PA Beef Producers
Working Group

Survey of Pennsylvania Beef Producers
Characteristics, Practices & Preferences

Conducted by Penn State Extension
Judy Chambers
Tara Felix, PhD
Neal Fogle

in collaboration with the Center for Survey Research, Penn State Harrisburg

September 2017
Contents

Table of Figures .................................................................................................................................................. 3
EXECUTIVE SUMMARY .................................................................................................................................. 5
1. INTRODUCTION ........................................................................................................................................ 6
2. MATERIALS AND METHODS .................................................................................................................. 6
   Distribution and Survey Size ..................................................................................................................... 6
   Paper versus Web Responses .................................................................................................................... 7
   Validity of the Data ..................................................................................................................................... 7
   Geographic Categories ............................................................................................................................... 8
3. CHARACTERIZATION .................................................................................................................................. 8
   Type of Beef Operation ............................................................................................................................... 8
   Location of Beef Operation ......................................................................................................................... 10
   Size of Beef Operation ............................................................................................................................... 11
   On-Farm Income from Beef Operation ....................................................................................................... 13
   Age of Respondents and Tenure in Beef Production .................................................................................... 14
4. FUTURE PLANS ......................................................................................................................................... 16
5. PRODUCTION AND MARKETING .......................................................................................................... 20
   General Herd Management – Housing, Confinement and Grazing ................................................................. 20
   Impact of Specialty Markets ......................................................................................................................... 22
   Supplements on Pasture ............................................................................................................................... 23
   Conservation Techniques .............................................................................................................................. 24
   Management of Pre-weaned Calves .............................................................................................................. 25
   Sales and Markets for Calves and Cows ......................................................................................................... 25
6. EDUCATION AND OUTREACH .............................................................................................................. 28
   Greatest On-Farm Challenges ...................................................................................................................... 28
   Education Topics of Interest ......................................................................................................................... 30
   Preferred Methods of Receiving Information .............................................................................................. 31
   Other Survey Comments ............................................................................................................................ 32
FINDINGS AND RECOMMENDATIONS ........................................................................................................ 34
   Major Findings ......................................................................................................................................... 34
   Other findings and recommendations ....................................................................................................... 35
# Table of Figures

## Introduction
- Figure 1. Penn State Extension Areas ................................................................. 8

## Characteristics
- Figure 2. Primary beef operation ........................................................................ 9
- Figure 3. Primary and other beef operations ........................................................ 9
- Figure 4. Location of largest number of survey respondents ................................. 10
- Figure 5. Number of survey respondents by Extension Area ............................... 10
- Figure 6. Number of feedlot/finishers by Extension Area ..................................... 11
- Figure 7. Average number of cattle per year ....................................................... 11
- Figure 8. Respondents with 50 or fewer cattle by primary operation ...................... 12
- Figure 9. Average number of cattle in commercial cow-calf operations............... 13
- Figure 10. Average herd size, feedlot/finisher ...................................................... 13
- Figure 11. Percentage of on-farm income from beef ........................................... 14
- Figure 12. Beef operations generating over 50% of on-farm income ..................... 14
- Figure 13. Age of respondents ............................................................................ 14
- Figure 14. Tenure in the beef business ............................................................... 14
- Figure 15. Tenure in the beef industry by age ..................................................... 15
- Figure 16. Tenure in beef industry, ages 55-64 ................................................... 16

## Future Plans
- Figure 17. Five-year production plans – condensed categories .......................... 16
- Figure 18. Five-year production plans – all categories ........................................ 17
- Figure 19. Five-year plans by primary beef operation ......................................... 18
- Figure 20. Five-year plans by tenure in the beef industry .................................. 18
- Figure 21. Five-year plans by age ...................................................................... 19
- Figure 22. Five-year plans to maintain or expand operation, by Extension Area .... 20

## Production and Marketing
- Figure 23. Herd management practices of survey respondents ........................... 21
- Figure 24. Housing practices of survey respondents ............................................ 21
- Figure 25 Number of operations using continuous grazing (numerator) ............. 21
- Figure 26. General management used by respondents targeting specialty markets . 22
- Figure 27. Type of pasture supplement utilized .................................................. 23
- Figure 28. Hay or grain used for pasture supplementation in different sized operations 23
- Figure 29. Mineral source used for pasture supplementation in different sized operations 24
- Figure 30. Conservation practices employed by survey respondents .................. 24
- Figure 31. Sale age of cattle from commercial cow-calf operations ..................... 25
- Figure 32. Sale age of cattle from purebred cow-calf operations .......................... 26
Figure 33. Location of respondents selling weaned calves................................................................. 26
Figure 34. Location of respondents selling finished calves................................................................. 27
Figure 35. How respondents are selling feeder cattle ........................................................................ 27
Figure 36. How cattle are sold by respondents .................................................................................... 27
Figure 37. Target market for finished/fat cattle .................................................................................. 28
Figure 38. How respondents are purchasing feeder cattle .................................................................. 28

Education and Outreach
Figure 39. Respondents’ greatest on-farm challenges ....................................................................... 29
Figure 40. Respondents’ preference for educational topics ................................................................. 30
Figure 41. Respondents’ [references for receiving information] .......................................................... 31
Figure 42. Preferred method of receiving information by age of respondent .................................... 32
Figure 43. Other survey comments .................................................................................................... 32
EXECUTIVE SUMMARY

The PABPWG comprises four key beef cattle organizations in the state: Penn State Extension, Pennsylvania Beef Council, Pennsylvania Cattlemans Association, and the Center for Beef Excellence. Their mission statement is “PA producers and stakeholders working together to monitor beef industry needs in order to create educational opportunities that improve performance and production.” In late 2016, the PABPWG commissioned a survey with two purposes: create baseline data about beef producers to help the working group characterize the complex and varied beef industry in Pennsylvania, and identify specific challenges and opportunities for producers. The survey was conducted in the spring of 2017 by Penn State Extension in collaboration with the Center for Survey Research at Penn State Harrisburg, with the support of the PA Department of Agriculture through the PABPWG.

A total of 783 producers responded to the survey. Using the NASS figure of 11,800 beef producers, the respondents constitute 6.6% of producers. Because the survey was distributed through multiple methods and was not a random sampling, this 6.6% is not necessarily representative of the 11,800 beef producers in Pennsylvania. However, many of the survey findings confirm national trends in the beef industry as well as trends observed by beef professionals on the ground in Pennsylvania.

This report provides detailed examination of characteristics such as location, type and size of operation, age of producers and their tenure in the beef industry, their future plans, greatest challenges, preferred methods of education and outreach and topics for educational programming. Production and marketing data provides a wealth of information on housing and confinement, pasture management, nutrition, how producers buy and sell calves and finished cattle, and specialty marketing.

Major findings:

- Most producers have multiple operations, in particular commercial cow-calf, retail fresh or freezer beef, and beef for personal use.
- Many producers are keeping their cattle from calf to slaughter and need outreach and education to support life-cycle production.
- Producers want more information about the economics of beef production, ranging from costs of inputs to market pricing.
- Nutrition was listed as the number one educational program producers wanted more of.
- A large number of respondents reported they are targeting both grass fed and natural markets, and the data raises questions about appropriate use pasture management and supplementation on pasture.
- Producers in some areas of Pennsylvania appear to be under-represented in the survey and possibly underserved.
- Government regulations are a challenge for many.
- The most preferred outreach methods include online videos, farm tours, regional meetings and one on one consultation. A number of producers expressed concern about the inaccessibility of internet/technology.

These and other findings, along with accompanying recommendations, will inform the work of the PABPWG in making a positive impact on the Pennsylvania beef industry.
1. INTRODUCTION

The following is a summary of survey data commissioned by the Pennsylvania Beef Producers Working Group (PABPWG) through Penn State Extension. The PABPWG comprises four key beef cattle organizations in the state: Penn State Extension, Pennsylvania Beef Council, Pennsylvania Cattleman’s Association, and the Center for Beef Excellence. Their mission statement is “PA producers and stakeholders working together to monitor beef industry needs in order to create educational opportunities that improve performance and production.”

In 2015 with funding from the PA Department of Agriculture (PDA), the PABWG commissioned Penn State Extension to conduct a series of listening sessions around the state to identify and understand challenges and concerns in the Pennsylvania beef industry. Those listening sessions involved over 100 producers and led to a more intensive project to survey beef producers. The survey was conducted in the spring of 2017 by Penn State Extension in collaboration with the Center for Survey Research at Penn State Harrisburg, again with the support of PABPWG through PDA.

The survey’s purpose is twofold. The first purpose is to create baseline data about beef producers in the state: their operations, production and marketing methods, the size of their operations, their age and tenure in the beef business, where they are in the state and other basic data. The survey provides an opportunity to gather detailed data on confinement, grazing, weaning and other specific practices, as well as determining where and how cows and calves are bought and sold. This data will have great value in helping the working group characterize the complex and varied beef industry in Pennsylvania.

The second purpose of the survey is to drill down into the information gathered in the listening sessions to identify specific challenges and opportunities for producers. In the listening sessions, participants identified general areas of interest. For instance participants spoke about the need for better finishing and conditioning, but the listening session format didn’t provide an opportunity to find out which aspects of finishing and conditioning are concerns. The survey explores specific issues and topics for education and outreach, how producers prefer to obtain information, and short-term plans over the next five years for herd expansion or reduction. The survey’s approach combines multiple choice answers and open-ended questions, which provides a wealth of detailed information about specific producer concerns.

