

# Livestock Science Experiment

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Topic Title: Average Daily Gain (ADG) Market Weight, Feed Conversion

## What we know. Look it up! (Research)

Livestock industries have an ideal market weight for each species. Current animal weight and length of feeding period determine the amount of gain need to meet this finished weight.

Market animal species have an industry average for average daily gain. Research what is industry average for ADG, what is the ADG range. Animals convert what they eat to pounds gained at different rates. What is ideal feed conversion for your animal species?

## Problem (Situation)

Many factors affect an animal's rate of gain, including: age, genetics, water availability, weather, amount of feed, feeding methods, feeding frequency, kinds of feed and feed processing. In order to keep your project profitable you need to best manage your animal selection and feeds and feeding methods.

Write your hypotheses

1. I will need \_\_\_\_\_ amount of feed to get average daily gain \_\_\_\_\_ of.
2. My animal will be market ready by feeding the above.

## Testing your hypothesis (Methods)

This is a long term experiment using 4-H/FFA county feeding periods for livestock species; Have your leader help you determine the required ADG for your project animal. Then determine the amount of feed required. Feed your animal to meet the required ADG. Weigh your animal and keep records of amount of feed fed.

## What you need

- Animal and ability to weigh it
- Proper feed ration for the animal species
- Beginning Planning & Record Sheet, Feed Record, and ADG Growth Chart

## Set up the experiment

At beginning weigh-in estimate the market ready weight of each animal and determine the required ADG. Use the Beginning Planning & Record Sheet.

Determine proper feed ration, the amount of feed and follow through

Weigh your project every 30, 15, or 7 days depending on the length of the feeding period.

## Change and Re-do the Experiment

This is a long term experiment; change and redo with next year's animal project or review last years project and change for this year's project.

For additional learning opportunities conduct the two experiment activities on the next page.

## What happened? (Results/Observations)

Record in journal (or record book) what animals look like at beginning and end i.e. take a picture or draw the animal. Explain your feed ration. Describe the animals you selected; record weight estimates, record dates and weights and plot in a table graph, record carcass information if available, list observations.

## Apply what we found out (Conclusions)

- What did members see? How did their animals change over the feeding period?
- Was your animal's ADG ideal? Why or Why not?
- What will you do different next year when selecting or feeding your project animal?

There are two activities listed here that can be used for additional learning opportunities. These can teach daily responsibility of feeding and various concepts of animal management challenges such as introducing new feed, water, time management and animal observation.

**Experiment Activity I:** Goal to teach daily responsibility of feeding.

**Situation:** You are raising an animal for your livestock project. You need to have an average daily gain of 6 beans to make market weight of 4 oz in 30 days. Your 4-H leader teaches you the average for the species is 6 beans per day, but some people have gotten gains as high as 8 beans. Feed conversion is 1 bean of feed = 1 bean of gain.

**Hypothesis:** If I feed my animal \_\_\_\_\_ times a day with \_\_\_\_\_ beans of feed, my ADG will be \_\_\_\_\_ beans per day. My animal will make minimum market weight of 4 oz by using the above feeding method.

**Methods:**

- Create your animal that must be able to hold feed.
- Purchase all your feed (beans) and decide how many times a day to feed your animal and how much at each feeding.
- Weigh-in your animal.
- Take your animal home and feed it every day for 30 days as your hypothesis indicates. If you miss a feeding-you cannot double feed. If you did not purchase enough feed. When you run out feed half a feeding once you get new feed for 7 days & then back on your plan for the rest of feeding period.
- Final Weigh-in of your animal and determine ADG.

**Need:** Beans or other type of feed (beans work well because they come in different sizes.) Milk carton type animal, scales. Paper or calendar to track how much you feed each day.

**Experiment:** Create your animal and feed it for 30 days

**Results:** Record what you did and what your animal weighs

**Conclusion:** Was your hypothesis true or false? What happens if your animal does not have the ADG you predicted?

**July**

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**Experiment Activity2:** Goal to teach various concepts of animal management challenges such as introducing new feed, water, time management and animal observation.

**Situation:** You are raising an animal for your livestock project. You need to have an average daily gain of 6 beans to make market weight of 4 oz. in 30 days. Your 4-H leader teaches you the average for the species is 6 beans per day, but some people have gotten gains as high as 8 beans. Feed conversion is 1 bean of feed = 1 bean of gain.

**Hypothesis:** If I feed my animal \_\_\_\_\_ times a day with \_\_\_\_\_ beans of feed, my ADG will be \_\_\_\_\_ beans per day. My animal will make minimum market weight of 4 oz by using the above feeding method.

**Methods:**

- Create your animal that must be able to hold feed.
- Decide how many times a day to feed your animal and how much at each feeding.
- Weigh-in your animal.
- Take turns and play the game of “roll the dice”. By rolling dice, you will determine the management situation your animal received due to various conditions that affect his eating habits.

If you roll:

1. Follow feeding plan exactly.
  2. Water trough is empty -only eats 1/2 of ration
  3. Follow feeding plan exactly
  4. In a hurry going to the movies, you don't clean out the feed pan & your animal has pooped in it. You just throw the feed on top. Your animal only eats 1/2 of his feed.
  5. Follow feed plan exactly.
  6. You increased animals feed by 1, but he doesn't eat all of it. You just put the next feeding on top of the feed left, staying with the increased amount. You do this for 3 days. Remove 1/2 of animals grain for the last 3 days as he hasn't been eating everything.
- Final Weigh-in of your animal and determine ADG.

**Need:** Beans or other type of feed (beans work well because they come in different sizes.) Milk carton type animal, scales. Paper or calendar to track how much you feed each day, dice.

**Experiment:** Create your animal and play the game of roll the dice

**Results:** Record what you did and what your animal weighs

**Conclusion:** Was your hypothesis true or false? What happens if your animal does not have the ADG you predicted?

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