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Utilizing Short- and Long-Term Evaluation to Measure the Impact of a Long-Standing, Multi-State Educational Venue

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The purpose of this program evaluation was to utilize short- and long-term surveys to measure the impact of a multi-state Range Beef Cow Symposium on knowledge change and changes in beef cattle production practices. Symposium participants completed end-of-session surveys and ranked their degree of knowledge change, with a 36% return rate. Follow-up surveys were mailed to past symposium participants who noted changes made to their production practices, with a 23% return rate. For symposium survey respondents, 70% were male, a majority were white, over 60% were under 50 years, and they represented 16 states. The estimated annual increase in profitability was positively associated with symposium attendance. Participants gained knowledge across all topics presented. For follow-up survey respondents, 86% were male, a majority were white, 62% were between 50-69 years old, and they represented 9 states. The estimated annual increase in profitability was positively associated with the likelihood to make operational changes, as well as notable changes made to genetics and selection, marketing options and plans for cattle, risk management, and time of calving. Over 70% made notable changes to cattle genetics, nutrition, health, marketing, replacement heifer development, and range management. By using short- and long-term evaluation methods, information was gained on current and past attendee's conceptual and instrumental knowledge acquisition and provided a context for how the knowledge was used.

Keywords: evaluation, program planning, range management decisions

Introduction

Cattle ranchers, industry personnel, and Extension educators and specialists need current, practical production information that is relevant to range beef cow production in the Great Plains region so they can make knowledgeable decisions that will improve natural resource management and ranch profitability. As a result, University of Nebraska-Lincoln (UNL) Extension and Extension programs from South Dakota, Wyoming, and Colorado have partnered to provide the Range Beef Cow Symposium (RBCS) for the past 40 years. The RBCS is a

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biennial event which began in 1969 at Chadron, Nebraska. This three-day educational experience is a cooperative effort between the Extension programs and Animal Science Departments of UNL, Colorado State University, South Dakota State University, and the University of Wyoming. Each university takes turns hosting the event in their state. Presentations and interactive sessions are made by Extension specialists, industry personnel, and producers on a wide range of topics related to beef production. Approximately 600-800 people attend this event to learn about industry issues, policy, market conditions, and current unbiased, research-based information that can be applied to their operations.

Approximately 588 million acres of pasture and rangeland exist in the United States (US) (Risk Management Agency, 2013). The majority of the land in the western US rangelands is typically highly erodible, subject to relatively low rainfall, and therefore, not conducive to farming (Natural Resources Conservation Service, 2013). However, these rangelands commonly contribute to the global food supply through grazing by US beef cattle herds (National Agricultural Statistics Service, 2013). In 2012, the US beef cattle inventory was approximately 89 million head, with 29.3 million of those being beef cows (National Cattlemen's Beef Association, 2013). Beef cattle production is a business of the private sector. Therefore, information that enables those in the beef industry to improve business practices, consumer relations, and animal husbandry is crucial. Since 1969, the RBCS has provided information based on university research and industry leaders' experiences to help producers improve operations. Historically, this information has included updates on US policy and legislation that may impact the beef industry, economic projections for commodity and cattle prices, and updates on global markets and impacts that may occur. Also, research updates are given in the areas of nutrition, genetic selection, herd health, range management, labor issues, and generational transfer of family businesses. Although this event has been well-received and attended, short- and long-term evaluation of this programmatic effort has not been previously documented.

Extension personnel are expected to evaluate programmatic efforts because of requirements at the state and federal level (Lamm, Israel, Diehl, & Harder, 2011). With the Government Performance Review Act (GPRA) and the Agricultural Research, Extension, and Education Reform Act (AREERA) passing, Extension systems have added evaluation capacity-building to their professional development agenda and are encouraging personnel to incorporate evaluation into programming for enhanced accountability (Franz & Townson, 2008). Unfortunately, evaluation attempts have been marginally improved within Extension, and on a federal level, the system continues to produce reports composed of contacts made and program reactions, as opposed to changes in behavior and potential long-term social, economic, and environmental changes (Franz & Townson, 2008). Within Extension, the evaluation aim needs to be moved away from accountability-driven assessments and instead focused on designing and utilizing evaluations to not only understand program accomplishments, but also the trials faced, so future activities can be guided in an informed and positive way (Cronbach, 2000).