This report summarizes the data collected in the surveys, identifies important findings and provides recommendations for the PABPWG. Ultimately the survey findings will be of high value in guiding education and outreach to sustain the Pennsylvania beef industry.

2. MATERIALS AND METHODS

Distribution and Survey Size

One of the major challenges in conducting this survey was understanding the size of the PA beef industry. The best available information is drawn from USDA’s National Agricultural Statistics Service (NASS), whose most recent survey data is from 2012. NASS identified 25,100 cattle operations in Pennsylvania, of which 11,800 were directly involved in beef production. The remaining 13,300 are principally dairy operations.

Identifying contact information for even a small number of the nearly 12,000 beef producers in the state proved a daunting task. As the survey data indicates, there are many very small producers (less than 10 cattle) and many others whose main source of on-farm income is from non-beef operations. These producers may not be working with any of the organizations represented in the PA Beef Producers Working Group and do not
necessarily show up on industry listings. The best available mailing and email lists from working group sources produced 3,815 direct contacts to receive the survey. This was supplemented by an email survey solicitation sent by the PA Beef Council to its proprietary list of approximately 2,100 producers who participate in the state’s checkoff program, which almost certainly had significant duplication with the list of 3,815 direct contacts. Ultimately the working group agreed to employ an informal approach which included solicitations by email, newsletters, web sites, face-to-face promotion at industry meetings and advertisement in Morning Ag Clips, a widely-read agricultural news clipping service. Details of the survey distribution can be found in the Report of Methods prepared by the Penn State Center for Survey Research (see appendix).

**Paper versus Web Responses**

The Center for Survey Research created a ‘cleaned’ distribution list from the various sources provided by the working group, eliminating duplications and out-of-state addresses as much as possible. Those who stated a preference for email (this information was included on one of the source lists) received an email solicitation to the survey (1,432); the remainder received a mailed survey with return envelope (2,383). Thus a total of 3,815 solicitations to take the survey were sent out initially by the Center for Survey Research.

Of the 2,383 people who received mailed survey requests, 446 used a paper option: the survey was completed on paper and returned by mail or fax. Of the 1,435 people who received surveys by email, 215 were completed on line. This resulted in a combined total of 661 surveys that were completed on paper or online from the initial distribution by the Center. An additional 122 surveys were completed online. It is not possible to say whether the individuals who completed these additional surveys received the mailed survey and chose the online option, or were solicited by email by the PA Beef Council, by another working group member via email or face-to-face meeting, or by advertisement in Morning Ag Clips.

We can say that 446 of the 2,383 producers on the mailing list responded by paper – 18.7% of those that were solicited by mail. But we do not know how many individuals who received the mailed solicitation chose to use the web link instead. The raw data showing us that 446 of the 783 surveys received were on paper (57%) would seem to indicate a preference for print rather than web-based materials. However a wiser course would be to assume a relatively even division between paper and web preferences, given the unknowns in the survey distribution.

**Validity of the Data**

How much of the PA beef industry is represented in the survey? A total of 783 producers responded to the survey (although not every respondent answered every question – one question may have 745 responses, another 770: the total number of responses varies by question). Using the NASS figure of 11,800 beef producers, the respondents constitute 6.6% of producers. However, this 6.6% is not necessarily representative of the 11,800 beef producers in Pennsylvania. This is because in statistical terms, the survey distribution methods did not produce a random sampling of producers. For instance, we cannot say with certainty that the proportion of cow-calf producers among survey respondents is representative of the number of cow-calf producers in the state. Nor can we say that because a high number of respondents are from one county, that there is actually a higher concentration of beef producers in that county than in other counties.

However, many of the survey findings confirm national trends in the beef industry as well as trends observed by beef professionals on the ground in Pennsylvania. The baseline data provides a better understanding of the characteristics of the state’s beef industry than has been available, and serves as a starting point for developing targeted education and outreach to address specific practices.
More importantly, the survey’s goal of identifying both topics and methods for outreach and education provides the working group with the data it needs to set a clear direction for improving beef industry production and performance in Pennsylvania. The survey identifies trends in beef production, such as the combination of operations under one roof, an interest in expanding herd size, and a growing interest in specialty marketing.

**Geographic Categories**

Survey responses were received from producers in 64 of Pennsylvania’s 67 counties (no respondents from Philadelphia, Delaware or Pike counties). This results in small numbers of respondents per county (if divided equally, there would be roughly 11 operations, or less than 2%, in each county). To make the geographic distribution of respondents more meaningful, the county data was combined into multi-county areas based on the method Penn State Extension recently employed to define service areas. There are ten Extension Areas (plus the three major metropolitan counties of Allegheny, Philadelphia and Delaware). Figure 1 shows the Penn State Extension Areas, some of which are quite large and include up to nine counties.

![Penn State Extension Areas](image)

These ten areas have been used consistently in the analysis of the survey data and appear throughout this report. They are helpful in identifying regional trends. Note that much of the original survey data has been sorted by county and specific data sets can be provided to the PABPWG upon request. However, in keeping with the discussion above of the validity of the data, we caution against drawing conclusions from the data at the county level.

### 3. CHARACTERIZATION

**Type of Beef Operation**

To understand the breadth of operations for Pennsylvania beef producers, the survey asked respondents to identify their primary operation along with other beef operations in which they are involved. Both questions were posed as multiple-choice. Respondents could choose only one operation as their primary, but could choose several operations as others in which they are involved. The distribution of primary beef operations generally follows expected patterns, with the exception of background/stocker which seems to be disproportionately low at only 13 respondents (1.7%; Figure 2).
# of respondents  | % of 783 respondents
--- | ---
commercial cow-calf | 283 | 36.3%
purebred cow-calf | 122 | 15.7%
retail fresh or freezer beef | 107 | 13.7%
feedlot/finisher | 105 | 13.5%
personal use | 99 | 12.7%
dairy beef | 50 | 6.4%
backgrounder/stocker | 13 | 1.7%

One possible explanation for the low number of respondents identifying backgrounder/stocker as a primary operation is that they were not familiar with the terminology used in the survey, and therefore chose another category such as feedlot/finisher. However when primary and other operations are combined, the number of backgrounder/stockers increases from 13 to 71 (Figure 3), so another explanation is that respondents who are engaged in backgrounder/stocker operations don’t consider it their primary beef operation but rather as a secondary operation.

There is a notable increase in all types of operations when primary and other operations are combined. This confirms the on-the-ground experience of members of the PA Beef Producers Working Group, along with data received from statewide listening sessions conducted in 2016, which indicates that many beef producers are involved in more than one type of operation. (For instance a commercial cow-calf producer may also have a small retail freezer beef operation.) The number of respondents with these types of blended operations may indicate the need for new approaches to education and outreach: traditional methods that target specific operations may be missing a number of producers. There may also be implications for specific production practices: producers can benefit from help in adapting practices such as grazing and confinement to suit more than one type of operation.

### Figure 3. Primary and other beef operations

**NOTE:** The data displayed in this table has been modified from the raw data in the survey: some respondents identified a specific operation as both a primary and other operation, which created inadvertent duplication. (For instance a respondent may have selected ‘feedlot’ for his primary operation, and then selected ‘feedlot’, ‘purebred cow-calf’ and ‘retail beef’ as his other operations. In order to avoid counting feedlot twice, the duplicated data ‘feedlot as other operation’ was removed.) Also note that personal use was not offered as an answer choice for the question ‘What other beef operations are you
involved in’ since we assumed that respondents primarily producing beef for personal use would not have other types of beef operations.

Location of Beef Operation
Survey respondents represented all but 3 of Pennsylvania’s 67 counties: there were no respondents from Delaware, Pike or Philadelphia counties. There were 744 responses to this question. Respondents ranged from 1 each in Forest, Monroe and Wyoming counties, to 46 in Lancaster County. The largest numbers of respondents by county are shown in Figure 4 below:

<table>
<thead>
<tr>
<th>Location of Largest Number of Survey Respondents</th>
<th># of respondents</th>
<th>% of 744 respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lancaster</td>
<td>46</td>
<td>6.2%</td>
</tr>
<tr>
<td>Westmoreland</td>
<td>34</td>
<td>4.6%</td>
</tr>
<tr>
<td>Berks</td>
<td>30</td>
<td>4.0%</td>
</tr>
<tr>
<td>Armstrong</td>
<td>21</td>
<td>2.8%</td>
</tr>
</tbody>
</table>

Figure 4. Location of largest number of survey respondents

While it may be tempting to draw conclusions concerning the distribution of beef operations in Pennsylvania from the survey data, such conclusions would be conjecture at best. As discussed in the Materials and Methods section, the survey may not have been distributed equally across Pennsylvania, and therefore does not produce a representative sample. So while data showing a larger number of respondents in Lancaster County seems consistent with the field experience of Working Group members, we are unable to determine whether other counties might have equally large numbers of producers who did not receive or respond to the survey. Despite these uncertainties, the location data when used with caution (and in terms of areas rather than counties) can inform outreach and education efforts.

