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January 2002

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# Effectiveness of Pork Quality Assurance Training for Youth

Rosie Nold<sup>1</sup>

## Summary and Implications

*Over 3,500 youth in Nebraska were trained and certified in Pork Quality Assurance (PQA) in 1999. Quality assurance training had an impact on the youths' opinions about quality assurance and consumers and on the youths' knowledge of quality assurance practices. Emphasis on character development and decision-making skills translated into positive responses about the responsibilities of a livestock producer to animals and consumers. While most youth understood at least some of their responsibilities prior to completing the training, the quality assurance training served to reinforce the understanding of those youth and also to help all youth recognize the breadth of the responsibilities that they have as livestock producers. Educating youth about quality assurance will also benefit the livestock industry. The youths' knowledge of quality assurance practices will strengthen the livestock industry's standards for producing safe and wholesome food products, both currently and in the future. While the livestock produced by these youth may not represent a large proportion of today's livestock industry, the youth themselves represent the future of the livestock industry. Only a small proportion may be directly involved in*

*production and use their skills in that manner, but all will be consumers. Food safety has been and will continue to be an issue to consumers. These youth will be consumers and should have a better appreciation and understanding of the measures that livestock producers take to ensure a safe, high quality, and wholesome food supply.*

## Background

When young people begin a project where the final product is food, they also assume a legal and moral obligation to produce a quality, wholesome, and safe product for consumers. It is critical that young producers are consciously aware of these responsibilities and understand the implications. Only with such an understanding will they deliberately adopt practices and procedures that allow them to fulfill their obligations to consumers. Because of a desire to instill this understanding in youth, quality assurance education has become a major focus of the Nebraska 4-H livestock program. As youth learn to implement quality assurance practices, they will develop an awareness and skills that will affect their current projects. In addition, they will develop an appreciation for food safety and responsibility that will form the foundation for their future contributions as producers, consumers, or both.

Quality assurance programs and

training materials exist for adult audiences; however, these materials have a strong emphasis on technical knowledge, with little discussion of responsibilities. In addition, these materials were designed for adult audiences and consist of lengthy manuals and lecture programs. These characteristics make the existing materials difficult to use with youth audiences. Hence, the goal of this project was to develop a more age appropriate quality assurance training program for youth.

## Materials and Methods

### Materials

Existing adult materials were modified to be more relevant and interactive. In order to accommodate the entire span of ages in 4-H (from 8 to 18 years) the materials were designed to appeal to characteristics of 9 to 11 year olds, as well as to some of the characteristics of older youth. Research identifying the needs for each age group was used in developing program content and design. For example, characteristics of 9- to 11-year-old youth that were considered included: 1) Are more interested when actively involved in making or doing something, 2) Enjoy working in groups, and 3) Are beginning to accept responsibility for their own actions. The characteristics of older youth that were considered were: 1) Can take responsibility in evaluating their own work, 2) Are beginning to



**Table 1. Summary of quality assurance knowledge questions and answers.**

Question topic	Possible answers for 8 to 11 age group (* indicates correct answer)	Possible answers for 12 and over age group (* indicates correct answer)
Proper injection sites	A. Neck* B. Loin C. Rump D. Ham	A. Neck* B. Elbow* C. Loin D. Ham
Needle usage	A. 16 gauge, 1 1/2 inches B. 18 gauge, 1/2 inch* C. Burred D. 18 gauge, 1 inch, bent	Same as 8 to 11 age group
Records information	A. Pig ear notch* B. Amount of drug* C. Withdrawal time* D. Date given*	Same as 8 to 11 age group
Drug misuse consequences	A. Monetary* B. Livestock show reputation* C. 4-H'er reputation* D. Consumer confidence*	Same as 8 to 11 age group
Proper handling	A. Sorting panels* B. Electric prods C. Slapping ham D. Working with before show*	Not asked
Responsibilities as exhibitor	A. Feed & water* B. Proper handling* C. Profit D. Safe product for consumers* E. Purple ribbon showmanship	Same as 8 to 11 age group