The purpose of this program evaluation was to utilize short- and long-term surveys to measure the impact of a multi-state Range Beef Cow Symposium on knowledge change and changes in beef cattle production practices. Another goal of the program evaluation was to identify gaps in subject areas where additional information and education would be beneficial for participants.

Methods

Participants were adults attending the 2011 symposium (end-of-session surveys) and those who had attended symposiums prior to the 2011 event (follow-up surveys collected in spring/summer 2011). This program was available to all adults who registered. The 2011 symposium was held in Mitchell, NE for three days at the Scotts Bluff County Fairgrounds. This Extension program did not exclude any adults from participating. The Institutional Review Board (IRB) at UNL approved this program evaluation project. Microsoft Excel was initially used to house all of the survey responses. Data were then coded and transferred into the Predictive Analytics SoftWare (PASW, version 17) program. Descriptive statistics computed included means, standard deviations, frequencies, and percent responses. Data were not normally distributed and were compared using a non-parametric, two-related samples test with a Wilcoxon Signed-Ranks Test. The associations among responses were investigated by Spearman correlation. Level of significance for all analyses was set at $p < 0.05$.

Symposium Survey (End-of-Session)

Program participants who voluntarily signed up for the symposium ($n = 572$) were encouraged to fill out end-of-session surveys, but were not required to complete surveys as part of their participation. Surveys from 206 participants were returned (36% return rate). A quiet space was available for participants to take surveys at the end of each session (Tuesday, November 29, 2011; Wednesday, November 30, 2011; and Thursday, December 1, 2011). The surveys did not ask for participants' names and took 10-15 minutes to complete. Participants were verbally informed at the symposium about the survey and its purpose. Survey questions included occupation, beef production segments, number of head for each cattle class, number of acres, changes to operation based on knowledge gained (Likert scale from *Not likely* to *Very likely*), knowledge level before and after presentation topics (Likert scale from *Nothing* to *Significant knowledge*), previous attendance, whether the topic was relevant to their business, perceived speaker knowledge and presentation skills, additional feedback, geographic location, gender, ethnicity, and age.

Those who turned in end-of-session surveys were given a raffle ticket which made them eligible to win prizes in a random drawing. Examples of prizes included coffee mugs, pens, baseball caps, and bags. When a participant turned in a survey at the end of the session (on Tuesday and Wednesday), he/she was given a raffle ticket with a number on it. A random drawing was

completed to select the prize winner the next morning (Wednesday and Thursday). On the last day (Thursday), name badges for those who turned in a survey at the end of the day were put into a drawing, and someone was randomly selected for a prize that was mailed to him/her.

Past Participant Survey (Follow-up Survey)

For the follow-up surveys, a mailing list was compiled from past participants; similar information that was used to verbally address symposium participants was included in the follow-up cover letter explaining the purpose of the survey. Hard copies were mailed to past participants ($n = 400$) who were identified as producers and voluntarily provided their mailing address. Surveys from 90 producers were returned (23% return rate). A pre-stamped and addressed return envelope was provided; return envelopes were shredded upon receipt. Producers were requested to return the surveys within three weeks of receipt. Follow-up surveys took approximately 10-15 minutes to complete. No names or identifying information were collected. Survey questions included occupation, beef production segments, number of head for each cattle class, number of acres, changes to operation based on knowledge gained (Likert scale from *Not likely* to *Very likely*), estimate of annual increase in profitability, degree of change made to their operations as a result of knowledge gained from attending past RBCS's on a scale of 1 (*No change*) to 5 (*Significant change*), an open-ended question on most notable changes made, geographic location, past symposium attendance, gender, ethnicity, age, and any additional comments.