The Extension area map was used to reduce respondents to areas as opposed to the 67 counties. Area 6 has the most respondents followed by Areas 9 and 1 (Figure 5). The same Extension Area map is used to show survey respondents by type of primary beef operation. Figure 6 shows the location of survey respondents who identified feedlot/finisher as primary operation. Area 6 had the most respondents followed by areas 9 and 1.
As discussed above, this data must be used with caution. However, there are some clusters among the 744 respondents who identified a geographic location, as can be seen on Figure 6 and the other maps of primary operations which are included in the appendix.

- Southeastern PA (Area 9) has over 40% of the respondents who identified feedlot/finisher as their primary operation
- Southeastern and southcentral PA (Areas 8 and 9) have nearly 50% of respondents who identified dairy beef as their primary operation
- Southwestern PA (Areas 6 and 7) has nearly 50% of the 122 respondents who identified purebred cow-calf as their primary operation
- Western PA (Areas 1 and 6) has over 30% of respondents who identified commercial cow-calf as their primary operation
- Western PA (Areas 1 and 6) has 40% of respondents who identified their primary operation as retail fresh or freezer beef

**Size of Beef Operation**

The size of a beef producer’s operation can have implications for operations ranging from herd health to marketing and business planning. Survey respondents were asked to identify herd size in the following question ‘On an average, how many cattle do you run per year? (For instance, cattle marketed through a feedlot, breeding age females and bulls, stocker capacity).’

<table>
<thead>
<tr>
<th># cattle run per year on average</th>
<th># of respondents</th>
<th>% of 776 respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 or fewer</td>
<td>152</td>
<td>19.6%</td>
</tr>
<tr>
<td>11 – 20</td>
<td>179</td>
<td>23.1%</td>
</tr>
<tr>
<td>21-50</td>
<td>212</td>
<td>27.3%</td>
</tr>
<tr>
<td>51-100</td>
<td>129</td>
<td>16.6%</td>
</tr>
<tr>
<td>101-500</td>
<td>86</td>
<td>11.1%</td>
</tr>
<tr>
<td>501 – 1,000</td>
<td>12</td>
<td>1.5%</td>
</tr>
<tr>
<td>Over 1,000</td>
<td>6</td>
<td>0.8%</td>
</tr>
</tbody>
</table>

![Figure 6. Number of feedlot/finishers by Extension Area](image)

Of the 776 producers who responded to this question, 86.6% have 100 cows or fewer on average, of which nearly 20% are truly small herds of less than 10 cattle (Figure 7). It may seem intuitive that those with small
numbers of cattle are raising them for personal use, but a more detailed analysis of the data reveals that this is not necessarily the case. Figure 8 shows the number of respondents who run an average of 50 or fewer cattle, sorted by their primary beef operation. As would be expected, nearly 100% of survey respondents who raise beef primarily for personal use have less than 50 cattle. However there is also a high number of commercial cow-calf operations running 50 or fewer cattle: 195 of the 282 survey respondents who are primarily commercial cow-calf.

![Figure 8. Respondents with 50 or fewer cattle by primary operation](image)

**NOTE:** The data displayed in Figure 8 is sorted to show the **primary beef operation** of survey respondents, but the number of cattle reflects all of the operations that a respondent is involved in. For instance, a respondent may have 25 cattle in commercial cow-calf and 20 in retail freezer beef. All 45 cattle would be counted as commercial cow-calf when answering the question ‘on average how many cattle do you run’ even though 20 of the cattle are in freezer beef. This can cause an artificial inflation in the number of cattle per primary operation.

One way to use this data is to look at the average herd size for each primary operation. Figure 9 shows that, according to survey data, the majority of commercial cow-calf operators run between 21 and 50 cattle on average. It is impossible to say whether the majority of all commercial cow-calf operators in Pennsylvania share this characteristic. Also, 100 survey respondents reported that they have commercial cow-calf as an ‘other operation’ in addition to their primary operation but they are not represented on this chart (their cattle were counted under a different primary operation, see note on Figure 8 above). But clearly there are enough commercial cow-calf operators with small herds to justify targeted programming. Depending on the nature of the education and outreach, it may make more sense to target those cow-calf operations who run 100 cattle or less.
Another example is shown below (Figure 10) for respondents whose primary operation is feedlot/finisher. In addition to the 105 survey respondents who identified feedlot/finisher as their primary operation, 159 respondents reported feedlot/finisher as a secondary operation and are not represented in this chart. In other words, more respondents reported feedlot/finisher as a secondary operation (159) than as a primary operation (105). In this instance, more data collection may be warranted if the number of cattle run is a critical factor in planning education and outreach for feedlot/finishers.

The complete set of graphs showing average number of cattle by each primary beef operation can be found in the appendix.

**On-Farm Income from Beef Operation**
The survey asked producers what percentage of on-farm income is derived from beef production. Of those that generate on-farm income, 67.2% derive less than half of their income from beef production, as compared to 25.8% who make more than half of on-farm income from beef (Figure 11). These respondents may have other on-farm operations that support their beef operations, or conversely they may be using their beef operations to support other on-farm operations. Either way, it’s worth noting that many beef respondents have other on-farm operations which can affect business plans, succession planning, and a variety of production practices such as housing and grazing.
<table>
<thead>
<tr>
<th>% of On-Farm Income from Beef</th>
<th># of respondents</th>
<th>% of 742 respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>No income from beef</td>
<td>51</td>
<td>6.9%</td>
</tr>
<tr>
<td>Less than 25%</td>
<td>340</td>
<td>45.8%</td>
</tr>
<tr>
<td>26 – 50%</td>
<td>159</td>
<td>21.4%</td>
</tr>
<tr>
<td>51 – 75%</td>
<td>67</td>
<td>9.0%</td>
</tr>
<tr>
<td>Over 75%</td>
<td>125</td>
<td>16.8%</td>
</tr>
</tbody>
</table>

Figure 11. Percentage of on-farm income from beef

This data raises more questions than it answers, such as how does on-farm income compare to off-farm income? What percentage of all a producer’s income comes from beef production? Can we consider a beef operation profitable that brings in less than 50% of on-farm income? While it is not possible to determine whether an operation is profitable from this data, it is useful to look at what types of beef operations seem to be bringing in higher levels of on-farm income. Figure 12 shows us that commercial and purebred cow-calf productions tend to generate a higher percentage of on-farm income than other types of beef operations.

![Figure 12. Beef operations generating over 50% of on-farm income](image)

Age of Respondents and Tenure in Beef Production
Survey respondents were asked ‘What is your age’ in an open-ended format, i.e. each participant wrote his or her age as a response. There were 718 participants (91.6%) who chose to answer this question. The average age of survey respondents is 57.1 years. This data is quite consistent with other sources of information on the age of farmers, both nationally and within Pennsylvania. According to the NASS 2012 Census of Agriculture, the average age of farmers in the nation in 2012 was 56.3 years, and in Pennsylvania the average age was 53.7 years (quickstats.nass.usda.gov).

The age responses were grouped into categories to make the data more usable. Figure 13 shows that the largest number of responses is in the age categories ‘55-64’ and ‘65 and over’. Combined, they indicate that 454 survey respondents (63.2%) are age 55 and over.

<table>
<thead>
<tr>
<th>Age of respondent</th>
<th># of respondents</th>
<th>% of 718 respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-34</td>
<td>56</td>
<td>7.8%</td>
</tr>
<tr>
<td>35-54</td>
<td>208</td>
<td>29.0%</td>
</tr>
<tr>
<td>55-64</td>
<td>224</td>
<td>31.2%</td>
</tr>
<tr>
<td>65 and older</td>
<td>230</td>
<td>32.0%</td>
</tr>
</tbody>
</table>

Figure 13. Age of respondents
Age is closely related to tenure – length of time – in the beef business. The survey respondents are mostly long-time producers (Figure 14). Over 65% reported they have been in the business for more than 15 years.

Figure 14. Tenure in the beef business

It seems intuitive that older producers have been in the business longer. The survey data supports this premise: a large majority of respondents who are 65 and older have been in the beef business for more than 15 years. However as Figure 15 shows, a large majority of younger respondents, age 35-54 and 55-64, have also been in the business for more than 15 years, so it would be inaccurate to equate experience with age for beef producers.

Figure 15. Tenure in the beef industry by age

The data also indicates that some producers are getting into the business later in their careers. Figure 16 shows the tenure in beef production for survey respondents ages 55-64. Nearly 17% of this group report being in beef production for 15 years or less.
This may reflect what we observe anecdotally as a growing trend towards farming as a retirement or semi-retirement activity. However we cannot determine if retirement operations are intended as a significant income-producing activity. When data concerning length of time in beef production is analyzed by % of on-farm income, the data is inconclusive. Nonetheless, if education and outreach strategies are based in part on the age of the target audience, consideration should be given to reaching producers in this age group.

4. FUTURE PLANS

In order to better understand and assist with the future operational pursuits of beef producers in Pennsylvania, we asked about their 5 year beef production plans. Survey respondents were asked to choose one response.

Two different figures are shown below to explain the results. Figure 17 provides information on the overall categories for future plans. These include: getting out of production, decreasing cattle, keeping the number of cattle the same or adding cattle. For this figure, the various levels of adding cattle (less than 10, 10 to 50, etc.) have been combined into one category of ‘add cattle’.