**Table 2. Change in opinions from pre- to post-training, %.**

Question number	Statement		Strongly Agree	Agree	Disagree	Strongly Disagree	Chi Square
1	"Consumers have a right to expect the pork they eat is safe and wholesome."	Pre-test	91.7	7.4	0.6	0.3	<0.001
		Post-test	97.0	2.4	0.4	0.2	
2	"Most consumers don't care about how pigs are treated and handled."	Pre-test	5.2	28.1	29.3	37.4	<0.001
		Post-test	4.2	12.5	19.0	64.3	
3	"It is the responsibility of every hog producer and exhibitor to produce a safe and wholesome product."	Pre-test	86.5	11.4	1.5	0.6	<0.001
		Post-test	94.5	4.0	1.1	0.4	
4	"If a 4-H member forgets to record a drug injection....drug residue....4-H member viewed as irresponsible."	Pre-test	50.7	36.1	10.0	3.2	<0.001
		Post-test	79.7	15.4	2.4	2.5	
5	"Using a tranquilizer ...calm wild steer... is responsible because protecting public."	Pre-test	13.2	29.1	24.2	33.5	<0.001
		Post-test	9.3	15.4	17.0	58.3	

develop a community consciousness, 3) Are developing a growing concern for the well-being of others (Karns and Myers-Walls, 1996).

Considering these characteristics, the materials included numerous hands-on activities and interactive discussions where younger and older youth worked together. Furthermore, using the Character Counts! (Josephson Institute of Ethics, 1992) model as a framework, hypothetical situations applicable to quality assurance and livestock projects were developed. The situations emphasized responsibilities involved in producing food and exhibiting animals, including the ultimate responsibility of producing safe food for consumers.

For ease of use, all materials were combined into a "kit" that was utilized by county extension staff. Items in the kit included a reference manual of technical knowledge, teaching methods, posters, stuffed pigs for use in practicing quality assurance procedures, hypothetical drug labels, and syringes with various needle sizes.

To provide continuity among county programs across the state, inservice sessions were delivered to extension educators and assistants. Once trained, these staff delivered programs across the state, often with the assistance of local veterinarians. Over 3,500 youth were trained and certified in Pork Quality Assurance (PQA) during the five month period of March 1999 to July 1999.

### Testing Procedure

To determine the impact of the training on youths' opinions about and knowledge of quality assurance practices, pre- and post-tests were completed by youth who attended the training sessions. The instrument for youth ages 12 years and over included five statements to evaluate their opinions toward quality assurance and consumers of pork or meat products, and five questions to test their knowledge of quality assurance practices. The test for youth ages 8 to 11 years included

(Continued on next page)



**Table 3. Change in knowledge from pre- to post-training, of quality assurance practices, 12 and over age group.**

Question number	Question topic & answers	% Response		Difference ( $\pm$ Std. Err.)
		Pre-test	Post-test	
<b>1</b>	<b>Injection sites:</b>			
	A. Neck*	84.7	96.7	+ 12.0 $\pm$ 2.5%
	B. Elbow*	30.7	79.4	+ 48.7 $\pm$ 3.7%
	C. Loin	4.8	0.6	- 4.2 $\pm$ 1.4%
	D. Ham	37.3	5.3	- 32.0 $\pm$ 3.3%
<b>2</b>	<b>Records Information:</b>			
	A. Pig ear notch*	63.2	86.5	+ 24.3 $\pm$ 3.6%
	B. Amount of drug*	74.7	93.9	+ 19.2 $\pm$ 3.0%
	C. Withdrawal time*	42.9	91.8	+ 48.9 $\pm$ 3.4%
	D. Date given*	86.6	93.9	+ 7.3 $\pm$ 2.5%
<b>3</b>	<b>Needle usage:</b>			
	A. 16 gauge, 1 1/2 inches	28.9	14.3	- 14.6 $\pm$ 3.4%
	B. 18 gauge, 1/2 inch*	71.5	89.9	+ 18.4 $\pm$ 3.3%
	C. Burred	1.6	0.5	- 1.2 $\pm$ .9%
	D. 18 gauge, 1 inch, bent	3.3	2.2	- 1.1 $\pm$ 1.4%
<b>4</b>	<b>Drug misuse consequences:</b>			
	A. Monetary*	45.2	67.3	+ 22.1 $\pm$ 4.2%
	B. Livestock show reputation*	56.8	80.3	+ 23.5 $\pm$ 3.9%
	C. 4-H'er reputation*	63.1	82.6	+ 19.5 $\pm$ 3.7%
	D. Consumer confidence*	73.3	82.3	+ 9.0 $\pm$ 3.6%
<b>5</b>	<b>Responsibilities:</b>			
	A. Feed & water*	89.2	95.8	+ 6.6 $\pm$ 2.2%
	B. Proper handling*	77.2	90.8	+ 13.6 $\pm$ 2.1%
	C. Profit	20.6	29.4	+ 8.8 $\pm$ 3.7%
	D. Safe product for consumers*	78.3	89.6	+ 11.3 $\pm$ 3.1%
	E. Purple ribbon showmanship	14.1	20.9	+ 6.8 $\pm$ 3.3%

\*Indicates correct answer.

only questions designed to test their knowledge of quality assurance practices and responsibilities.