Results

Symposium Survey (End-of-Session)

Demographics. Seventy percent of survey respondents were male and 30% were female, with the majority being White (Not Hispanic). Over 60% were under the age of 50, and the majority fell within the 30-39- and 40-49-year-old age categories. On average, respondents had attended the RBCS event 3 times. Respondents were from 16 different states, with the majority from Nebraska (33%), Colorado (15%), South Dakota (14%), and Wyoming (13%). About half of participants self-identified as producers (54%), with Extension agent/educator at 13%, and students at 11%. Seventy percent or more reported that cow-calf, replacement heifers, and weaned calves were beef production segments in their operations or that they served as a consultant in that area. Producers and consultants/educators were separated out in the comparative analysis to more accurately reflect number of head for each class of animal and number of acres owned, managed, or influenced. Those who self-identified as students were excluded from this analysis. Consultants/educators covered a much broader range of number of head for each class of animal and number of acres owned, managed, and influenced compared to producers.

Quantitative. As a result of knowledge gained from the RBCS symposium, about 55% reported being *Likely* to *Very likely* to make changes in their operation. No significant differences ($p > 0.05$) were detected between producers and consultants/educators regarding likelihood to implement changes. As a result of knowledge gained, 41% of respondents estimated an annual increase in profitability to beef enterprises (dollars per head), ranging from as low as \$5 to as high as \$12,000, with an average of about \$500 per respondent. No significant differences ($p > 0.05$) were detected between producers' and consultants'/educators' estimation of an annual increase in profitability to beef enterprises. Based on post-pre survey questions, significant differences in responses were detected ($p < 0.001$), indicating knowledge gain in all topic areas presented (Table 1). On average, participants were *Neutral* to *Agreed* that topics presented were relevant to their business and *Agreed* to *Strongly agreed* that speakers presented well and were knowledgeable on their topic (Table 2).

Number of times attended was positively associated with age ($r = 0.50, p < 0.01$). Estimated annual increase in profitability to beef enterprise (dollars per head) was positively associated with likelihood to make changes to their operation based on knowledge gained from RBCS ($r = 0.27, p < 0.05$).

Table 1. 2011 Symposium End-of-Session Survey Results: Knowledge Level Before and After Presentations (n = 206)

Topic	Before (M ± SD)	After (M ± SD)
Land use decisions, ownership, and control	3.17 ± 0.9	3.96 ± 0.8
Land/Enterprise ownership transfer	3.13 ± 0.9	3.87 ± 0.8
Genomics for the rancher	2.54 ± 1.0	3.45 ± 0.9
Implementation of marker assisted Expected Progeny Differences (EPD's)	2.60 ± 1.0	3.56 ± 0.9
Feed efficiency - How is it used in cow herd	3.02 ± 0.9	3.72 ± 0.8
Importance of steak origin to restaurants	2.71 ± 0.9	4.00 ± 0.7
Capturing added value for the calves produced	3.33 ± 0.9	3.99 ± 0.7
Adding value to calves - age and source verified	3.36 ± 1.0	4.03 ± 0.8
Cutting through the myths to feed the population	2.90 ± 0.9	3.91 ± 0.8
Activities and benefits from exporting beef	2.90 ± 0.9	3.88 ± 0.7
50 years of beef reproduction through my eyes	2.93 ± 1.0	4.19 ± 0.7

Note: Likert scale used for knowledge level before and after presentation topics was from 1 = *Nothing* to 5 = *Significant knowledge*. Two-related samples test with a Wilcoxon Signed-Ranks Test found all means significantly different at $p < 0.05$ level.

Table 2. 2011 Symposium End-of-Session Survey Results: Relevance to Attendee's Business and Speaker's Perceived Knowledge and Presentation Effectiveness (n = 206)

Topic	Relevance (M ± SD)	Speaker (M ± SD)
Land use decisions, ownership and control	3.85 ± 1.1	4.38 ± 0.7
Land/Enterprise ownership transfer	3.84 ± 1.1	4.14 ± 0.9
Genomics for the rancher	3.44 ± 1.1	4.34 ± 0.8
Implementation of marker assisted EPD's	3.48 ± 1.0	4.44 ± 0.7
Feed efficiency - How is it used in cow herd	3.90 ± 0.9	4.25 ± 0.8
Importance of steak origin to restaurants	3.67 ± 0.9	4.46 ± 0.7
Capturing added value for the calves produced	4.01 ± 0.8	4.32 ± 0.8
Adding value to calves - age and source verified	3.98 ± 0.9	4.33 ± 0.8
Cutting through the myths to feed the population	3.68 ± 1.1	4.40 ± 0.8

Note: Likert scale used for topic relevance to attendee's business and the speaker's perceived knowledge and effectiveness of presenting the topic was from 1 = *Strongly disagree* to 5 = *Strongly agree*.