<table>
<thead>
<tr>
<th>5 year beef production plans</th>
<th># of respondents</th>
<th>% of 743 respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keep number of cattle the same</td>
<td>327</td>
<td>44.0</td>
</tr>
<tr>
<td>Add cattle</td>
<td>317</td>
<td>42.7</td>
</tr>
<tr>
<td>Decrease number of cattle</td>
<td>73</td>
<td>9.8</td>
</tr>
<tr>
<td>Get out of beef production</td>
<td>26</td>
<td>3.5</td>
</tr>
</tbody>
</table>

The results show that respondents overwhelmingly plan on retaining or expanding their cattle numbers. Most respondents plan on keeping the number of cattle the same. This was reported by 327 of the respondents (44.0%), slightly ahead of the 317 that plan to add cattle (42.7%). Decreasing their cattle herd is planned by 73 producers (9.8%), while only 26 plan to get out of beef production (3.5%).

Figure 18 includes all of the categories that respondents were able to choose from, and provides a breakdown of the number of cattle respondents are planning to add. This allows more detail and review as to the degree by which producers plan to add cattle.

While keeping the number of cattle the same remains the highest response, adding 10 to 50 cattle and adding fewer than 10 cattle are second and third, ahead of decreasing cattle. The level by which these two categories
of adding cattle are ahead of decreasing cattle is noteworthy. Plans to add 10 to 50 cattle are reported by 146 respondents (19.7%), and 129 (17.4%) plan on adding fewer than 10 cattle. In comparison, there are 73 (9.8%) respondents planning to decrease their number of cattle. The relationship of these five year plans to other components of the beef industry will be addressed later in this section.

The fifth ranked category is adding 51 to 100 cattle, (28 respondents or 3.8%). The remaining three categories in order of rank are: get out of beef production (26 respondents or 3.5%), adding 101 to 500 cattle (12 respondents or 1.6%) and adding 500+ cattle (2 respondents or 0.3%).

<table>
<thead>
<tr>
<th>5 year beef production plans</th>
<th># of respondents</th>
<th>% of 743 respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Get out of beef production</td>
<td>26</td>
<td>3.5</td>
</tr>
<tr>
<td>Decrease cattle</td>
<td>73</td>
<td>9.8</td>
</tr>
<tr>
<td>Keep number of cattle the same</td>
<td>327</td>
<td>44.0</td>
</tr>
<tr>
<td>Add fewer than 10 cattle</td>
<td>129</td>
<td>17.4</td>
</tr>
<tr>
<td>Add 10 to 50 cattle</td>
<td>146</td>
<td>19.7</td>
</tr>
<tr>
<td>Add 51 to 100 cattle</td>
<td>28</td>
<td>3.8</td>
</tr>
<tr>
<td>Add 101 – 500 cattle</td>
<td>12</td>
<td>1.6</td>
</tr>
<tr>
<td>Add 500+ cattle</td>
<td>2</td>
<td>0.3</td>
</tr>
</tbody>
</table>

Figure 18. Five-year production plans – all categories

The data from these two tables is consistent with the national trends for future plans in beef production. Nationwide, the beef cattle industry has been in expansion mode since the aftermath of the drought of 2012 when cow herd numbers were reduced to the lowest population since the 1980’s. Herds continue expanding although the expansion is slowly stabilizing (Cattle Networking 2017).

A look into 5 Year Producer Plans by specific producer categories gives a more in-depth view of how to plan for future educational and service needs. It’s important to note that the figures reported in this section are based on the reported primary beef operation, and do not reflect secondary operations.

Overall results for future plans by primary beef operation predominantly show stability and expansion. As shown on Figure 19, adding cattle and keeping the number of cattle the same are the top two plan types for every primary beef operation type. Those with ‘adding cattle’ as the most reported plan and ‘keeping the number of cattle the same’ as second include: dairy beef, purebred cow-calf and commercial cow-calf operations. Those with ‘keeping the number of cattle the same’ as the top plan type and ‘adding cattle’ as second are: personal use, retail or freezer beef, backgrounder/stocker and feedlot/finishers.

One standout item from the data is the number of commercial cow-calf operations that plan on adding cattle (124) and keeping the number the same (111). These figures are clearly the highest among respondents for all primary beef operation types for these categories.
Survey results show that future plans for adding cattle well exceed plans for getting out of the beef business. However, there is variation when looking at factors such as length of time in the beef industry or age of producer. For example, adding cattle is the top plan for four out of five categories of beef operations based on time in the beef business. Keeping the number of cattle the same was the top category for producers that have been in the beef business more than 15 years (Figure 20).

Just as length of time in the beef industry affects future plans, so does the age of the respondents. Survey results show that adding more cattle is the top future plan for the two youngest age categories -- 18 to 34 year olds and 35 to 54 year olds (Figure 21). Respondents 55 to 64 years old and those 65 or older reported their top plan as keeping the number of cattle the same. However, adding cattle was their second highest plan.

Also worthy of note is the number of respondents 65 or older that plan on getting out of beef production (18). This number is well above the next highest age category (55 to 64) with 4 respondents getting out of the beef business. Overall, the data for producers 65 or older reveal an important and varied role that this age group
plays in the beef industry. While they are most likely to get out of the beef business (18 out of 228 producers or 7.9%), they also have the highest number of respondents that plan on keeping their number of cattle the same (115). In addition, they report 69 producers that plan on adding cattle.

The data from the length of time in the beef cattle business and age categories provides a number of items for consideration. First, a number of respondents (primarily with the most experience or age) will be getting out of the beef industry and may be in need of materials or training on how to plan for their transition and farm succession.

Additionally, consideration could be given to an effort of recruiting or mentoring new and younger beef producers. The expansion and retention plans for 18 to 34 year olds and those in the beef business for less than 1 year and 1 to 5 years are already relatively strong; mentoring could potentially strengthen such operations as well as add new producers to the limited number of new and/or young producers.

In order to show geographical dispersion of producers that plan to retain or expand their herd size, Figure 22 contains the number of respondents that plan on keeping their number of cattle the same or adding cattle. Overall, the Extension Areas in the southern and western part of the state contain the highest levels of these types of operations. This figure illustrates the need for programmatic efforts geared toward expansion in the NW, SW, SC, and SE parts of the state.
When respondents do plan on adding cattle, the degree to which they plan on doing so is predominantly for ‘10 or less’ or ‘10 to 50 cattle’. The two primary exceptions, as could be expected, are respondents that run 501 to 1,000 cattle or over 1,000 cattle. Of the 11 respondents that run 501 – 1,000 cattle, 3 (28%) plan on adding 101 to 500 cattle. Of the 5 respondents that run over 1,000 cattle, 2 (40%) plan on adding 101 to 500 cattle, while 1 plans on adding more than 500. The actual number of respondents that are planning to add 501 to 1,000 or over 1,000 cattle is small, yet these figures do show that a few operations are planning to make major investments in beef cattle.

The survey data shows plans to add 101–500 cattle operations in Area 3 (1 respondent), Area 6 (2 respondents), Area 7 (3 respondents), Area 8 (3 respondents), and Area 9 (3 respondents). In addition, plans to add operations of more than 500 cattle were reported for Area 2 (1 respondent) and Area 8 (1 respondent).

While many of the educational materials and services for beef operations will be similar no matter what the size, there are additional considerations for very large operations. These can include items such as regulatory considerations and neighbor/public relations. As such, it is recommended that educational materials and assistance on these subject areas be made available to all producers, but with an additional emphasis on larger producers.

5. PRODUCTION AND MARKETING

General Herd Management – Housing, Confinement and Grazing

The general herd management of Pennsylvania beef producers is dependent on what they responded was their primary operation ($P < 0.01$). Most respondents use a combination of grazing and confinement with 56% ($n = 432$) in their operations (Figure 23). The most common type of housing used by survey respondents was a bedded pack, with 62.3% of respondents (Figure 24). However, a close second was bank barns. Bank barns and bed packs are excellent facilities for cattle in cold climates which is likely why they represent the majority in this Pennsylvania survey. However, both can have a buildup of moisture and poor ventilation and these issues should be addressed with producers using these facilities. The prevalence of outdoor lots in Pennsylvania (39.2%) is likely due to producers utilizing winter feeding lots to conserve pastures. Therefore, the interpretation of this number as ‘confinement’ should be used cautiously.
Of the 772 respondents that responded to the survey questions on herd management, 89% are using some grazing in their operations. The intensity of the grazing management is dependent ($P < 0.01$) on how respondents identified their primary operation. For example, those raising beef for personal use or raising dairy beef are most likely to use continuous grazing. However, cow-calf producers, whether they are commercial or purebred are more likely to manage grazing more intensively through rotation, intensive rotational, or strip grazing. Of the 682 respondents to this survey question, only 2 appear to be grazing tall grass. This is likely a product of the environment and land usage in Pennsylvania and may not necessarily be an area to focus efforts on.

