

4-H Market Steer Record Guide



Check Project Taken:

Bite into Beef

Here's the Beef

On the Mooove

Leading the Charge

Your Animal's Photo Here!

Year 20__ __

Name _____ Club _____

County _____ Address _____

Age _____ Years in 4-H _____ Date project completed _____

Introduction

The 4-H Market Steer project begins when the 4-H project year starts in October. Some sections of the record book require you to establish some goals you expect to meet. It is important to do these at the start of the project year. If you need help with understanding the material, contact your 4-H club leader or Extension agent.

This project is for those who want to learn how to raise a steer to market weight and produce a quality meat product. The end objective of this project is to sell or consume a wholesome quality food product. During the project, you should learn about the beef cattle industry, feeds, antibiotics, housing facilities, supplements, minerals, and diseases. You will need to market the animal, prepare for shows, and publicly promote the beef industry.

Why Is Biosecurity Important?

Biosecurity means doing everything possible to protect the health of livestock by preventing the transmission of disease. An outbreak of animal disease could not only harm your poultry or livestock, but it could affect nearby animals and quickly spread through your area. The economic consequences of a disease outbreak could be devastating. Taking commonsense precautions to prevent disease from coming onto your farm is the best investment you can make. The Commissioner of Agriculture strongly urges you to evaluate your disaster prevention practices and develop habits that will protect you, your farming operation, and the public.

Make these simple steps part of your daily routine to decrease the risk of your poultry and livestock getting sick.

- Restrict vehicle traffic on the farm and direct routes.
- Schedule and accompany all farm visitors. Limit areas to be visited.
- Know each visitor's exposure to animals for the past four days.
- Provide protective clothing and/or footwear for visitors. Footbaths are optional.
- Maintain a log of visitors and vehicles that enter the farm.
- Wear clean, disinfected boots when visiting other farms and stockyards. Sanitize all equipment and trailers between visits.
- Do not feed ruminant animals feeds containing animal by-products.
- Isolate all new animals by at least 300 yards from your other animals for 21 days. Test them before they enter the herd. Maintain strict entry and exit sanitation for all personnel in the isolation area.
- Remove and promptly dispose of fallen animals. (Bury, compost, incinerate, or have removed.)
- Keep pets out of confined feeding facilities.
- Be aware of all wildlife and pet movements, when possible.
- Ban all known foreign food and food products from the farm.
- Control rodents and flies thoroughly.
- Report all suspicious activity and events to local authorities.

Emergency Phone Numbers

West Virginia Department of Agriculture (Commissioner of Agriculture) 1-304-558-2201
APHIS Veterinary Service 1-614-469-5602
APHIS Web site www.aphis.usda.gov



Developed and written in 1996 and revised in 2000 and 2006 by the 4-H beef curriculum development committee: Debra Friend, Braxton/Clay County Extension Agent; Zona Hutson, Doddridge County Extension Agent; Bruce Loyd, Lewis County Extension Agent; Ronnie Helmondollar, Randolph County Extension Agent; Jennifer Ours Williams, WVU-ES ANR; H.R. Scott, Wood County Extension Agent; Carol R. Schuller, Senior Project Coordinator; Jean M. Woloshuk, Extension Specialist, 4-H Youth Agriculture; and Phil Osborne, Extension Specialist, Animal Husbandry.

Steer Profile

Ear Tag	
EID	
Point of Origin	
Breed/Breed Combination	
Birth Date	
Purchase/Start Weight	
Value (\$/Head)	



Goal Setting for the 4-H Market Steer Project

For almost everything in life, you set goals, then work toward achieving those goals. 4-H Beef projects are no different. In the Feeder Calf project, a goal may be to exhibit and receive a blue ribbon for your project animal. It may also be to have a feeder calf that will weigh 500 pounds at your county fair. For the Beef Heifer project, a reasonable goal would be to raise a heifer that will breed to calve when she is 24 months old. For the Market Steer project, a goal might be to feed your market steer so that he will grade choice at a show weight of 1,200 pounds.

The West Virginia 4-H Market Steer Record Guide asks you to calculate some numbers that will help you set and reach goals for your project animals. Following is a brief explanation of some of those numbers, why they are important, and the formulas to calculate them.

Set goals for your Market Steer project and then calculate how your steer actually performed at the conclusion of your project. Record these actual values in the table “Performance Summary” on page 9.