Qualitative. Seven themes came from the qualitative information reported on the end-of-session survey in the additional comments section. Themes included that the symposium was a learning opportunity/educational experience, there were issues with planning and location logistics, vendors were a distraction from symposium presentations, supplemental symposium information was desired, a better balance between the application and science was wanted, suggestions for improving panel presentations were provided, and ideas and topics for future programming were suggested. Table 3 contains selected quotes by theme from the end-of-session survey.

Table 3. Selected Quotes by Theme from 2011 Symposium End-of-Session Surveys

Learning Opportunity/Educational Experience	<p>“As a student who has done research on the industry, knowing a decent amount, I have learned SO much in addition to my education. A great opportunity.”</p> <p>“Good job! Speakers and presentations covered broad spectrum of the cattle business!”</p> <p>“Enjoyed source verified, important to keep in mind the HOW, information on Estate/management transfer was excellent and needs to be repeated in many more places.”</p> <p>“This has been a very educational experience and I really enjoyed all of the speakers. They gave me a lot of information to think about and have sparked many ideas for me to use as a future producer and agricultural instructor.”</p>
Planning and Location Logistics	<p>“Shorten length of day to two days, have more producers on program.”</p> <p>“Three days is too long for this event in this day and age of higher costs and shrinking budgets. Make it 2 days MAX! Start at 10 am on Day 1 and end at 4 pm on Day 2 so people can drive in/out and would only have 1 night hotel.”</p> <p>“Need to have exact street address for meeting so those of us who have GPS can use it and find the meeting.”</p> <p>“Put maps in future symposium, flyers and handbooks.”</p>

Vendors and Distractions	“Vendors need to watch noise level during proceedings.”
	“By the end of Wednesday, lots of people were visiting with vendors during speakers. With the setup of only tarps separating the two, this was distracting.”
	“Good vendors. Is it possible to add or change each day to offer something different? We need the breaks; by this afternoon (or am) we've seen and talked to all.”
	“Noise from vendor area was very distracting during presentations. We are here for the presentations not the trade shows.”
Symposium Information Provided	“I would like more charts in the booklet. Most of the presentations used charts we don't have to look at and study in this book.”
	“Most speakers just read what was already printed in program book. Share something in addition to what we can read.”
	“I believe proceedings would have more value if in form of slide handouts rather than written proceedings, easier to follow, take notes and refer back to later.”
Balance Between Application and Science	“XX speaker needs to prepare better and speak on topics relevant and applicable instead of going into the science.”
	“XX speaker went over my head in details instead of day to day applications.”
	“Marker Assisted EPD (Expected Progeny Difference) and Feed Efficiency - not practical enough - too academic. Switch these out and get hands-on speakers.”
	“For the average producer, the presentations involving significant technicalities were probably over their heads. As an older person, I appreciate the topics on transferring control and ownership of cows, machinery, and land.”
Panel Presentations	“It would have been nice to have a panel discussion with questions for each of them to answer.”
	“Don't have three speakers retell the same story. If you have a panel, have all three at the table.”
	“Panel members should have been directed to give high points relative to topics, 10 minutes would have been more appropriate than 15 and then have a summary to close that session.”
Suggestions for Future Programming	“Topics to cover: bale grazing, beef quality audit, agricultural tourism, feeding company products, designing cattle handling facilities, marketing mistakes.”
	“Offer beef cattle reproduction topics to be part of each year's program.”
	“Need speaker on fetal programming.”
	“More value in information of genetics, methods of production and transfer of owners instead of value realized in dollars of profit. Too much duplication of ownership, transfer information.”
	“Ideas for future programs: herd health, more veterinarian input, suggest Estate Planning.”