As the number of cattle on an operation increases up to 500 head, the proportion of respondents using continuous grazing decreases ($P < 0.01$). Although not statistically significant ($P = 0.62$), extension Areas 1 and 9 are the 2 areas with the greatest proportion of respondents using continuous grazing (31% and 37% of all graziers in the area, respectively; Figure 25). Thus, these areas should be considered target areas for programs on grazing management. Interestingly enough, Area 1 also has the second greatest number of respondents utilizing intensive rotational grazing. Perhaps grazing producers in the area should be showcased to demonstrate and discuss their reason for utilizing this technique.
Impact of Specialty Markets

Confinement is also widely utilized in Pennsylvania. While climate likely plays a role in the combination of confinement and grazing, another possible explanation may be the number of specialty markets in Pennsylvania. In fact, 48% of survey respondents stated that they target some specialty market. Most of the respondents targeting specialty markets are targeting natural markets (54%), which are largely undefined although some commercial programs exist in Pennsylvania. Although there is a lot of popular press and commercialization of organic foods, only 1% (n=3) of the beef producers surveyed are targeting markets in a certified organic market, and 2 of those operations are purebred cow-calf operations. This may mean that efforts focused on certified organic farming at this time may not be worthwhile to the Pennsylvania beef industry. The remainder of the specialty markets were grass-fed (35.5%), breed-specific markets (like Certified Angus Beef, 38.5%), and others (15.1%). Due to the heavy influence of grazing and the fact that almost 40% of respondents are targeting grass-fed markets, this is an area of programming that could benefit many producers in Pennsylvania.

When producers target specialty markets, such as grass-fed or natural programs, this appears to shift their use of grazing or confinement ($P < 0.01$; Figure 26) It is important to note that respondents could select multiple specialty markets when answering the survey. For example, there may be some overlap in those marketing for grass-fed (133 of the 272 respondents to the question) and natural (202 of the 272 respondents to the question) cattle, two of the largest groups.

![Figure 26. General management used by respondents targeting specialty markets](image)

**NOTE:** The data displayed in this chart is sorted to show the **general management** of survey respondents targeting specialty markets, but a producer could be involved in more than one specialty market. For instance, a producer may market his beef as both grass-fed and natural. Each response would be counted as an individual response. This can cause an artificial inflation in the number of respondents targeting specialty markets.

Of the finished cattle marketed through specialty markets, a staggering 90% (n=272) are being marketed directly to the consumer as either fresh or freezer beef. The next largest outlet for these specialty calves is through the sale barn (41%). Marketing of these specialty products is an area for greater emphasis in programmatic efforts. For example, marketing for beef specialty markets through the sale barn may represent a lost advantage to the producer if the right buyers are not present when their natural calves are sold. Therefore, where to target sales and the economics of the specialty markets should be addressed with each program.
Supplements on Pasture

While many respondents use some combination of housing and grazing, 90% of respondents feeding cattle on pasture provide some type of supplement, and most provide multiple options (Figure 27). In many cases, the pasture supplement is supplemental hay (78.6%). Unfortunately, we do not know if this is due simply to a need for winter feeding or if perhaps this number is representative of a great deal of overstocked summer pastures and the need for year round supplementation of energy on pasture. A great deal of respondents mentioned that they also supplement with grain (45.7%). Again, whether this is representative of a great deal of growing cattle being left on pasture but also fed, or if this represents some deficiency of pasture to meet the energy needs of the Pennsylvania cattle population, we cannot say from this survey. The reduction in number of respondents that supplement hay or grain on pasture as operation size increase is likely just caused by the shift to increased confinement when producers have over 100 head of cattle and the relatively low proportion of respondents with cattle farms over 100 head (Figure 28).

<table>
<thead>
<tr>
<th>Supplements used on pasture</th>
<th>Number of respondents</th>
<th>% of 696 respondents (1,741 total responses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hay (wet or dry)</td>
<td>547</td>
<td>78.6</td>
</tr>
<tr>
<td>Grain mix</td>
<td>318</td>
<td>45.7</td>
</tr>
<tr>
<td>Mineral blocks</td>
<td>377</td>
<td>54.2</td>
</tr>
<tr>
<td>Loose minerals</td>
<td>312</td>
<td>44.8</td>
</tr>
<tr>
<td>Licks tubs or wheels</td>
<td>146</td>
<td>21.0</td>
</tr>
<tr>
<td>Other</td>
<td>34</td>
<td>4.9</td>
</tr>
<tr>
<td>None/ I do not supplement</td>
<td>7</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Figure 27. Type of pasture supplement utilized

Figure 28. Hay or grain used for pasture supplementation in different sized operations

NOTE: The data displayed in this chart is sorted to show the supplementation strategies of survey respondents by herd size, but a producer could feed both hay and grain. Each response would be counted as an individual response. This can cause an artificial inflation in the number of respondents who supplement with either hay or grain mix. Still, the most common supplement, regardless of operation size, is grain mix.

The most popular type of mineral supplementation is a mineral block, and 54.2% of respondents used a mineral block on pasture (377 responses; Figure 27) with only 44.8% (312 responses) using loose minerals and 21% feeding lick tubs or wheels (146 responses; ADDITIONAL FIGURES IN APPENDIX). From a nutritionist’s viewpoint, the loose minerals are preferable to mineral blocks as animals tend to consume them better and they are freshened more often. As the size of the cattle operation increases, respondents use proportionately more loose
minerals and fewer mineral blocks (P < 0.01; Figure 29). Although it represents a very small proportion of the total responses, the 7 respondents not using any supplementation on pasture are 1% of the total population. In Pennsylvania, all cattle on pasture need at least mineral supplements. This point should be stressed in future meetings wherever possible. Many producers will cite the cost of minerals ($700 to $800 per ton) as a reason to not feed them. This is a falsely inflated number because minerals are most typically fed at a rate of 4 ounces per animal each day. Thus, minerals cost beef producers 2 cents per head per day. The advantages in reduced morbidity (and mortality), reduced fertility issues, and increased rates of gain far out way this cost.

![Figure 29. Mineral source used for pasture supplementation in different sized operations](image)

**NOTE:** The data displayed in this chart is sorted to show the supplementation strategies of survey respondents by herd size, but a producer could be using more than one supplementation strategy. These 3 in particular were separated out because, in general, we would not expect producers to feed multiple mineral supplements. Thus, this shows the increasing use of loose minerals as herd size increases.

### Conservation Techniques

When the producers were questioned about the conservation techniques they use when grazing cattle, many replied they used stream bank fencing (47.0%). The conservation techniques of respondents are dependent on the number of cattle run per year (P < 0.01). Respondents with 21 to 500 cattle are more likely to use conservation techniques in general and are also more likely to use more than one technique when compared to those with 20 cattle or less. For respondents that run 10 or less cattle, the conservation techniques most used are streambank fencing (34 out of 130 respondents with 10 or fewer cattle) and sacrifice lots for winter (35 out of 130 respondents with 10 or fewer cattle). The most popular conservation techniques across the board are stream bank fencing, sacrifice lots for the winter, and manure storage (Figure 30).

<table>
<thead>
<tr>
<th>Conservation techniques employed by beef producers</th>
<th>Number of respondents</th>
<th>% of 670 respondents (1,497 total responses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stream bank fencing</td>
<td>315</td>
<td>47.0</td>
</tr>
<tr>
<td>Sacrifice lots for winter</td>
<td>275</td>
<td>41.0</td>
</tr>
<tr>
<td>Manure storage</td>
<td>261</td>
<td>39.0</td>
</tr>
<tr>
<td>Improved feeding pad</td>
<td>245</td>
<td>36.6</td>
</tr>
<tr>
<td>Stream crossings</td>
<td>226</td>
<td>33.7</td>
</tr>
<tr>
<td>I do not use conservation techniques</td>
<td>92</td>
<td>13.7</td>
</tr>
<tr>
<td>Other</td>
<td>83</td>
<td>12.4</td>
</tr>
</tbody>
</table>

![Figure 30. Conservation practices employed by survey respondents](image)
Management of Pre-weaned Calves
The management of pre-weaned calves (use of two stage weaning, creep feeding and vaccinations) is dependent on how many cattle the respondents run per year \( (P = 0.05) \). For respondents that run less than 50 head per year, the management technique most used is creep feeding which is used by over half the respondents. Although management depends on herd size, the duration from wean to ship does not \( (P = 0.70) \). The majority of respondents hold calves 45 days or more (72.0%) prior to shipping, and only 5% of producers ship the calves directly to the feedlot. Holding calves prior to feedlot entry is an important management tool to mitigate sickness in the feedlot. Nationwide, less than 45% of calves are held after weaning prior to shipment to the feedlot (Ohio State University Extension, 2017).

Sales and Markets for Calves and Cows
Typically sale of cattle is dependent on the primary beef operation of the respondent \( (P < 0.01) \). The majority of respondents who produce feedlot/finisher cattle (99%), retail fresh or freezer (93.4%), and dairy cattle for beef (81.1%) sell them as finished. As one would expect, the majority of backgrounded cattle are sold as yearlings (61.54%). Although the majority of respondents that are selling from their commercial cow-calf operations sell the most of their animals as weaned calves \( (n = 181; \text{Figure 31}) \), many also sell their cattle as finished cattle \( (n = 132) \). These values shift dramatically when we look at the purebred cow-calf operations (Figure 32). Purebred cow-calf operations are selling predominantly breeding stock (73.7%).