Average Daily Gain

For market steers, you should set a goal based on the weight class in which you expect your steer to “finish.” A finished weight is when your steer should have enough marbling to grade high select or low choice.

Example: You purchase a steer October 15 that weighs 500 pounds. Your steer will be exhibited at the county fair July 15. The target weight you have set for your steer is 1,200 pounds. So, your steer needs to gain 700 pounds in 273 days. Average daily gain will tell you how much you need your steer to gain to reach your target weight.

Average Daily Gain (ADG) = Gain / Number of days in the feeding period

For our example: $ADG = 700 \text{ pounds} / 273 \text{ days} = 2.56 \text{ pounds/day}$

Feed Conversion

On the average, steers fed in the United States require about 7 pounds of feed to gain 1 pound. Calculating feed conversion for your market steer will help you determine how much feed you need to buy and give you an idea of how much this project may cost. Generally speaking, improving feed conversion will make a big difference in the profit you can expect from your Market Steer project. In fact, reducing the amount of feed by only 1 pound will save about \$50 per head.

Example: By using an average feed conversion of 7 pounds of feed per pound of gain, you will need to feed 4,900 pounds of feed to get our example market steer to gain 700 pounds (7 pounds per pound of gain \times 700 pounds gain needed). At the end of your project, calculate the feed conversion to determine if your steer was above or below average for the beef cattle industry.

Feed Conversion = Total pounds of feed / Total gain

Feed Cost per Pound of Gain

This is another number that plays a major role in determining the profit for your Market Steer project. This goes hand-in-hand with the feed conversion calculation. The better the feed conversion of your steer, the cheaper your feed cost per pound of gain.

Example: The feed in our example situation cost an average of \$7.50/100 pounds. The total cost was $\$7.50/100 \text{ pounds} \times 4,900 \text{ pounds} = \367.50

Feed cost per pound of gain = Total feed cost / gain

For our example: Feed cost per pound of gain = $\$367.50 / 700 \text{ pounds} = \$ 0.53/\text{pound}$



Steer Hip Height and Frame Score

The hip height (in inches) and the age of your steer are used to determine his frame score. Why is frame score important? Frame score can help you determine the weight at which your steer should grade choice. Then, by looking at your steer's current weight and how long it is until your fair's weigh-in, you can decide how fast your still needs to grow to be ready for the show. Here's an example:

Today is December 15. My steer was born on March 15, so he is 9 months old. He weighs 750 lbs. and is 47 inches tall (hip height). The date for weigh-in at my county fair is July 15.

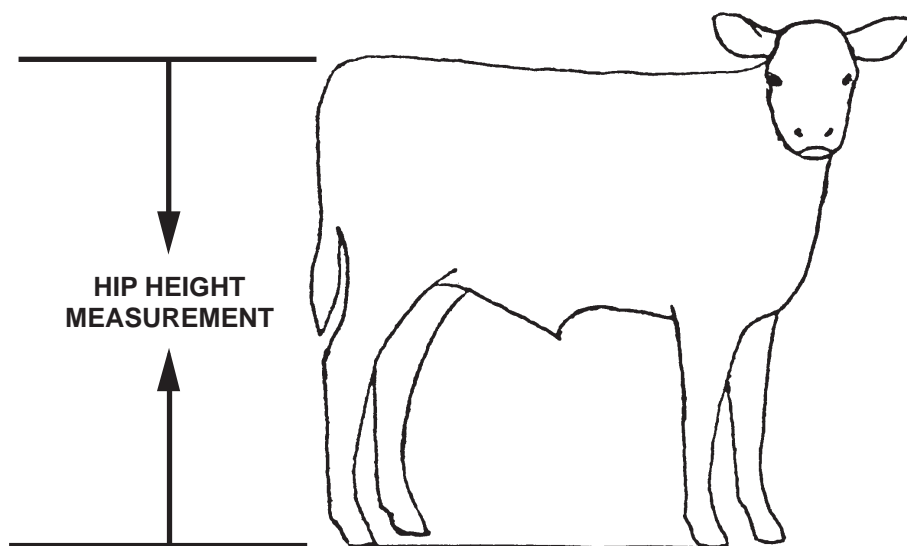
By using the Hip Height and Frame Score chart on the next page, I can see that my steer is a frame score 5. His finish weight when he should grade choice is between 1176 and 1250 lbs. (look at the pictures on page 4: "Choice weight related to frame size for steers").