Past Symposium Participants (Follow-up Surveys)

Demographics. Eighty-six percent of respondents were male and 14% were female, with the majority being white (Not Hispanic). Sixty-two percent fell into the 50-69-year-old age category. Approximately 20% were less than 49 and greater than 70 years old. On average, respondents had attended the RBCS event 5 times. Respondents reported living in 9 states, and the majority lived in Nebraska (31%), Wyoming (21%), Colorado (20%), and South Dakota (17%). Eighty-seven percent reported their main occupation was a producer. Seventy percent or more reported that cow-calf, replacement heifers, and weaned calves were beef production segments in their operation, or they served as a consultant in that area. Producers and consultants/educators were separated out to more accurately reflect number of head for each class of animal and number of acres owned, managed, or influenced by category. In some cases, the average reported was drastically different between categories, and separating the information helped decrease the overlap in reporting.

Quantitative. As a result of knowledge gained from past RBCS's, 64% reported being *Likely to Very likely* to make changes in their operation (Table 4 on the next page). No differences ($p > 0.05$) were detected between producers and consultants/educators regarding likelihood to implement changes. As a result of knowledge gained, 85% of respondents estimated an annual increase in profitability to beef enterprises (dollars per head). The average increase reported was between \$25-30 per respondent. No differences ($p > 0.05$) were detected between producers' and consultants'/educators' estimation of an annual increase in profitability to beef enterprises. Approximately 68% reported *Some to Major changes* in operations as a result of knowledge gained for genetics and selection, cattle nutrition, range and forage management, herd health care and management, marketing options and marketing plans for cattle, and reproductive management. Fifty percent reported *Some to Major changes* for replacement heifer development. *Minor to Some changes* were reported for ranch business management and planning and use of technology on the ranch at about 64%. *No to Some changes* were reported for business and family working relationships, added enterprises, and risk management at approximately 84%. *Minor to Major changes* for changes in time of calving was 53%.

Table 4. Follow-up Survey Responses from Past Symposium Participants: Changes in Operations Made as a Result of Knowledge Gained from the RBCS

Changes	Responses (<i>n</i> = 90)
Genetics and Selection (<i>M</i> ± <i>SD</i>)	2.95 ± 1.1
No change	14%
Minor changes	18%
Some changes	31%
Major changes	32%
Significant changes	5%
Cattle Nutrition (<i>M</i> ± <i>SD</i>)	3.44 ± 0.9
No change	5%
Minor changes	11%
Some changes	32%
Major changes	42%
Significant changes	10%
Range and Forage Management (<i>M</i> ± <i>SD</i>)	3.11 ± 1.0
No change	11%
Minor changes	13%
Some changes	34%
Major changes	39%
Significant changes	4%
Herd Health Care and Management (<i>M</i> ± <i>SD</i>)	3.24 ± 1.0
No change	9%
Minor changes	13%
Some changes	30%
Major changes	42%
Significant changes	6%
Marketing Options and Marketing Plans for Cattle (<i>M</i> ± <i>SD</i>)	2.93 ± 1.1
No change	12%
Minor changes	18%
Some changes	38%
Major changes	26%
Significant changes	5%
Reproductive Management (<i>M</i> ± <i>SD</i>)	2.99 ± 1.2
No change	15%
Minor changes	16%
Some changes	31%
Major changes	30%
Significant changes	8%