![Figure 31. Sale age of cattle from commercial cow-calf operations](image)

*Note: There were 274 respondents from commercial cow-calf operations that responded to the question regarding how they sell their feeder calves out of the 283 respondents that identified cow-calf as their primary operation. This data shows that many producers must be using a variety of outlets for their cattle. However, the 2 most common sales appear to be either as weaned calves or as finished cattle. This graph further illustrates the number of respondents that may be birth-to-finish operations which is not common nationwide.*
Figure 32. Sale age of cattle from purebred cow-calf operations

Note: It is important to note that the obvious greatest difference between the commercial and the purebred cow-calf operators is the sale of breeding stock, but there are also fewer purebred operations (118 purebred operation respondents to this question vs 274 commercial cow-calf for the same question). Proportionately, purebred respondents are just as likely to take calves all the way to finish as commercial (50% of purebred vs 48% of commercial cow-calf respondents take calves all the way to finish)

The sale of cattle appears to be dependent on area ($P = 0.01$), but area differences are difficult to dissect, suggesting cattle producers are using a wide array of options to sell their cattle.
The difficulty in dissecting the sales by area may have to do with the fact that many Pennsylvania producers are raising their own feeder calves and selling them as finished cattle off their operations (Figure 36), discussed more later.

<table>
<thead>
<tr>
<th>How feeder cattle are sold</th>
<th># of respondents</th>
<th>% of 518 respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>I keep my feeder cattle</td>
<td>246</td>
<td>47.5</td>
</tr>
<tr>
<td>direct from producers</td>
<td>198</td>
<td>38.2</td>
</tr>
<tr>
<td>sale barn</td>
<td>146</td>
<td>28.2</td>
</tr>
<tr>
<td>cattle buyer</td>
<td>62</td>
<td>12.0</td>
</tr>
<tr>
<td>online</td>
<td>11</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Figure 35. How respondents are selling feeder cattle

This is important to programmatic efforts because there may be the temptation to generalize programming and offer feedlot meetings in the southeast and cow-calf meetings in the center of the state simple based on location of the primary operations (Figure 3, p.9), when in fact, programmatic efforts probably should be more diverse throughout the state. The fact that 68% of survey respondents are selling finished cattle represents the tremendous need for programming related to feedlot nutrition and management as well as marketing finished cattle (Figure 36).

<table>
<thead>
<tr>
<th>How cattle are sold from the operation</th>
<th>Number of respondents</th>
<th>% of 731 respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finished cattle</td>
<td>497</td>
<td>68.0</td>
</tr>
<tr>
<td>Weaned calves</td>
<td>293</td>
<td>40.1</td>
</tr>
<tr>
<td>Yearlings</td>
<td>180</td>
<td>24.6</td>
</tr>
<tr>
<td>Breeding stock/show stock</td>
<td>159</td>
<td>21.8</td>
</tr>
</tbody>
</table>

Figure 36. How cattle are sold by respondents

Most producers surveyed are selling cattle direct to consumer (65.8%; Figure 37). The main specialty market for the primary beef sold is natural (54.0%). Although the target market for finished cattle is related to the purchase of those cattle ($P < 0.01$), the type of specialty market does not appear to affect how respondents purchase their cattle ($P = 0.66$).
<table>
<thead>
<tr>
<th>Target market for finished cattle</th>
<th># of respondents</th>
<th>% of 619 respondents (947 total responses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>direct to consumer (fresh or freezer beef)</td>
<td>407</td>
<td>65.8</td>
</tr>
<tr>
<td>through the sale barn</td>
<td>314</td>
<td>50.7</td>
</tr>
<tr>
<td>direct to the packer - live</td>
<td>87</td>
<td>14.1</td>
</tr>
<tr>
<td>direct to the packer - on the rail</td>
<td>71</td>
<td>11.5</td>
</tr>
<tr>
<td>other</td>
<td>30</td>
<td>4.8</td>
</tr>
<tr>
<td>direct to the retailer (packaged beef)</td>
<td>25</td>
<td>4.0</td>
</tr>
<tr>
<td>online</td>
<td>13</td>
<td>2.1</td>
</tr>
</tbody>
</table>

**Figure 37. Target market for finished/fat cattle**

This may be because most of the respondents who are targeting specialty (81.4%; n = 237) raise their own feeder cattle, regardless of target markets. In fact, of all the respondents surveyed, 78.4% raise their own feeder cattle (Figure 38). This scenario of raising one’s own cattle for finish is a little bit unique to Pennsylvania and may be driven by a) the plethora of small scale slaughterhouses in the state, and b) the proximity of farms to the populace. This can be further demonstrated by the fact that of the 327 respondents who market directly to the consumer, 289 of them are raising their own animals to market.

<table>
<thead>
<tr>
<th>How feeder cattle are purchased</th>
<th># of respondents</th>
<th>% of 551 respondents (724 total responses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I raise my own feeder cattle</td>
<td>432</td>
<td>78.4</td>
</tr>
<tr>
<td>direct from producers</td>
<td>136</td>
<td>24.7</td>
</tr>
<tr>
<td>sale barn</td>
<td>97</td>
<td>17.6</td>
</tr>
<tr>
<td>cattle buyer</td>
<td>52</td>
<td>9.4</td>
</tr>
<tr>
<td>online</td>
<td>7</td>
<td>1.3</td>
</tr>
</tbody>
</table>

**Figure 38. How respondents are purchasing feeder cattle**

The fact that many respondents are raising their own cattle may have also driven the low response to the question regarding how many cattle were sourced from Pennsylvania. Two thirds of the respondents source more than 75% of their cattle from Pennsylvania, but this only represents 179 producers.

### 6. EDUCATION AND OUTREACH

**Greatest On-Farm Challenges**

One specific question sought to find the greatest on-farm challenges faced by beef producers. Respondents were given a choice of six common challenges in the PA beef industry: government regulations, access to land/capital, direct marketing, access to USDA-inspected packers, neighbor relations and dairy-to-beef transitions. Respondents could also choose ‘other’ and write down their challenges.

Figure 39 shows that ‘government regulations’ is an issue that is seen as a challenge by the highest number of producers at 303 (43.7% of respondents). This category does not address specific levels of regulations, such as local, state or federal, but was made intentionally broad to identify a wide variety of regulatory issues. Access to land and capital is ranked as the second greatest challenge by respondents, being reported by 254 producers (36.6% of respondents). Direct marketing was ranked as third, being reported as one of the greatest challenges by 185 producers (26.7% of respondents). The lowest response was for dairy to beef transition with 51 producers (7.3% of respondents). This may be in part due to dairy beef being reported as a primary operation by only 6.4% of respondents, and by only 14% as a secondary operation.
### Greatest on-farm challenges

<table>
<thead>
<tr>
<th>Greatest on-farm challenges</th>
<th># of respondents</th>
<th>% of 694 respondents (1,109 total responses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government regulations</td>
<td>303</td>
<td>43.7</td>
</tr>
<tr>
<td>Access to land/capital</td>
<td>254</td>
<td>36.6</td>
</tr>
<tr>
<td>Direct marketing</td>
<td>185</td>
<td>26.7</td>
</tr>
<tr>
<td>Other</td>
<td>143</td>
<td>20.6</td>
</tr>
<tr>
<td>Access to USDA-inspected packers</td>
<td>99</td>
<td>14.3</td>
</tr>
<tr>
<td>Neighbor relations</td>
<td>74</td>
<td>10.7</td>
</tr>
<tr>
<td>Dairy to beef transition</td>
<td>51</td>
<td>7.3</td>
</tr>
</tbody>
</table>

It’s important to view the ‘other’ category from the on-farm challenges questions not only because it had 143 respondents, but also because it can expand upon unique producer experiences and/or perspectives. All of the ‘other’ responses were categorized into eleven categories. Some comments addressed more than one category (“the ever increasing fertilizer costs and dropping sales prices”), and were counted once in each category they addressed. The top categories related to marketing and production. Below is a synopsis of the types of comments received in each category. (A complete listing of all comments is provided in the appendix).

- **Marketing** (33 comments). The greatest challenge that respondents identified was marketing. However, it is important to note that in our categorization, this was not just concerns with how to market their product; rather, many respondents focused on the challenge of the national beef market itself. Singled out from all other responses was the variability in beef prices. This uncertainty affects their operations. With the notable proportion of smaller producers responding to the survey, this uncertainty seems exacerbated with one respondent noting “I face many challenges from pricing of calves to feeders. Market fluctuations into unstable pricing. Interest rate fluctuations that impact my business grant opportunities that do not afford me the same as larger operations.”

- **Production** (30 comments). This category was used to house all responses that may affect production. These range from access to organic grains to the ineffectiveness of antibiotics for addressing shipping fever to outdated facilities to making hay. Some trends did emerge from the production category however. Housing, whether inadequate, outdated, or repairs, was cited by a number of respondents as a concern. More emphasis on housing strategies and information regarding cost-share programs for housing (and manure storage) may need to be incorporated into future programs. Another area mentioned multiple times in the comments was the ability to a) get through calving season, and b) keep calves healthy, including feeder and young calves. Programming may be needed based on responses related to keeping feedlot calves healthy.

- **Expense** (20 comments). This category was specifically separated from access to land and capital because as one respondent pointed out “We have access to capital. We’re just afraid to spend additional money.” Most of those in the expense category cited high input costs as a major stumbling block to their operation.