I am going to try to get my steer to 1,200 lbs. at my fair's weigh-in. I have 212 days until the fair (December 15 to July 15). He needs to gain 450 lbs.

My steer needs to gain $450 \text{ lbs.} / 212 \text{ days} = 2.1 \text{ lbs. per day}$ (average daily gain) to weigh 1,200 lbs. on July 15.

Record the following information for your steer:

	Example from Above	Your Steer
Date of measurement	December 15	
Age in months	9 months	
Hip height (in inches)	47	
Frame Score (from chart on page 3)	5	
Projected finished weight	1,200 lbs.	
Days until show	212	
Average daily gain needed	2.1 lbs./day	



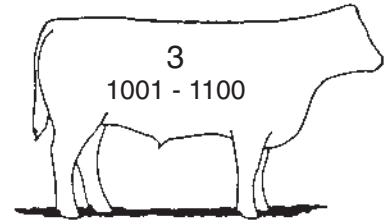
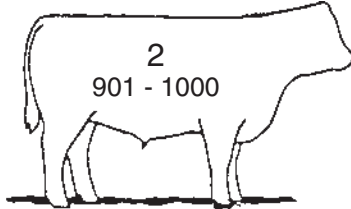
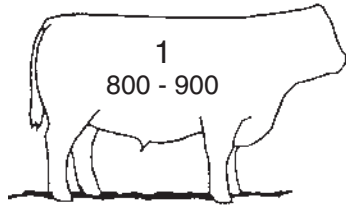
Steer Frame Score Chart (in inches)

Age in Months	Frame Score								
	1	2	3	4	5	6	7	8	9
	Hip Height (in inches)								
5	33.5	35.5	37.5	39.5	41.6	43.6	45.6	47.7	49.7
6	34.8	36.8	38.8	40.8	42.9	44.9	46.9	48.9	51.0
7	36.0	38.0	40.0	41.2	44.1	46.1	48.1	50.1	52.2
8	37.2	39.2	41.2	43.2	45.2	47.2	49.3	51.3	53.3
9	38.2	40.2	42.3	44.3	46.3	48.3	50.3	52.3	54.3
10	39.2	41.2	43.3	45.3	47.3	49.3	51.3	53.3	55.3
11	40.2	42.2	44.2	46.2	48.2	50.2	52.2	54.2	56.2
12	41.0	43.0	45.0	47.0	49.0	51.0	53.0	55.0	57.0
13	41.8	43.8	45.8	47.8	49.8	51.8	53.8	55.8	57.7
14	42.5	44.5	46.5	48.5	50.4	52.4	54.4	56.4	58.4
15	43.1	45.1	47.1	49.1	51.1	53.0	55.0	57.0	59.0
16	43.6	45.6	47.6	49.6	51.6	53.6	55.6	57.5	59.5
17	44.1	46.1	48.1	50.1	52.0	54.0	56.0	58.0	60.0
18	44.5	46.5	48.5	50.5	52.4	54.4	56.4	58.4	60.3
19	44.9	46.8	48.8	50.8	52.7	54.7	56.7	58.7	60.6
20	45.1	47.1	49.1	51.0	53.0	55.0	56.9	58.9	60.9
21	45.3	47.3	49.2	51.2	53.2	55.1	57.1	59.1	61.0

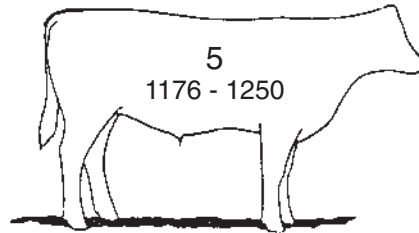
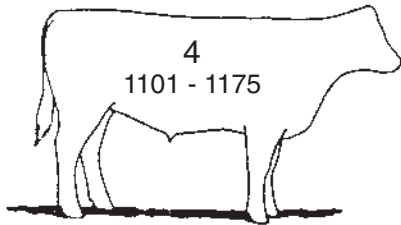


