good	Excellent
				Agricultural Careers				
3%	13%	40%	44%	22. Identify career opportunities in agriculture	12%	29%	38%	21%
6%	17%	37%	40%	23. Explore ag career opportunities (job shadow, etc.)	21%	29%	30%	20%

How often do you practice the following?

After the Program					Before the Program			
Rarely	Sometimes	Often	Almost Always		Rarely	Sometimes	Often	Almost Always
				Sportsmanship				
1%	3%	15%	82%	24. Play fair	3%	6%	26%	64%
1%	1%	10%	88%	25. Follow the rules of the contest/show	1%	4%	19%	76%
0%	2%	11%	87%	26. Treat fellow exhibitors with respect	1%	4%	20%	75%
1%	3%	16%	80%	27. Respect the decisions of judges and officials	2%	7%	24%	68%
Never	Sometimes	Often	Almost Always		Never	Sometimes	Often	Almost Always
				Mentoring/Leadership				
1%	10%	30%	58%	28. Share knowledge with others (e.g. help younger members)	4%	21%	36%	39%
1%	9%	27%	62%	29. Help others with animal care and management	5%	19%	34%	43%

30. What is your gender?	Male	Female	31. County? Write County name in the space below						
	48%	52%	See Appendix A						
32. What is your age as of Jan 1, 2013?	11 yrs	12 yrs	13 yrs	14 yrs	15 yrs	16 yrs	17 yrs	18 yrs	19 yrs
	8%	15%	15%	14%	14%	11%	11%	8%	3%
33. Projects enrolled in (•mark all that apply)	Beef	Dairy	Goats	Poultry	Rabbits	Sheep	Swine		
	31%	16%	4%	10%	8%	17%	66%		
34. I am a member of the following: (•mark all that apply)	4H	FFA	Breed Association	Other					
	83%	34%	7%	2%					