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A Survey of the General Public on Poultry Topics

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Abstract: The Delmarva Chicken Festival has had an educational exhibit organized by extension poultry specialists/veterinarians for 25 years. A three question survey of the general public was performed at the 64th and 65th Annual Festivals to determine how much of the educational material has reached the general public. The results indicate that extension outreach needs to continue on educating the public that hormones are not used in chicken feed; that there is not nutritional difference between brown-shelled eggs and white-shelled eggs; and that commercial poultry farmers are stewards of the environment that we all share.

Key words: Poultry, eggs, survey, delmarva chicken festival

INTRODUCTION

The Delmarva Chicken Festival is an annual event that has taken place on the Delmarva Peninsula (Delaware, Maryland, and Virginia, USA) since 1948. On June 21-22, 2013 and June 20-21, 2014, the 64th and 65th Annual Delmarva Chicken Festival was held in Snow Hill and Centreville, Maryland, respectively. The 65th Delmarva Chicken Festival was also the final Chicken Festival which presented a unique opportunity to evaluate the efforts of 25 years of extending information to the general public about poultry production. At these events, an education committee consisting of extension poultry specialists, extension poultry veterinarians, and poultry extension alumni, created an educational exhibit. This exhibit contained both historical and educational materials designed to educate the public about the poultry industry. The exhibit also provided the public with the opportunity to view broilers that are ready for harvest and to interact with day-old broiler chicks in addition to watching chicks hatch inside of an incubator. This exhibit attracts several thousand people annually and is an excellent opportunity to interact with the general public and teach them about how modern chickens are produced.

The educational exhibit at the Delmarva Chicken Festival has been in place for over 25 years. The subject matter of the education portion of the exhibit area has changed over the years to meet the needs of the broiler chicken industry. One topic that has not changed is the fact that hormones are not fed to chickens. This education talking point has been repeated in several different formats ranging from small laminated sheets to large posters that explain why hormones are not used. This educational talking point confuses many members of the general public because of the consumer product labeling on some poultry meat products that indicate that the product contains no added hormones. However, in so doing, the public assumes that other poultry products on the shelf contain hormones, thereby perpetuating the myth. There is a certain amount of mistrust that the public has garnered over the years about the poultry industry due to this marketing technique, thereby making education on this topic much more difficult for extension personnel. Many members of the general public do not understand that this quick growth rate is due to over 60 years of breeding (genetic selection), management, and diet improvements, rather than adding hormones to the feed.

Another common topic within the region is the healthful nature of eggs with different colored eggshells. Many members of the public believe that brown-shelled eggs are “better.” This leads to the confusion of terms in relation to what makes an egg “better.” Some use the term “better” to refer to taste, health, yolk color, freshness, locally-sourced or food safety. An informal survey of poultry flock owners at the 2013 Delaware AgWeek provided extension poultry specialists with a list of terms that could be tested with regard to why one egg may be considered “better” over another by their customers. The term of “better” was translated to mean many different things including: tastier, healthier, safer, and more natural. The Delmarva Chicken Festival venue was not conducive to sensory testing of eggs to assess taste because: 1) there was a lack of facilities; and 2) the festival is the celebration of meat chicken production for the region, not eggs. Therefore the next most popular

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term of health was assessed in the survey done at the festival.

The last topic that was assessed was in reference to housing and management systems. Over the years, there has been a great deal of educational material in the exhibit about biosecurity measures, advances in health, concern by farmers for the environment, as well as the great strides in production efficiency made by the broiler industry. This question sought to determine the influence of that material on how the general public views the poultry industry in comparison to an alternatively managed poultry production system. The overall objective of the survey questions was to determine what information was reaching the general public about these particular three poultry topics.

MATERIALS AND METHODS

Three survey questions were placed so that the public would encounter them as they passed through the educational exhibit. The questions were reviewed by the University of Maryland Institutional Review Board prior to the start of the study. The general public consisted of men and women from a range of ages and ethnicities. No data as to the age, sex, or ethnicity of the general public was gathered as they participated in the survey and all responses were anonymous. The order of the responses to each question (A, B, C, or D) for each poster was randomized prior to printing the poster. Each poster contained the instructions, which was that the reader could select only one answer in response to the question the poster asked. The questions, and any associated photographs, were printed on 3 ft. by 4 ft. posters and displayed on boards in the exhibit area. The boards were located inside the education building in locations designed to be easily seen by the general public. To respond with the answer that they thought was correct, members of the public placed a colored square of paper into a bag next to the answer that they selected. To compare the frequency of responses to the questions in 2013 and 2014 a chi-squared test was used (SPSS, 2014).

