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Sarah Al-Mazroa Smith

*Iowa State University*, [sjalmaz@iastate.edu](mailto:sjalmaz@iastate.edu)

Greg Miller

*Iowa State University*, [gsmiller@iastate.edu](mailto:gsmiller@iastate.edu)



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## Needs Assessment Tool for a Value-Added Beef Extension Program for Small Farmers

SARAH AL-MAZROA SMITH<sup>1</sup> AND GREG MILLER<sup>1</sup>

AUTHORS: <sup>1</sup>Iowa State University.

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**Abstract.** As beef industry trends have evolved, beef producers are looking for value-added beef practices and marketing strategies. To ensure that a new value-added beef Extension program framework at Iowa State University aligns with beef producers' needs, a needs assessment instrument was created. We developed a needs assessment tool focused on program objectives and delivery method preferences. This tool can be used to adapt the program to meet specific needs and preferences of participants.

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### INTRODUCTION

Beef producers have been looking into new opportunities to increase their overall profitability. One way to increase profitability is through value-added programs. According to the USDA, Value-Added can be defined as a change in the physical state or form of the product, production of a product in a manner that enhances its value, or physical segregation of an agricultural commodity or product that results in value enhancement (AGMRC, 2020). Producers who are seeking new information about Value-added opportunities can receive science-based educational programming through Extension (USDA National Institute of Food and Agriculture, n.d.).

A new value-added beef Extension program framework was recently created., (Al- Mazroa Smith & Miller, Accepted 2022). The Extension program framework can be identified as an Innovation as described by Roger's Theory of Diffusion of Innovation. Rogers (2003) defined an innovation as the "idea, practice or object that has been perceived as new by an individual" (p. 12). In preparation for translating the framework into a successful program, prospective participants should be surveyed to measure levels of compatibility, complexity, and preference of delivery method. Compatibility is the attribute that is most important for the participants to adopt the innovation that is being provided (Harder & Lindner, 2008). Individuals are more likely to adopt an innovation when it is compatible with or relevant to the needs in their life (Moore et al., 2012). Rogers (2003) defined complexity as the perception that the innovation is difficult to understand and use. If the innovation is too difficult to understand, the participants will likely not adopt it.

### NEEDS ASSESSMENT TOOL

It is critical to perform a needs assessment to ensure that the program is tailored to the specific group of producers who participate. Due to the lack of instruments available for Extension personnel to utilize for this topic, a needs assessment tool was created. The following subsections provide a description of the needs assessment tool and data interpretation guidelines to use in planning for the value-added beef Extension program.

## THE VALUE-ADDED NEEDS ASSESSMENT TOOL

### INSTRUMENT

The needs assessment questionnaire is organized into three sections that include value-added beef Extension program objectives, delivery methods, and demographics. A copy of the Needs Assessment Survey Instrument is provided in the Appendix. The instrument is deemed valid and reliable for the intended purpose of assessing the needs of beef producers who plan to participate in the proposed program. To ensure content and face validity a panel of experts evaluated the questionnaire using an evaluation rubric. A field test of the questionnaire was completed with five producers. Finally, a pilot study was conducted to evaluate the questionnaire for reliability. The test-retest reliability coefficient was 0.88. The pilot study procedures were approved by the institutional review board at Iowa State University (IRB # 20–348).

The first section of the questionnaire focuses on the program objectives with two sets of questions. The first set of questions focuses on the relevance of the program objectives to the participants utilizing a five-point agreement Likert-type scale. These questions measure the objective compatibility to assist in the rate of adoption. The second set of questions focuses on the complexity level of the program objectives utilizing a three-point Likert-type scale (Too easy, Just Right, Too complex). Ensuring the correct complexity level of the program objectives will assist in the learning process. The overall goal for the first section, is to ensure the objectives are written in a way that best serves the participants.

The second section of the questionnaire focuses on delivery methods. It is important to get feedback from potential participants to make sure the delivery method aligns with their preference. This section has a list of potential delivery methods. Participants will rate their preferred delivery method on a four-point likeness Likert-type scale which will challenge participants to think about what to answer. Participants still have the option of not answering the question. Ensuring that participants are receiving the information in their preferred delivery method will also assist in the rate of adoption of the new program.

The third section of the questionnaire is the demographic section. These questions allow the program planner to understand who are the potential program participants and customize the program to best serve the different types of beef producers that are in their area. This section is a mixture of multiple-choice and open-ended questions.

### DATA COLLECTION

The survey can be administered online through Qualtrics or via paper. The questionnaire should be accompanied by an explanation that the purpose of the survey is to enable program planners to learn more about the producers' wants and needs so that the program can be modified accordingly. All communication to participants should be personalized. If multiple communications are used, the content and tone should vary. It is advisable to send messages at the beginning of the workday and send them frequently, i.e., fewer than 3 days apart (Dillman et al., 2014).

### DATA ANALYSIS

The data from the questionnaire can be analyzed with Qualtrics, Excel, SPSS, or any other similar data processing software. Descriptive statistical analysis is recommended. Table 1 provides guidance on how to interpret the data after it is processed. The compatibility set of questions were rated on a five-point Likert-type scale. When the mean score is between 1–3.5 it indicates it is not relevant and should be dropped. The complexity set of questions were rated on a three-point Likert-type scale. Objectives with a mean score below 1.51 will need to have their level of complexity increased. Objectives with means greater than 2.5 will need to be simplified. The delivery method section aims to identify the preferred delivery method on a four-point Likert-type scale. If the method has a mean score of above 2.5 it should be utilized for the program. The last section is the demographic section. The multiple-choice questions can be analyzed with percentages. The open-ended questions ask participants to enter a number to answer the question and can be analyzed with calculating the mean, median, or mode.