Choice weight related to frame size for steers

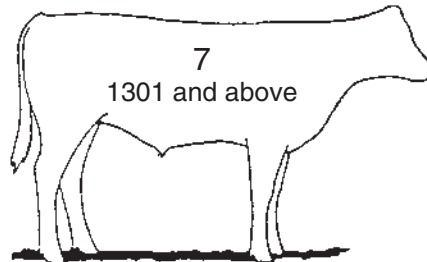
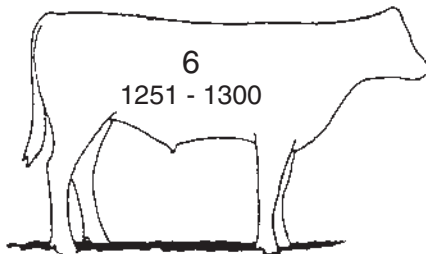
Small (S)



Medium (M)



Large (L)



Feeding Record

Complete one feed record for each steer in your project (extra copies may be obtained from your county WVU Extension Office). This report should include all feeds used in this project. The feeding periods should change each time you change what you feed your animal(s). Record the beginning and ending dates for each feeding period. Only include days your animal(s) are actually grazing in the days on pasture (don't include time in a dry lot).

To calculate the free choice parts of your ration (for example, hay, minerals, protein tubs, salt blocks), follow this example to calculate what your project animal is consuming each day.

This is December 1. I put out a 450-pound round bale of hay for a group of 5 steers. I have to put in another bale 10 days later. On average, each steer would have consumed 9 pounds per day.

$450 \text{ lbs.}/10 \text{ days} = 45 \text{ lbs. per day}$

$45 \text{ lbs./day divided by } 5 \text{ steers} = 9 \text{ lbs. per steer per day}$

You can do this similarly for minerals. You put a 50-pound bag of Beef Mineral in the mineral feeder on December 1. This feeder provides for 5 steers. The mineral feeder is empty in 50 days.

$50 \text{ lbs.}/50 \text{ days} = 1 \text{ lb. per day}$

$1 \text{ lb./day divided by } 5 \text{ steers} = 0.2 \text{ lbs. per steer per day}$

If you do not have scales to weigh bales of hay, contact your WVU County Extension Office to see if portable scales are available to weigh the bale. Or, ask for a copy of fact sheet *Using Volume to Determine Large Bale Weight* or download the fact sheet from the Web (www.wvu.edu/%7Eagexten/forglvst/largebalevolume.pdf).

Practice exercise for you:

15 steers are fed in a group. You place a 600-pound round bale of hay in a feeder on November 15. You must place another bale in the feeder on December 1. On average, how many pounds of hay are the steers eating each day?

_____ pounds per day per steer

Now, calculate any feeds that are offered free choice for your project animal(s) and transfer to the feeding record during the appropriate feeding period.

For a more accurate intake, you may need to estimate the pounds of hay wasted (not consumed) before the next round bale is placed in the feeder. The type of feed will affect the amount of hay wasted.

For more information, visit the Web (www.ext.nodak.edu/extpubs/ansci/range/as1190w.htm).



Animal ID: _____

Feeding Record

Feeding Period		Days in Feeding Period	Pounds of Feed Fed		Pounds of Hay Fed		Days on Pasture	Pounds of Other Supplements (minerals, etc.)	
Starting Date	Ending Date		Daily	For the Period	Daily	For the Period		Daily	For the Period
Example: 10/16	11/30	45	5	225	10	450	0	0.25	11.25
Totals									



Performance Summary

The calculations needed to complete this chart are found on page 1 of this record guide. For help with the calculations, ask a parent, project leader, or Extension Agent.

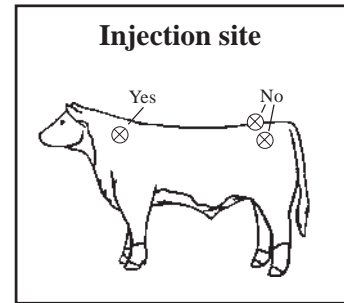
	Example	Your Steer
Date project was started	December 15	
Date project was closed	July 15	
Total days in the feeding period	212	
Starting weight	750	
Ending weight	1240	
Total gain	490	
Total pounds of feed fed	4000	
Total feed cost	\$380	
Feed cost/pound of gain	\$0.78	
Average daily gain	2.31	
Feed conversion rate	8.2	



Health Care

You should expect to receive a health record with any animal that you purchase. Include a copy of the health record with your record guide. The health record should include any vaccinations and treatments that your steer received before you purchased him.