Question 1: Broiler Production

The first question showed a photograph of two chicken carcasses. One carcass was from a trial where the birds were from a 1957 heritage breed (an unimproved line of broilers) fed a 1950's diet. The second carcass was a Ross 308 (improved broiler line) fed a 2001 diet (Havenstein *et al*., 2003). The second carcass was significantly larger than the first with the second carcass weighing 2093 g and the first weighing 591 g at 42 days of age (Havenstein *et al*., 2003). On the poster the following question was asked: "Why do these two chickens look so different from one another?" Those who visited the exhibit were asked to choose from one of four possible answers as to why the two carcasses were so greatly different from one another. The choices were as follows:

A. They are given hormones in the feed.
B. Advances in genetics and breeding.
C. Improvements to the diet of the bird.
D. Advances in management and feeding

Several years prior to this survey, a similar photo on a poster was used and attendees were asked why they thought the two birds were different from one another. It was an open ended question so that committee members could interact with the public and teach them about broiler production. After the Delmarva Chicken Festival that year, we took note of the four most frequent responses and those responses were used as the answers.

Question 2: Eggs and Health

Another common topic within the Mid-Atlantic region is the healthful nature of eggs with different colored eggshells. Many members of the public sincerely believe that brown-shelled eggs are "better." This leads to the confusion of terms in relation to what makes an egg "better." Some use the term "better" to refer to taste, health, yolk color, freshness, locally-sourced or food safety.

The second question was in reference to eggs and had clip art graphics of eggs with three different colored eggshells: white, brown, and blue-green. On the poster the following question was asked: "Which egg is healthier?" The answer choices were as follows:

A. White-shelled eggs
B. Brown-shelled eggs
C. Blue-green shelled eggs

Question 3: Public Perception

For question 3, over the years, there has been a great deal of educational material in the exhibit about biosecurity measures, advances in health, concern by farmers for the environment, as well as the great strides in production efficiency made by the broiler industry. This question was designed to determine the influence of that material on how the general public views the poultry industry in comparison to an alternatively managed poultry production system. The answers were developed by the extension education committee members. The third question was in reference to two different poultry housing management systems shown in photographs. One picture (labeled picture A) showed a commercial poultry production houses with biosecurity signs and fencing in place. The second picture (labeled picture B) showed movable pens of poultry in a field which is a popular type of pastured free-range system. Above the photographs, there was the following statement: "Compare the two types of chicken management systems, then select your answer below." The answer choices were as follows:

A. Picture B exposes their birds to more disease and parasites.
B. Picture A is an efficient system of production.
C. Picture B uses little biosecurity.
D. Picture A is responsible for environmental conservation and manure control

RESULTS AND DISCUSSION

Question 1: Broiler Production

In 2013 and 2014 there were a total of 238 and 720 responses, respectively. The low number of responses during 2013 is attributed to the location of the festival and the overall lower attendance. The increased number of participants in 2014 is attributed to both the location and the fact that it was the last Delmarva Chicken Festival. Attendance was increased because many who had skipped attending in the past wanted to be present at the final festival.

Table 1 shows the first question and the results. The analysis of the data indicated that there was no statistical difference between the years. These results do indicate that despite the number of educational materials that are exhibited in the educational exhibit, the message that hormones are not given to poultry is being countermanded by information received from other sources. The majority of those who participated in the survey, 37.58%, indicated that they believed that hormones are given in the chicken feed. At times during the survey, people spoke to education committee members about what they read on packaging materials that state that no hormones are used, but that they believed that other chicken product on the shelves did use hormones. This indicates that more education on the subject needs to be done to remove the damaging stereotype that hormones are used in chicken feed.

The next most popular answer was advances in genetics & breeding (24.11%), advances in management and feeding (22.23%), and lastly, improvements to the diet of the bird (16.08%). These results indicate that the general public is not likely to attribute the big differences in the carcasses in the photograph to just changes in diet alone. It was interesting to note that the public was willing to accept that advances in genetics and breeding was more likely to be selected over management and feeding. Genetics accounts for 85-90% of the improvement in broilers (Havenstein *et al*., 2003).

Question 2: Eggs and Health

In 2013 and 2014 there were a total of 251 and 763 responses, respectively. Table 2 shows the second question and the results. The chi-squared analysis of the data indicated that there was no statistical difference between the years. As is evident by the results, that vast majority of the general public stated that they believed that brown-shelled eggs (66.77%) are healthier for them. There exists among the public in this region a general misconception that brown-shelled eggs are better. The result that the general public believed that brown eggs were healthier corresponds to work done by Johnston *et al*. (2011) in which positive connotations about brown eggs included that they were more nutritious; had more flavor and Omega-3 polyunsaturated fatty acid content; and had a farm-flock origin. However in the Johnston *et al*. (2011) study, the preference for white-shelled eggs always exceeded that of preference for brown-shelled eggs due to the region of the United States in which the research was performed.