## PROGRAM DEVELOPMENT RECOMMENDATIONS

Once the data has been collected and analyzed, it should be used by Extension personnel to personalize the value-added beef Extension program framework described in Al-Mazroa Smith and Miller (Accepted 2022) study.

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**Table 1.** 4-H Youth Retention Study Data Sample Quote and Code

Set of Questions	Mean Score	Data Interpretation
Compatibility (1st set of questions)	1–3.5	Not compatible and should be dropped
	3.5<	Compatible and should be used in program
Complexity (2nd set of questions)	1–1.5	Too easy. The difficulty level should be increased
	1.51–2.5	Complexity level is appropriate and should be used as is in the program
	2.51–3	Too complex and objectives should be simplified.
Delivery Method (3rd set of questions)	1–2.5	Not preferred and should not be used for the program
	2.5<	Preferred and should be used for the program

## CONCLUSIONS

Alignment between producers and the educational materials in an Extension program is critical to ensure that producers' needs are met. The instrument created in this article can be adapted and changed based on the setting and the needs for the audience that will participate in the program. When the curriculum is adapted based on beef producers' input the curriculum will achieve its maximum level of effectiveness.

This article provides a model for creating and utilizing a needs assessment questionnaire to aid in customizing an Extension education program. The overall structure and process described in this article could be applied to different Extension programs and in different regions of the country. A well planned and executed needs assessment is a foundational element of Extension program development.

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**APPENDIX: VALUE-ADDED BEEF EXTENSION PROGRAM  
NEEDS ASSESSMENT QUESTIONNAIRE TOOL**

**VALUE-ADDED BEEF EXTENSION PROGRAM NEEDS ASSESSMENT QUESTIONNAIRE**

**SECTION 1: RELEVANCE OF PROGRAM OBJECTIVES**

Question 1. When creating a new Extension and Outreach program there are many different objectives Extension specialists could cover. However, we want to ensure educational objectives align with information that is relevant to you. We also want our educational programs to help advance your operation's goals. Please indicate the extent to which you agree that the following objectives align with your information needs.

(Rating Scale: Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

*Note:* Apply to the list of objectives that appear following question 2.

**SECTION 2. COMPLEXITY OF PROGRAM OBJECTIVES**

Question 2. We want to ensure the educational objectives are at the appropriate complexity level to ensure the content is useful. We don't want items to be too simple or too complex.

Please rate the **complexity** of the following objectives.

(Rating Scale: Too easy, Just right, Too complex)

*Note:* Apply to the list of objectives that follow.

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Objectives to use with sections 1 and 2.

1. Apply different business planning strategies to manage cost of the operation.
2. Recognize the details of a generic business plan for beef operations.
3. Produce an example business plan for a beef operation.
4. Outline different business plans with specific timeframes.
5. Analyze different investment requirements for your new or expanding business.
6. Summarize break-even details.
7. Identify beef marketing strategies.
8. Practice beef operation budgeting.
9. Critique a break-even budget.
10. Explain the labeling regulation details of meat products.
11. Summarize the requirements for shipping product across state lines.
12. Describe the details on shipping perishable value-added products to consumers.
13. Summarize the basics of forage management strategies.
14. Compare and contrast forage management strategies.
15. Apply different forage management strategy plans to your own operation.
16. Describe regulations regarding transportation of livestock.
17. Identify record keeping tools that are available to assist in tracking production costs.
18. Demonstrate the use of record keeping tools for tracking production costs with example records.
19. Recall the basic details of decision tools for cattle performance, economic/ price outlook, etc.
20. Analyze cattle performance using decision tools.
21. Interpret economic/ price outlook using decision tools.

## Needs Assessments for Farmers

### SECTION 3: PREFERRED DELIVERY METHODS

There are many different delivery methods that can be used when implementing an Extension program. You may have experienced a variety of delivery methods during your involvement with [University] Extension. Please rate the following **delivery methods** based on your personal preference. (Rating scale: Strongly Dislike, Dislike, Like, Strongly Like)

1. Formal Lecture Style Class (In person)
2. Hands on Workshop (In person)
3. Field Day (Single day in person during business hours)
4. Short Course (Multiple days in person)
5. Evening Meetings (In person outside of normal business hours)
6. Fellow Producer Mentor Program (In person)
7. Small Group Work (In person)
8. Mailed Publications/ Information
9. Publications (Online)
10. Email Newsletter (Online)
11. Recorded Informational Videos (Online)
12. Webinars Guided by Extension Personnel (Online)
13. Self-guided Webinars (Online)
14. Podcast (Audio/ Online)
15. Web-blended Workshops (Online and In person)

### SECTION 4: DEMOGRAPHICS

Do you manage, own, or work with beef cattle regularly?

- Yes
- No

What sector of the beef industry are you involved in? (Check all that apply)

- Commercial cow-calf
- Seedstock
- Feedlot
- Cow-calf through Feedlot (Retained Ownership)
- Other (please describe in the text box below)

Approximately how many head of cattle do you own? (Enter a number) \_\_\_\_\_

Approximately how many head of cattle do you manage for someone else? (Enter a number) \_\_\_\_\_

Approximately how many years have you been involved in beef production? (Enter a number) \_\_\_\_\_

What is your gender identity?

- Male
- Female
- Other
- Prefer not to answer

Please enter your age in years. (Enter a number) \_\_\_\_\_