Changes (continued)	Responses (<i>n</i> = 90)
Ranch Business Management and Planning (<i>M</i> ± <i>SD</i>)	2.85 ± 1.1
No change	12%
Minor changes	23%
Some changes	40%
Major changes	16%
Significant changes	9%
Business and Family Working Relationships (<i>M</i> ± <i>SD</i>)	2.48 ± 1.2
<i>No change</i>	27%
<i>Minor changes</i>	25%
<i>Some changes</i>	27%
<i>Major changes</i>	17%
<i>Significant changes</i>	5%
Use of Technology on the Ranch (<i>M</i> ± <i>SD</i>)	2.74 ± 1.0
No change	11%
Minor changes	29%
Some changes	37%
Major changes	21%
Significant changes	2%
Added Enterprises (yearlings, recreation, etc.) (<i>M</i> ± <i>SD</i>)	2.17 ± 1.1
No change	38%
Minor changes	22%
Some changes	28%
Major changes	8%
Significant changes	4%
Risk Management (<i>M</i> ± <i>SD</i>)	2.37 ± 1.0
No change	23%
Minor changes	34%
Some changes	28%
Major changes	14%
Significant changes	1%
Time of Calving (<i>M</i> ± <i>SD</i>)	2.44 ± 1.4
No change	38%
Minor changes	15%
Some changes	20%
Major changes	18%
Significant changes	9%

Changes (continued)	Responses (<i>n</i> = 90)
Replacement Heifer Development (<i>M</i> ± <i>SD</i>)	3.07 ± 1.1
No change	11%
Minor changes	21%
Some changes	29%
Major changes	28%
Significant changes	11%

Note: Likert scale used for questions regarding changes made to operations based on knowledge gained was from 1 = *No change* to 5 = *Significant changes*.

Estimated annual increase in profitability to beef enterprise (dollars per head) was positively and significantly associated with how likely participants were to make changes to their operation ($r = 0.38, p < 0.01$), genetics and selection ($r = 0.43, p < 0.01$), range and forage management ($r = 0.24, p < 0.05$), marketing options and marketing plans for cattle ($r = 0.28, p < 0.05$), risk management ($r = 0.36, p < 0.01$), and time of calving ($r = 0.36, p < 0.01$).

Qualitative. Participants were asked to list the most important changes made to their operation as a result of information or knowledge gained from the RBCS. They were also asked how those changes improved profitability, natural resources, or quality of life for them as an individual, as well as for their family. The overarching theme produced from qualitative data was that participants reported improved resource management through different techniques and changes in operations, which translated into increased profitability and sustainability and more quality time with family. Changes in operations noted were moving calving dates, heifer development, alterations in feeding practices, and selection of genetics. Respondents also reported on the long-term value of the education received.

Many commented that education and implementation of moving calving dates resulted in better utilization of resources, increased market flexibility, and improved family life. As one respondent stated, “Our cowherd used to calve in February and March and be on full supplemental feed February through April. We moved our calving season to May and June and went to grazing our cows 12 months of the year rather than 9 months, and the cows only receive supplemental protein in the last trimester of pregnancy. A \$42,000 savings on supplemental feed last year!” Others specifically reported on improved quality of life by changing calving dates, such as having a “better family life” and “quality time with grandchildren.”

Survey respondents reported changes in feeding practices resulted in better resource management and increased profits. As one respondent commented, “The RBCS is where I first learned about limited feeding of grain products to replace hay. It has lowered my feeding expenses during drought, high hay prices, and years with poor hay production.” Some also reported that information and knowledge gained through past symposiums gave them the confidence to make significant shifts in their practices with regards to feeding practices. As one reported,

“Developing heifers on a limited DDG [dried distillers grains] and alfalfa/millet hay ration was probably the biggest change we made after the 2007 and 2009 RBCS. We would not have had the knowledge or the confidence to do so without the RBCS.” Participants reported positive, long-term impacts because of education they received at symposiums and modifications made related to changes in feeding practices.

Many participants reported that selection of genetics greatly improved herd health, management practices, and produced a more profitable cattle production in the industry. As one reported, “Selection of genetics has been the most important by using EPD [expected progeny differences] and all things relating to it. Herd health is very important. I feel we saved more animals by using the right medication.” Another stated, “I learned more about genetic selection. I made changes in the nutrients I fed to my cattle and the importance of maintaining a more healthy cattle herd. It has helped my calving percentage, and I have healthier calves.” Respondents took information on genetics and applied it to their operations, which resulted in healthier animals and profits.