- **Other** (16 comments). Community cohesion is reported from two extremes, lack of acceptance of an outsider or “foreigner”, to being “blessed with a neighborly community”. Examples of other concerns are lack of computer, animal issues, slow response to request for assistance, and taxes.

- **Weather** (15 comments). Weather impacts included drought, mud, animal welfare and equipment.

- **Regulations** (13 comments). Issues include concerns over specific levels of regulations (state, federal, and local) and their impact on operations and costs. There are also questions about the reasoning
behind regulations. Examples: “township zoning related to in-farm stores” and “stormwater regulations that cost money to build beef barn”.

- **Labor** (12 comments). Items covered include limited available labor, impacts on completing farm tasks or projects, and labor management. One respondent described this challenge “labor to expand, so I won’t”.

- **Age** (10 comments). Comments focus on decreased ability to perform tasks, new interests and priorities. The age comments in this category did not appear to be directly related to succession.

- **Access to land/capital** (4 comments). Issues include concerns about companies buying land and not renting it out, competition from other farmers, and government programs. Example: “competing with the CREP, CPR programs that pay way too high land rent and ties up available hay and grazing land”.

- **Off farm conflict** (3 comments). Comments relate to responsibilities of other job, family responsibilities and conflicts for time.

- **Succession** (2 comments). Issues include no one wanting to take over the farm/business and the challenge of property tax for those that may.

### Education Topics of Interest

On another survey question, producers were asked what topics they would like to learn more about. Respondents were given a choice of eight common topics of interest in the PA beef industry: calf-pooling/feeder cattle marketing, marketing fat cattle, farm business management, genetics, nutrition, planning for farm succession, preconditioning and reproduction. Respondents could also choose ‘other’ and write down their own topics.

Respondents are interested in more education. The topic generating most interest is nutrition, with 299 producers (42.2% of respondents) wanting to learn more about it (Figure 40). The second highest topic area is farm business management at 218 (30.8% of respondents), followed by planning for farm succession with 199 (28.1% of respondents) and marketing fat cattle with 198 (28.0% of respondents). The only predetermined categories that do not have over 100 interested producers are ‘none – not interested in learning more about other topics’, and ‘preconditioning’.

<table>
<thead>
<tr>
<th>Topics respondents would like to learn more about</th>
<th># of respondents</th>
<th>% of 708 respondents (1,645 total responses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutrition</td>
<td>299</td>
<td>42.2</td>
</tr>
<tr>
<td>Farm business management</td>
<td>218</td>
<td>30.8</td>
</tr>
<tr>
<td>Planning for farm succession</td>
<td>199</td>
<td>28.1</td>
</tr>
<tr>
<td>Marketing fat cattle</td>
<td>198</td>
<td>28.0</td>
</tr>
<tr>
<td>Genetics</td>
<td>190</td>
<td>26.8</td>
</tr>
<tr>
<td>Reproduction</td>
<td>170</td>
<td>24.0</td>
</tr>
<tr>
<td>Calf-pooling/feeder cattle marketing</td>
<td>143</td>
<td>20.2</td>
</tr>
<tr>
<td>None</td>
<td>92</td>
<td>13.0</td>
</tr>
<tr>
<td>Preconditioning</td>
<td>86</td>
<td>12.1</td>
</tr>
<tr>
<td>Other</td>
<td>50</td>
<td>7.1</td>
</tr>
</tbody>
</table>

**Figure 40. Respondents’ preference for educational topics**

Additionally, 50 respondents (7.1% of respondents) chose to write in other topics. After the survey was closed, these topic areas were put into categories by the survey team. The ‘other’ topics listed by respondents were often quite similar to the topic choices offered in this question. (A complete listing of all comments is provided in the appendix).
• Farm business management (14 comments). Issues include grants, new or revised business practices or opportunities, legal questions, more profit, on and off farm improvements.
• Grazing (8 comments). Grazing management and ways to increase pasture productivity, including soil health, were mentioned.
• Marketing (8 comments). Educational needs include social media, pricing, and processes.
• Ideas for training (6 comments). Respondents provided suggestions about publications and methods for conducting activities. Examples of specific comments include
  o build networks
  o very small group discussions with other beef producers sharing ideas, problems, and good things
  o presentations should be on two levels, elementary and advanced, attendees can’t do both
  o beef cow management publication has been very helpful – needs an update
• Technology (4 comments). Respondents are interest in learning more about ID and health monitoring programs, artificial insemination and EPDs, and implant technologies.
• Health, Genetics, Nutrition and Housing (8 comments) – Comments relate to vaccinations, controlling poisonous plants, breeds best suited to grazing, using genomics in purebred herds, meat quality, forage testing, housing methods and finding funding for new housing. Example “learn what is involved to get a grant funded feeding barn; tired of dealing with mud that the new winters bring to us”.

Preferred Methods of Receiving Information
The survey also addressed preferences for receiving information, which is an important program component. Education and service providers can have valuable information, but if it is not made available by accessible and effective means, it will have a limited audience and impact.

By using a scale of 1 (Not at all Likely) to 5 (Extremely Likely), the survey asked producers about their likelihood of using various educational methods. The mean values (average scores) of the results are shown in Figure 41. Three of the methods have mean values of three or above, indicating a strong likelihood that respondents would use these methods. These include: online videos to watch when you want (3.1), farm tours (3.1) and regional meetings (3.0). One on one consultation received a mean value just under three at 2.9. The two lowest ratings were for statewide meetings (2.1) and online webinars (1.9).

![Figure 41. Respondents’ preferences for receiving information](image)

It’s important to point out the mean value differences between similar delivery methods. For example, regional meetings received a 3.0 mean value but statewide meetings received only a 2.1 mean. This is also applicable to
webinars. Webinars that can be watched at any time received a 2.5 mean value, while online webinars at a scheduled time received a 1.9 mean value.

A review of responses by Extension Area did not show any particular preferences by geographical region. However, different age cohorts show a number of clear differences for information delivery preferences. Figure 42 shows the mean values by age. For every method listed, the 18 to 34 cohort shows the highest mean value. Another standout item is that there are only two methods that received a mean value of 3.0 or above from all age cohorts; these being regional meetings and farm tours. Online videos received mean values of 3.1 or above for all age cohorts with the exception of 65 or older (2.8).

<table>
<thead>
<tr>
<th>Mean Values by age for preferred method of receiving information</th>
<th>ages 18 to 34</th>
<th>ages 35 to 54</th>
<th>ages 55 to 64</th>
<th>age 65 or older</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online videos</td>
<td>3.5</td>
<td>3.4</td>
<td>3.1</td>
<td>2.8</td>
</tr>
<tr>
<td>Online webinars (watch when you want)</td>
<td>2.8</td>
<td>2.7</td>
<td>2.5</td>
<td>2.3</td>
</tr>
<tr>
<td>Online webinars at a scheduled time</td>
<td>2.2</td>
<td>2.0</td>
<td>1.9</td>
<td>1.7</td>
</tr>
<tr>
<td>Online courses</td>
<td>3.2</td>
<td>2.8</td>
<td>2.5</td>
<td>2.2</td>
</tr>
<tr>
<td>Statewide meetings</td>
<td>2.4</td>
<td>2.2</td>
<td>1.9</td>
<td>2.0</td>
</tr>
<tr>
<td>Regional meetings</td>
<td>3.1</td>
<td>3.0</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Farm Tours</td>
<td>3.7</td>
<td>3.2</td>
<td>3.1</td>
<td>3.0</td>
</tr>
<tr>
<td>One-on-one consultation</td>
<td>3.4</td>
<td>3.0</td>
<td>2.9</td>
<td>2.7</td>
</tr>
</tbody>
</table>

Figure 42. Preferred method of receiving information by age of respondent

The data for delivery methods provides insight into ways to best reach producers. There are a number of methods that have a high likelihood that respondents will use them. Case in point: the top four rated methods only have a 0.2 difference in mean value (a minimal amount considering a scale range of 1.0 to 5.0). These four top rated methods are online videos (watch when you want), farm tours, regional meetings, and one on one consultation. In contrast, there are two methods (statewide meetings and online webinars at a scheduled time), which respondents report they are unlikely to use. The target audience is an important factor when planning the method for outreach and education. The survey results can assist educators in making well-informed decisions on the method(s) most likely to best serve the intended audience.

Other Survey Comments

In order to provide ample opportunity for producers to provide information they deemed important, an open ended question concluded the survey. This question asked for any additional information that the respondent wanted to share. A total of 147 responses were provided. The fact that over 18% of respondents chose to share additional thoughts – and took the time to write them in – indicates confidence on the part of the respondents that this survey has value and will ultimately benefit them. These comments were grouped into seven different categories (Figure 43). The top categories related to needs and information about the respondents’ farms. (A complete listing of all comments is provided in the appendix)

<table>
<thead>
<tr>
<th>Needs</th>
<th>42</th>
</tr>
</thead>
<tbody>
<tr>
<td>About our farm</td>
<td>39</td>
</tr>
<tr>
<td>Other</td>
<td>28</td>
</tr>
<tr>
<td>Complaints</td>
<td>15</td>
</tr>
<tr>
<td>Kudos</td>
<td>12</td>
</tr>
<tr>
<td>Marketing</td>
<td>10</td>
</tr>
<tr>
<td>Irrelevant</td>
<td>8</td>
</tr>
</tbody>
</table>

Figure 43. Other survey comments
**Needs** (42 comments) A wide variety of needs are listed, many of which relate to specific types of programming and informational needs including grants, pricing, grazing, grass feed beef, feed, and nutrition. Examples:

- would like a better idea if I’m selling animals too cheap, like to find creative financial tools
- seminars on economics and cost analysis would be helpful

A number of comments give recommendations or requests for certain educational formats or delivery methods:

- would like to receive monthly or at least quarterly newsletter from Extension
- always face to face meeting for information, more things are learned talking amongst others at the meeting a lot of times
- I do not have a computer, so for me online information is not possible, direct mailings are my best source of information

Comments also focus on government programs and policies, including the need to know more about them. Some comments revolve around contacts and service, including requests for local contacts and sharing of producer contact information for future communication/service. There are also comments about and request for farm visits.