To evaluate the knowledge of quality assurance practices, multiple choice tests were used. The test for the 8 to 11 age group included six questions, with multiple correct answers per question. Youth were instructed that multiple answers were possible. Questions regarding injection sites and needle usage used pictures, rather than words as choices. The test for the 12 and over age group included only five questions, but also with multiple correct answers per question. A summary of question topics and possible answers is presented in Table 1.

To determine opinions toward quality assurance and consumers of meat products, participants were asked to circle one of the following: "Strongly agree," "Slightly agree," "Slightly disagree," or "Strongly disagree," for each of the five statements listed in Table 2.

### Statistical Analyses

Chi-square analyses were used to determine if there was a difference in the outcomes between pre- and post-tests in the opinions of youth participating in the training. Because the quality assurance knowledge questions had more than one possible correct answer, the percentage of responses was calculated for each possible answer. The difference in the probability of having a response on the pre-test versus the probability of having the same response on the post test was calculated and compared using a 95% confidence interval. The sample consisted of 1,054 pre-tests and 1,040 post-tests for the 12 and over age group and 584 pre-tests and 612 post-tests for the 8 to 11 age group. The sample sizes for statistical analyses were lower than the actual number of youth participating in the training because of the need to have

parental consent forms signed before youth could respond to the pre- and post-tests.

## Results and Discussion

### Opinions

Chi-square analyses showed changes ( $P < 0.001$ ) in opinions for all statements. For questions 1, 3 and 4, the most desirable opinion, based on quality assurance principles, would be "Strongly Agree." The percentage of individuals who slightly or strongly agreed with statements 1, 3, and 4 in the pre-test was high, but a shift toward even stronger agreement was seen in the post-test. Similarly, for questions 2 and 4, for which the most desirable answer would be "Strongly Disagree," from pre- to post-test there was shift toward more "Slightly Disagree" and "Strongly Disagree" opinions. Results are shown in Table 2.

### Quality Assurance Knowledge

Between pre- and post-tests, there were significant increases ( $P < 0.05$ ) in correct answers for every knowledge based question for the 12 and over group (Table 3). For all except one of the questions that also had distinctly incorrect answers, there were significant decreases ( $P < 0.05$ ) in the percentage of incorrect answers. For questions where all possible answers were correct, there were increases in the percentage of correct responses for all possible responses. Especially obvious differences were seen in recognition of the ham as an incorrect place for injections and the elbow pocket as an appropriate place for injections (question 1), and recognition of information, particularly withdrawal times, that should be included in records (question 2).

Correct responses from nearly 90% or more of the youth for injection site placement (question 1), information necessary in records (question 2), proper needle usage (question 3), and responsibilities of a producer (question 5) indicate a good overall understanding



of quality assurance by this group of youth.

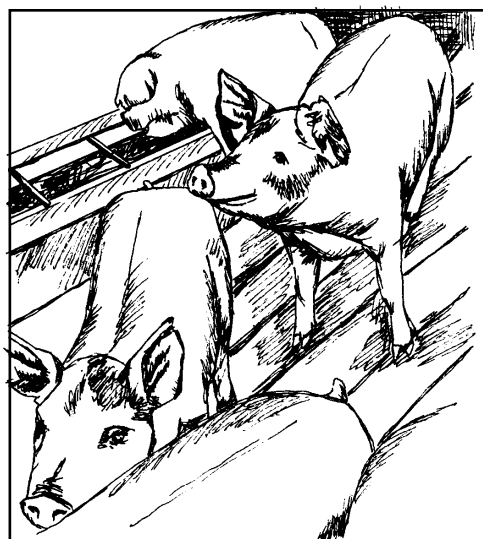
The only question for which there was an increase in incorrect responses was question 5. This may be due an overall increase in knowledge about pork production and the accompanying responsibilities. An increase in overall awareness of pork production could lead the youth to view the answers about profit and ribbons as correct answers. Furthermore, the low hog prices of 1999 led to discussions about profit in many different situations. The presence of these discussions by adults during or near the time of the PQA sessions may have influenced the youths' answers. In addition, the program's emphasis on responsibility may have led the youth to believe that increased responsibilities should also bring increased rewards, such as profit and ribbons at a fair.