Overall, several respondents reported the education received at these symposiums was invaluable to their operations and pushed them to continually improve their management practices. One respondent commented, “The long term value of continuing education is hard to put a dollar amount on, but it is there. Thought-provoking data and information that makes me question my own ways has value, even if I don’t change those ways.” Many stated the symposiums are a great vehicle for staying abreast of a variety of topics and issues relevant to operations. One reported, “RBCS have more value than any one item. In this business, knowledge is power, if you think you know it all, your business will suffer. There are many things I am keeping track of or sampling from past RBCS. I have gained so much knowledge from past RBCS I couldn’t begin to put a value on it.” Many participants reported feeling smarter about decision-making processes related to a variety of management practices because of the education and information received from attending this event.

Discussion

Throughout this program evaluation process, important changes were made to the end-of-session survey delivery, and instituting a follow-up survey provided invaluable companion and long-term impact data for this programming effort. End-of-session surveys were collected daily throughout the symposium, and a material incentive was provided for turning in surveys, whereas in previous years, only one survey was collected at the conclusion of the meeting on the last day with no incentive provided. By collecting surveys daily and providing an incentive, a much greater return rate was noted. Incentives, whether financial or material, can improve questionnaire response rate, demonstrate respect and appreciation for participants’ time and effort, and convey trust (Centers for Disease Control and Prevention [CDC], 2010). This type of

raffle incentive was chosen because it was more affordable, given this was not originally budgeted into the event, and it was easy to implement (CDC, 2010). Historically, a segment of participants would leave the meeting early on the last day, and waiting to collect surveys until the very end was decreasing the return rate.

Typically, end-of-session surveys were the only questionnaire format used to collect impact data on symposium efforts. These surveys are useful for providing immediate feedback on what did and did not work, information on improving current and future programs, and helpful information for accountability reporting, as well as demonstrating to participants and stakeholders the value of their input (Taylor-Powell & Renner, 2000). However, by conducting a follow-up survey of past participants, knowledge gained from symposium efforts and long-term impacts and changes made as a result of that knowledge could be documented. Compared to interviews, mailed questionnaires are the least expensive method in terms of time and money, but typically yield the lowest return rates (Hager, Wilson, Pollak, & Rooney, 2003). Because this format allows researchers to attain information from a large sample, gives respondents time to contemplate their responses, potentially allows anonymity of respondents, helps reduce interviewer bias, and has geographic flexibility, mailed questionnaires are a common selection among survey researchers (Christianson & Tortora, 1995; Greer, Chuchinprakarn, & Seshadri, 2000; Kennedy & Vargus, 2001). As public funding declines and competition for grant dollars increases, Extension programs need to be able to produce substantial, measureable program outcomes and impacts (Hachfeld, Bau, Holcomb, & Craig, 2013).

Unfortunately, there is often a lack of documentation for evidence of behavior change or greater impacts on society through program evaluation. Too often, program evaluation only collects information on items such as inputs, activities, people, involvements, and reactions or knowledge changes without assessing higher-level changes (Stup, 2003). A review of Extension outcome studies published in the *Journal of Extension* over 5-year increments (1965-69, 1975-79, 1985-89, 1995-99, and 2005-09) found that 88.5% of the articles documented evidence above participation level, and almost two-thirds were measuring outcomes, although only 5.6% documented long-term outcomes (Workman & Scheer, 2012). By conducting short- and long-term program evaluation, this Extension symposium evaluation effort is moving towards documenting impacts in knowledge gain and behavior change of participants and demonstrating how those combined components may result in sustainable, profitable changes that not only benefit the individual, but also the family unit and the state.

In a heavily quantitative research field, such as range and beef systems management, qualitative data may not be viewed as an important piece of the program development puzzle. However, utilizing open-ended questions on end-of-session surveys and follow-up surveys provided unique program impacts and demonstrated areas for improvement. Asking participants to check which practices they implemented can help draw conclusions about economic consequences, but the

personal impact of applying recommended modifications can best be conveyed in the participants' own words (Olney & Barnes, 2006; Smith & Lincoln, 1984). When conducting a quantitative impact study, having personal accounts of what is being measured can make quantitative data more meaningful and provide a reader of the evaluation report with improved understanding of how the program worked and/or what the effects were (Olney & Barnes, 2006; Smith & Lincoln, 1984). Participants showed gains in knowledge from the symposium, but several commented on wanting a better balance between the application and research/science behind it. For example, some producers said they did not prefer the producer panel on the program, and some commented they wanted more industry experience on the program and fewer university speakers. On the other hand, some said that they loved the research updates or reported wanting the research update, but asked for speakers to put their data into more producer-friendly terms. Varying responses indicate that there is a broad array of clientele and perspectives represented at these meetings, and finding a balance between the research and application is something that needs to be a part of the planning process for future meetings.