**About our farm** (39 comments) Future plans for the farm is a topic area that many respondents note. These comments range from passing the farm on to future generations, agricultural preservation programs, and not wanting to quit. Many comments also focus on the difficulties of running and/or keeping the farm.

**Other** (28 comments) The implications of limited cell and internet service are listed as well as concerns over beef imports and government policies. Issues surrounding youth are listed, such as education and continuation in farming.

**Complaints** (15 comments) Complaints are provided regarding the benefit and effectiveness of organizations and programs serving the beef industry. Examples:

- there are too many meetings stacked up against other industry meetings
- when you comingle presentation attendees, those with elementary knowledge don’t grasp the information. Knowledgeable stockmen are bored with the limited information available at the allotted time. You must impact both. If you have two presenters, have two rooms with simultaneous presentations geared to both levels.

**Kudos** (12 comments) Numerous comments revolve around appreciation for the survey and the Beef Producers Working Group. Examples:

- I like this survey a lot, it helped me.
- Your regional meetings and willingness to come to my Farm and help me with specific issues has been great!
- This group is efficient and effective. Good job

**Marketing** (10 comments) Many of the respondents making comments about marketing were interested in expanding freezer beef sales.
FINDINGS AND RECOMMENDATIONS

Major Findings

1. **Most producers have multiple operations.** Over 80% of survey respondents answered the question ‘What other beef operations are you involved in?’ which indicates they run at least two types of beef operations. 32% of those with secondary operations are involved in retail fresh or freezer beef; 24.8% are involved in feedlot/finisher. *(see figures 2 and 3, p. 9)*

   **Recommendations:**
   a. Outreach efforts should be more widespread and not targeted by type of operation.
   b. It is tempting to offer programming based on the location of primary operations, for instance feedlot meetings in the southeast and cow-calf meetings in the center of the state. Because so many producers run more than one type of operation, programmatic efforts should be more diverse throughout the state.
   c. Outreach and educational messages should 1) use language that acknowledges multiple operations, and 2) encourage producers to identify themselves by more than one operation.

2. **Many producers are keeping their cattle from calf to slaughter.** 68% of survey respondents are selling finished cattle. *(see figures 35 and 36, p.27)*

   **Recommendations:**
   a. There is a need for programming addressing multiple aspects of cattle production, for instance managing cows and calves on a single operation.
   b. There is a need for programming related to feedlot nutrition and management as well as marketing finished cattle.

3. **Producers want more information about the economics of beef production.** There were many comments about production costs (such as feed), market pricing, and capital needs for housing and equipment. Although survey respondents did not use the term ‘economics’, they are asking for more education and outreach to address the business of beef production.

   **Recommendations**
   a. Incorporate economic discussions into all aspects of educational outreach.
   b. Place more emphasis on information regarding cost-share programs such as for housing and manure storage.

4. **Nutrition was listed as the number one educational program producers wanted more of.** In addition, some respondents are using inappropriate minerals or are not using any supplementation on pasture. *(see figure 40, p.30 and figures 28 and 29, pp.23-24)*

   **Recommendations**
   a. The current programmatic emphasis on nutrition should be continued.
   b. There is a need for more education on appropriate methods of supplementation on pasture.

5. **A large amount of respondents reported they are targeting both grass fed and natural markets.** The data also indicate a heavy reliance on grazing. *(see figure 26, p.22)*

   **Recommendations**
   a. Because there is so much blurring of definitions, provide guidance for producers on how to define and label their products.
b. Provide more programming for graziers on the health, nutrition and marketing of grass-fed beef.
c. Information on how to target sales and the economics of the specialty markets should be addressed across a variety of programming on grazing, nutrition etc.

6. **Producers in some areas of Pennsylvania appear to be under-represented in the survey.** Extension Areas 2, 3, 4, and 5 comprise 28 counties but only 208 survey respondents (27%). This factor may be associated with how the survey was distributed, or it may reflect a lack of engagement with organizations in the PABPWG. *(see figure 5, p. 10)*

   **Recommendations**
   a. PABPWG member organizations should focus outreach and education in underserved areas of the state.
   b. Consider marketing and promotion to connect producers with PABPWG member organizations.
   c. Consider additional research to compare county response rates to NASS county-level data.

7. **Government regulations are a challenge for many.** With 43.7% of respondents reporting government regulations as a challenge, it is the top ranked on-farm challenge. In addition, a number of survey respondents expressed specific concerns over governmental policies and government regulations. *(see figure 39, p.29)*

   **Recommendations**
   a. Develop programming that could include differences in regulatory authority (local, state, etc.) pertinent regulations, processes, elected or appointed service opportunities, and communicating with officials/regulators.
   b. The PABPWG should consider educational materials or programs for regulators or elected officials to help them better understand current and anticipated future farming practices.

8. **The most preferred outreach methods include online videos, farm tours, regional meetings and one on one consultation.** The preferences varied by age group, but regional meetings and farm tours were methods highly supported by all ages. *(see figures 41 and 42, pp. 31-32)*

   **Recommendations**
   a. Educational efforts should consider the target audience and utilize a blended approach of meetings and online materials.
   b. Offer the same information through more than one outreach method.
   c. PABPWG should consider taking a lead role in producing/commissioning online programming.

**Other findings and recommendations**

9. **Expansion plans:** 317 respondents (42.7%) are interested in adding cattle. Two of them plan to add more than 500 (Clearfield and Cumberland counties). *(see figure 17, p. 16)*

   **Recommendations**
   a. While many of the educational materials and services for beef operations will be similar no matter what the size, there are additional considerations for very large or very small operations.

10. **Age is often noted as an issue in the survey.** A number of respondents (primarily with the most experience or age) reported they will be getting out of the beef industry. There were also concerns about the future of farming. *(see figure 13, p.14 and figure 21, p.19)*

    **Recommendations**
a. Producers may be in need of materials or training on how to plan for their transition and farm succession.

b. Programs or information should be considered for reaching the next generation of beef farmers.

11. **Grazing management is not consistent with Penn State current science-based recommendation in all Extension areas. (see figure 25, p.21)**

   **Recommendations**

   a. Extension Areas 1 and 9 have the greatest proportion of respondents using continuous grazing. Area 1 also has the second greatest number of respondents utilizing intensive rotational grazing. These areas should be considered target areas for programs on grazing management.

   b. PABPWG should consider showcasing grazing producers in the area to demonstrate and discuss their reason for utilizing continuous grazing.

12. **Rearing calves is a challenge for some producers.** Respondents commented on the challenges of a) getting through calving season, and b) keeping calves healthy, including feeder and young calves

   **Recommendations**

   a. In addition to Extension’s programming regarding preconditioning of calves prior to feedlot entry, introduce programming on strategies to improve calf health at an earlier age.

   b. Continued programming may be needed based on responses related to keeping feedlot calves healthy.

13. **Internet access is a concern for some respondents when technology is used for outreach.** Several respondents commented on their limited use of internet/technology.

   **Recommendations**

   a. Provide alternative outlets for web-based information.

14. **Some respondents noted the variations in producer knowledge and experience at educational meetings.** A small number of respondents age 55 or older are just starting out and have been in business less than 15 years.

   **Recommendations**

   a. Provide programming on introductory and advanced levels for the same topic.

   b. Consider the development of a mentoring program, peer-to-peer technical assistance, or other methods for connecting experienced and novice producers.
Alternative Media Statement
This publication is available in alternative media upon request.

Long Affirmative Action Statement
The University is committed to equal access to programs, facilities, admission and employment for all persons. It is the policy of the University to maintain an environment free of harassment and free of discrimination against any person because of age, race, color, ancestry, national origin, religion, creed, service in the uniformed services (as defined in state and federal law), veteran status, sex, sexual orientation, marital or family status, pregnancy, pregnancy-related conditions, physical or mental disability, gender, perceived gender, gender identity, genetic information or political ideas. Discriminatory conduct and harassment, as well as sexual misconduct and relationship violence, violates the dignity of individuals, impedes the realization of the University’s educational mission, and will not be tolerated. Direct all inquiries regarding the nondiscrimination policy to Dr. Kenneth Lehrman III, Vice Provost for Affirmative Action, Affirmative Action Office, The Pennsylvania State University, 328 Boucke Building, University Park, PA 16802-5901, Email: kfl2@psu.edu, Tel (814) 863-0471.