Remember, injection-site blemishes are costly. Minimizing injection of material into the muscle must be considered. So, use subcutaneous (under the skin) injections as much as possible. Injections should be given in the neck and not in the areas of the more valuable, expensive cuts. Be sure to read and follow the label on all products used on or in your steer.



Health Care Purchase Record

Please record any health products purchased or used for your steer in the following table. Include vaccines, dewormers, antibiotics, fly tags, etc. Cost should be for your project animal(s) only. For example, if you buy 1 liter (1000 ml) of dewormer for \$70, and you use 10 ml to deworm your animal, your cost is:

$$\begin{aligned} \$70/1000 \text{ ml} &= \$0.07 \text{ per ml} \\ \$0.07/\text{ml} \times 10 \text{ ml} &= \$0.70 \text{ for your animal.} \end{aligned}$$

Vaccine Type	Product	Company	Lot Number	Expiration Date	Cost
<i>Example:</i> IBR, PI3, BVD	Bovishield	Pfizer	001-4870	Jan. 08	\$1.50/HD
Total					



Preventative Health Care Record

Record any vaccinations given to your steer. List the vaccine below the type of disease it should help build immunity against.

Vaccine Type	Date Given	When cleared for harvest*	Where/how was it given	Who did it
7-Way Clostridial				
IBR, PI3, BVD, BRSV				
Haemophilus somnus				
Pasteurella				
Internal/External Parasites				
Other				

*Data given + days to withdraw (on label insert).

Example: August 30 date given + 21 days withdraw time = September 20 animal ready for market.

Attach original or copy of vaccine box or product label insert.



Additional Management Procedures

Management Practice	Date Performed	Cost
Weaned		
Dehorned		
Castration		
Foot Trimmings		
Implants		
Ultrasound		
Other:		
Total		

Additional Treatment Information

Record any other treatments (antibiotics, etc.) given to your project animal(s).

Reason for treatment	Product	Date given	When cleared for harvest	Where/how was it given	Who did it	Cost (if not recorded on purchase record)
<i>Example:</i> Pinkeye	LA-200, 20cc	5/20	(28 Days) 6/17	SQ in neck (right side)	Dad	\$3.00
Total						



Other Expenses (other than feed and health practices)

Item	Date	Cost
Equipment		
Bedding		
Grooming Supplies		
Sales Fees (Commission)		
Beef Check-Off		
Trucking Fees		
Insurance		
Merchandising/Advertising		
Entry Fees		
Other		
Total		





Project Animal Travel Log

What is a premises? A premises is the location where an animal is born, cared for, exhibited, or marketed. Examples include farms, ranches, feed yards, auction barns, fairs, and livestock exhibitions. To obtain a premise identification number for your farm or the place where your project animal is housed, contact the W.Va. Department of Agriculture (www.wvagriculture.com or 304-558-2214).

Record all movement of your project animal(s) and include premise identification numbers, where possible. Include any time your animal is moved from its primary location. An example has been included to help you complete the chart (the EID tag and premise ID numbers given are fictional). Indicate whether your animal returned to the premise where it was primarily housed.

Premises identification number where your animal was housed: _____

Location	Other ID Number	Official AIN	Date	Event	Premises ID
To: Jackson's Mill, WV From: Weston, WV	M502	840123555666789	12/5/05	Fair Weigh-in	Jackson's Mill, WV 111A2WW
To: Jane Lew, WV From: Weston, WV	M502	840123555666789	7/12/06	For transport to State Fair	John Smith 122A2RR
To: Lewisburg, WV From: Weston, WV	M502	840123555666789	7/15/06	State Fair	Lewisburg, WV 999A2XX
To: From:					
To: From:					
To: From:					
To: From:					
To: From:					
To: From:					
To: From:					
To: From:					

Show Record

Record the results of all shows and showmanship events your steer entered during the year.

Name and Place of Show/Fair	Animal ID	Date	Placing	Premiums/Ribbons
Total Value of Premiums Won				

Carcass Information

Based on the live weight of your steer, work through the following calculations to figure the following carcass traits. How do the actual calculations compare to carcass and ultrasound data, if available?