Conclusions

Information presented at RBCS tracks with the research conducted, and through initial evaluation of these symposiums, evidence of utilization has been indicated. The symposium pays careful attention to focus on validated, unbiased, and research-based information and techniques from which clientele would benefit. By using short- and long-term evaluation methods, information was gained on attendee's conceptual and instrumental knowledge acquisition and provided a context for how the knowledge was used. Unless evaluation attempts to measure both kinds of knowledge gained, it is difficult to understand the real world impact of Extension programs on attendees. Further refinement of the evaluation process at the short- and long-term level needs to be established so impacts can be better defined and assessed.

Implications of Work: Lessons Learned

Increasing Return Rate for the RBCS End-of-Session and Follow-up Surveys

Only hard copies of surveys were available for end-of-session questionnaires; making the survey available in an electronic format (compatible with mobile devices such as tablets and phones) might have increased participation. There is also room to experiment with adjusting incentives or providing a variety of financial and material incentives. Sending post card reminders and/or conducting follow-up phone calls with past participants would have provided another way to collect impact data and would have likely resulted in a higher percentage of past participants providing feedback. Additionally, an on-line version of the survey could have been made available to garner more responses. Increased variety of survey delivery formats and reminders would have likely increased the response rate and decreased the potential non-response bias.

Including Evaluation Efforts into the Programming/Event Budget

In the future, evaluation efforts such as these will be incorporated into budget planning. Funds for items such as postage, return postage, labor of office assistant/student, and time needed for follow-up phone calls will be included into the cost of programming to cover budgetary needs. Additionally, costs related to the evaluation component will be incorporated into future grant applications. Having these funds up front will help increase the thought and planning of the evaluation, improve response rate, and better estimate the impact of programming by decreasing the non-response bias.

Collecting Qualitative and Quantitative Information

Collecting qualitative information in the form of open-ended questions was beneficial; however, it is important to add more detail in some cases to help direct/guide participants. For example, the comment section at the end-of-session surveys was left open with no specifics about desired information. There was a mix of logistic and programmatic comments and it would have been beneficial to have separate questions, one requesting issues with symposium logistics (e.g., temperature, food, and meeting space) and another on programmatic issues (e.g., program content, delivery, and speaker quality). In the future, putting more emphasis on encouraging people to fill out open-ended questions is needed, orally (at sessions) and in writing on survey documents about why this information is important and how it is used.

Training on Evaluation and Analysis for Extension Programming

Many Extension personnel in agricultural fields are familiar with evaluation, planning, and analysis techniques for field work related to crop and animal experiments but are not as familiar with conducting evaluation, planning, and analysis of clientele feedback. Working with an evaluation specialist or specialist with experience in program evaluation, even though it may be in a different content area, can be an extremely beneficial and interesting collaboration. By combining the expertise of program planning and evaluation with knowledge about audience preferences and event/programming details, Extension personnel across different fields can combine their talents and perspectives to garner participant feedback and impact.

Separating Out Participant Categories to More Accurately Reflect Data

Initially, all participant responses for end-of-session and follow-up surveys were combined. After separating out participants by self-selected occupational categories, differences were noted. Because participants self-selected occupational categories, this allowed for the detection of differences between responses. No differences were found between producers' and consultants'/educators' responses on knowledge gained and with regards to profitability, which

validates/confirms that education provided by consultants and educators is on track. If differences had been detected, this would have prompted a need to recalibrate how profitability is being measured because it is important not to falsely overestimate or underestimate programmatic efforts.

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