Results (Table 4) for the 8 to 11 age group also showed significant increases ( $P < 0.05$ ) in correct answers for all questions. Of special note are differences seen in recognition of the ham as an incorrect place for injections (question 1), the recognition of information, particularly withdrawal times, that should be included in records (question 3), and recognition of the possible consequences of drug misuse (question 4). Following training, nearly 100% of the youth recognized the neck as the proper site for injections (question 1), over 95% correctly answered questions about needle usage (question 2), and over 85% recognized at least three items that should be included in records (question 3), proper pig handling techniques (question 5) and the responsibilities of a swine producer (question 6). We speculate that the 8 to 11 age group likely used the same reasoning as did the other age group in answering these questions.

**Table 4. Change in knowledge from pre- to post-training, of quality assurance practices, 8 to 11 age group.**

Question number	Question topic & answers	% Response		Difference ( $\pm$ Std. Err.)
		Pre-test	Post-test	
<b>1</b>	<b>Injection sites:</b>			
	A. Neck*	81.8	99.8	+ 18.0 $\pm$ 3.1%
	B. Loin	9.6	2.8	- 6.8 $\pm$ 2.7%
	C. Rump	13.4	3.0	- 10.4 $\pm$ 3.1%
	D. Ham	41.8	14.8	- 27.0 $\pm$ 4.9%
<b>2</b>	<b>Needle usage:</b>			
	A. 16 gauge, 1 1/2 inches	30.5	26.8	- 3.7 $\pm$ 5.1%
	B. 18 gauge, 1/2 inch*	88.7	95.6	+ 6.9 $\pm$ 3.0%
	C. Burred	1.9	0.5	- 1.4 $\pm$ 1.2%
	D. 18 gauge, 1 inch, bent	4.4	0.2	- 4.2 $\pm$ 1.7%
<b>3</b>	<b>Records information:</b>			
	A. Pig ear notch*	68.7	80.8	+ 12.1 $\pm$ 4.9%
	B. Amount of drug*	71.6	88.0	+ 16.4 $\pm$ 4.5%
	C. Withdrawal time*	36.0	78.9	+ 42.9 $\pm$ 5.0%
	D. Date given*	83.9	91.0	+ 7.1 $\pm$ 3.7%
<b>4</b>	<b>Drug misuse consequences:</b>			
	A. Monetary*	40.9	59.6	+ 18.7 $\pm$ 5.6%
	B. Livestock show reputation*	41.2	64.4	+ 23.2 $\pm$ 5.5%
	C. 4-H'er reputation*	45.0	66.4	+ 21.4 $\pm$ 5.5%
	D. Consumer confidence*	54.6	77.6	+ 23.0 $\pm$ 5.2%
<b>5</b>	<b>Pig handling:</b>			
	A. Sorting panels*	68.9	86.5	+ 17.6 $\pm$ 4.7%
	B. Electric prods	4.2	3.5	- 0.7 $\pm$ 2.2%
	C. Slapping ham	21.3	11.3	- 10.0 $\pm$ 4.2%
	D. Working with before show *	90.3	94.0	+ 3.7 $\pm$ 3.1%
<b>6</b>	<b>Responsibilities:</b>			
	A. Feed and water*	96.2	87.8	+ 1.6 $\pm$ 2.0%
	B. Proper handling*	87.1	94.3	+ 7.2 $\pm$ 3.3%
	C. Profit	22.1	31.8	+ 9.7 $\pm$ 5.0%
	D. Safe product for consumers*	74.6	89.4	+ 14.8 $\pm$ 4.3%
	E. Purple ribbon showmanship	20.2	24.3	+ 4.1 $\pm$ 4.7%

\* Indicates correct answer.



<sup>1</sup>Rosie Nold is the extension youth specialist, Department of Animal Science. References are available upon request from author.