	Example	Your Steer
Live weight	1,240 lbs.	
Carcass weight (a)	770 lbs.	
Rib eye area (b)	15.4 sq. inches	
Fat thickness (c)	0.45 inches	
Percent KPH (d)	3 %	
Quality grade (e)	Choice	
Yield grade (f)	2.2	

- (a) Carcass weights of most slaughter cattle will average 60-65% of live weight.
Example: $(1240 \times 62\%) = 770$ lbs.
- (b) Rib eye areas usually will range from 1.7 to 2.7 sq. inches per 100 lbs. carcass weight. Moderate to thickly muscled British (Angus, Hereford, etc.) will range from 1.8 to 2.0 sq. inches and continental breeds (Limousin, Maine Anjou, Charolais, etc.) will range from 1.9 to 2.2 sq. inches. Example:
 $[(770 \text{ lbs.} / 100) \times 2 \text{ sq. in.}] = 15.4$ sq. inches
- (c) Fat thickness on slaughter cattle usually will measure between 0.2 and 1.0 inches. The most desirable finished cattle will have 0.3 to 0.6 inches of fat cover.
- (d) Kidney, Pelvic, Heart fat percentage usually will range from 2.5 to 4.5. The amount of KPH is related to the amount of external finish.
- (e) Quality grades are determined primarily by intramuscular fat (marbling). The quality grades used by USDA are Prime, Choice, Select, and Standard. Marbling scores that may be used are: slightly abundant, moderate, modest, small, slight, trace.
- (f) Yield grade = $2.5 + (2.5 \times \text{fat thickness in inches}) + (0.2 \times \% \text{ KPH}) + (0.0038 \times \text{hot carcass weight lbs.}) - (0.32 \times \text{rib eye area, sq. inches})$. Example: $2.5 + (2.5 \times .45) + (0.2 \times 3\%) + (0.0038 \times 770) - (0.32 \times 15.4) = 2.2$



Record of Demonstrations, Talks, and Activities During the 4-H Year

Record your participation in events such as judging contests, project workshops, visits to farm operations, demonstrations, etc.

Date	Location	Activity	Comments



Financial Summary

Income

Price received for your project animal(s) _____

Show premiums won (*Page 14*) _____

Other _____

Total Income _____

Expenses

Cost or value of your project animal(s)
at the beginning of your project _____

Cost of feed bought or used (*Page 8*) _____

Cost of health care (*Page 10*) _____

Cost of additional management procedures (*Page 12*) _____

Cost of additional treatments (*Page 12*) _____

Cost of other expenses (*Page 13*) _____

Total Expenses _____

Total Income _____

Less Total Expenses _____

Net Income _____

Merchandising Summary

List any potential buyers contacted before your show/sale.

Describe any other methods used to sell your animal(s). _____

Who purchased your animal? _____

At what price? _____

Please include a copy of your thank-you letter.



4-H Project Evaluation

Now that you have finished this project, it is time for you to think about what you have learned. We also would like to know what you have learned and if the project needs to be improved. Your comments will help the people write the projects. Please write answers to the following questions. Then give this form to your 4-H leader or mail it to:

**Project Evaluation
State 4-H Office
Knapp Hall, PO Box 6031
Morgantown, WV 26506-6031**

Title of Project _____

Girl Boy (circle one) Age _____ Grade in School _____ Years in 4-H _____

1. Was this your first project in this subject? _____

2. Why did you pick this project? _____

3. What was your favorite part of this project? _____

4. By doing this project, what did you learn that you didn't know before? _____

5. Did you do the activities in the project book? Why or why not? _____

6. What activities did you like doing? _____

7. How would you change this project to make it better? _____

8. Would you tell others to take this project? Why or why not? _____

9. What other 4-H projects have you taken? _____

10. If you have something else to say, write it on the back.



Market Steer Project Score Sheet

- ★ If you are taking this project without an animal, check with your Extension agent for approval. It is suggested that the Self-Determined project be used with the National 4-H Cooperative Curriculum System beef project book as a resource. Consult with your Extension agent to plan your project work.

Beef Project Book

- ✓ Complete seven activities in the Beef Achievement Program of the National 4-H Cooperative Curriculum System Project Book (*Each activity is worth 5 points ~ Total 35 possible points*) _____
- ✓ Complete Planning Guide in National 4-H Cooperative Curriculum System Project Book on pages 3-4 (*Worth 5 points*) _____

Market Steer Record Guide (Worth 20 points)

Exhibit/Production Score (*Total 20 possible points*) ★

- ✓ This may be the actual exhibition of your animal or other designated project or service determined with your Extension agent.

Activity Record (Worth 20 points)

Total

Comments:



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