It was interesting to note that the white (16.66%) and blue-green-shelled (16.57%) eggs received almost the same number of responses, albeit a far second and third from the brown-shelled eggs. Many survey participants readily admitted that they did not know that blue-green-shelled eggs existed, nor were they aware of the breeds that lay this color eggshell. This became an excellent opportunity for the educational exhibit staff to reach the public that may have otherwise just come in to pet chicks.

Question 3: Public Perception

In 2013 and 2014 there were a total of 100 and 431 responses, respectively. Table 3 shows the third question and the results. The chi-squared analysis of the data indicated that there was a statistical difference between the years. However, since the location of the Chicken Festival Changes annually, it was not possible to determine if the difference was due to location or the year. The main differences with the expected outcomes were found with responses C and D of the question.

The results indicate that the general public views a commercial poultry operation as one of efficiency first and foremost (32.96%). This is not surprising given that many visitors and residents frequently see the farms in their travels throughout the region. The second most selected response was the statement regarding the environmental conservation and manure control in a commercial poultry operation (32.58%). The need for environmental education to the producer is well-recognized by members of cooperative extension given that the grow-out conditions maintain a large number of animals to a small piece of land (Bailey *et al*., 1995). The fact that only slightly fewer survey participants selected this statement may indicate that education on this topic is being effectively absorbed by the general public. This topic has been of concern within the region lately and has been hotly debated in the media (Wheeler, 2012).

Interestingly, the third and fourth most popular responses to this question (17.70% and 16.76%, respectively) indicate that the general public recognizes that alternative poultry management system engages in higher risk management strategies. This indicates that the biosecurity educational materials that have been

Table 1: The distribution of answers on Friday and Saturday for the question "Why do these two chickens look so different from one another?"

	Year		
Response	2013	2014	Total
They are given hormones in the feed	92 (38.66%)*	268 (37.22%)	360 (37.58%)
Advances in genetics and breeding	49 (20.58%)	182 (25.28%)	231 (24.11%)
Improvements to the diet of the bird	31 (13.03%)	123 (17.08%)	154 (16.08%)
Advances in management and feeding	66 (27.73%)	147 (20.42%)	213 (22.23%)

* # of responses (% of the total responses for the year)

Table 2: The distribution of answers on Friday and Saturday for the question "Which egg is healthier?"

	Year		
Response	2013	2014	Total
White-shelled	45 (17.93%)*	124 (16.25%)	169 (16.66%)
Brown-shelled	164 (65.34%)	513 (67.23%)	677 (66.77%)
Blue-green-shelled	42 (16.73%)	126 (16.51%)	168 (16.57%)

* # of responses (% of the total responses for the year)

Table 3: The distribution of answers on Friday and Saturday for the question about chicken management systems

	Year		
Response	2013	2014	Total
Picture B exposes their birds to more disease and parasites	17 (17.00%)*	72 (16.71%)	89 (16.76%)
Picture A is an efficient system of production	34 (34.00%)	141 (32.71%)	175 (32.96%)
Picture B uses little biosecurity	27 (27.00%)	67 (15.55%)	94 (17.70%)
Picture A is responsible for environmental conservation and manure control	22 (22.00%)	151 (35.03%)	173 (32.58%)

* # of responses (% of the total responses for the year)

offered over the years through the educational exhibit as well as through the efforts of cooperative extension may be easily recognizable to the general public. The statement that was selected the least by those who visited the educational exhibit was in reference to the alternative management system and was about this system's exposure of the flock to disease and parasites. It is understood by poultry scientists that alternative management systems tend to expose birds to the three main vectors of disease: rodents, insects, and wild birds. Despite the photo showing birds in enclosed, movable pens with covered roofs, this system does expose birds to insects and rodents which can carry disease to the flock (Heckendorn *et al*., 2009; Permin *et al*.,1999; Elbers *et al*., 2004). The fact that this was selected the least may indicate that the general public either does not realize the threat or may have thought that one of the other answers was more correct. The pastoral scene of chickens out in a field may outweigh the production and disease or parasite realities associated with this system of management.

The results indicate that education efforts to the general public are still needed in order to improve their understanding of modern poultry production practices. The survey at the Delmarva Chicken Festival provided committee members an opportunity to assess the effectiveness of the educational content given in the exhibit over the years while the survey poster format allowed exhibit staff a far greater opportunity to speak and interact with the general public.

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