

Science can be found in many of the 4-H activities we do. Livestock & Horse Science experiments will be printed in the newsletter for members and leaders to do this summer (six total). Keep a journal of your experiments; Asking what, why, how and describing what you saw, smelled or touched, record any data. Adults should ask prodding questions during the experiments to challenge members to think and understand what is going on.

Livestock & Horse Science Experiment 1

Topic Title: Processed Feeds, Feeding Methods, Feed Storage

Credit: written by Cindy A. Kinder, University of Idaho Extension Educator

What we know. Look it up! (Research)

There are different types of livestock feed processing. Processes can be found for grains: ground, cracked, rolled, whole. Processes can be found for forages: standing in the field, baled, ground, silage. Select one and do some research; find the advantages and disadvantages.

Problem (Situation)

Feed is expensive and a major cost in horse and market animal projects. Therefore feeding methods and storage are very important. There are many kinds of feeding methods for animal projects. Some methods are better than others. Which type of feed processes is best for the feeding method you have?

Write your hypotheses

1. I think the _____ feed process is better/worse for my _____ project.
2. Storing my feed in _____ keeps the feed fresher.

Testing your hypothesis (Methods)

Test your feed storage and feeding methods with the different types of processed feeds.

What you need

Collect three types of processed feed: ground, whole, pelleted, others

Collect equipment for feeding methods: feed pan (different kinds), self feeder, bunk

Collect equipment needed for storage: paper sack, plastic bag, others

Collect equipment for conditions: fan (this represents wind), water (represents rain & moisture), others

Set up the experiment

Have members feed in the different equipment for feed or storage methods. Apply various conditions, i.e., windy day, feed got wet, old feed not cleaned out, feed pans get dumped over, broken bottom to the feed bunk. Think of animal behaviors at feeding time.

Change and Re-do the Experiment

What happened? (Results/Observations)

Members record in their journals what they did and what they saw. Measure out how much feed went in and how much feed was left after a condition. What did the feed look, smell, and feel like.

Apply what we found out (Conclusions)

What did members find out? Ground feed blows away, feed gets moldy, waste of feed issues, feed not available so animals can grow.

Bringing out the Science in Livestock Projects Questions:

(Next month be prepared for questions on this experiment.)

Bringing out the Science in Livestock Projects Questions:

(These questions are for the feed experiment found in the previous newsletter)

1. Was your hypothesis right?
2. How can your animal get the right amount of feed, so he can get fat or perform, if the wind is blowing, feed pan is broke or feed is dumped on the ground?
3. Why is processing feed important?
4. In what way can you reduce waste and expense with your feed?

Livestock & Horse Science Experiment

Topic Title: Changing Feeds, Animal Behavior

What we know. Look it up! (Research)

Animals react in different ways to a change in feed. Animal behavior research can predict some of the reactions. Research one animal behavior.

Problem (Situation)

There are times when we underestimate the amount of feed needed for our animals. Sometimes feed stores run out of the type or brand of feed we have been feeding. Because of that we purchase a different feed and animals react to that and that reaction will impact their average daily gain or performance needs (horses).

Write your hypotheses

1. My animal will eat more/less of a new feed.

Testing your hypothesis (Methods)

Test your new feed on your club members by introducing a new “feed” to them.

What you need

- New “feed” to be served as the refreshment at a club meeting
- Plates

Set up the experiment

Volunteer to do the refreshments at a club meeting. You could purchase some different foods such as kippers or smoked oysters and see how many club members eat them and then monitor if they consume the entire portion or not. Another idea is to make toast and butter it with flavored butters: garlic, licorice, cayenne pepper, etc. Cut the toast into strips and have club members choose. Monitor which ones they choose and do they eat all of it.

Change and Re-do the Experiment

What happened? (Results/Observations)

Members record in the journals what they did and saw. They could also interview members and asked them why they chose what they did and what it tasted like.

Apply what we found out (Conclusions)

What did members find out? We “shy” away from new foods. If we do try it, it is in very small quantities’ and most of the time we won’t finish all of the serving. When our animals do this, it will lower their consumption and therefore their average daily gain or energy for performance.

Livestock Science Experiment

Topic Title: Frame Size and Market Ready Weights

What we know. Look it up! (Research)

Animals are different sizes; small, medium and large frame. Frame size will determine individual market ready weight. All livestock specie industries have an ideal market weight. Research frame scores and market weights for your project.

Problem (Situation)

Market animal projects need to be market ready by fair time. If you underfed your animal, you have potentially lost money because your animal should have been heavier at sale time. If you overfed to your animal's market weight you have lost money due to the extra feed you purchased.

Write your hypotheses

1. My animal is a _____ frame and will have a market ready weight of _____.
- 2.

Testing your hypothesis (Methods)

This is a long term experiment using 4-H/FFA county feeding periods for livestock species; typically 150 days for beef, 100 days for swine and 60 days for sheep and meat goats. Test your frame size selection.

What you need

- Animals of different frame sizes. (If members have multiple animals then may select different frame sizes or they may work as a club together)
- Feeding period of 150, 100 or 60 days
- Proper feed ration for the animal species

Set up the experiment

Select your market animals and determine the frame size.

Determine proper feed ration and follow through

At beginning weigh-in estimate the market ready weight of each animal.

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 and change last years project.

What happened? (Results/Observations)

Record in journal 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. Explain your feed ration.

Apply what we found out (Conclusions)

- What did members find out?
- Was your animal ideal market weight? Why or Why not?
- What will you do different next year when selecting or feeding your project animal?

Credit: written by Cindy A. Kinder, University of Idaho Extension Educator

Livestock Science Experiment

Topic Title: Water & Water Temperature

What we know. Look it up! (Research)

Different species of livestock require different amounts of water on a daily basis. Livestock also prefer water that is clean and cool.

Problem (Situation)

There are lots of containers to water animals in. Having the correct size that holds enough and keeps it clean and cool is important. What type of container is best for my animal?

Write your hypotheses

I think _____ will be the best water container and will keep the water at _____ temperature and clean.

Testing your hypothesis (Methods)

Test different water containers determining how much they each hold, calculating how many times it would have to be filled on a daily or weekly basis. Measure the water temperature until all the water would be consumed by your animal.

What you need

Different types of water containers
Thermometer that can be dunked in water
Journal for recording readings

Set up the experiment

Research how much water your animal would consume on a daily basis. Gather up different types of water containers and determine the capacity of each one. Figure how many times you would have to fill the container to meet animal's daily requirements. If it holds more than required, how many days would it take to empty it. Fill the containers and record the temperatures and score the "cleanliness" of the water.

Change and Re-do the Experiment

What happened? (Results/Observations)

Record the temperatures and how often the container had to be filled or how long the water lasted. Review the cleanliness scores and determine the best container for your animal.

Apply what we found out (Conclusions)

What did you find out? Small containers stay cool and clean, but have to be filled more than once a day. Large containers do not have to be filled often, but water will be warmer and dirtier.

Credit: written by Cindy Kinder and Shannon Williams, UI Extension Educators

Livestock & Horse Science Experiment

Topic Title: Water Quantity

What we know. Look it up! (Research)

Different species of livestock require different amounts of water on a daily basis. Research how much your project animal needs on a daily basis.

Problem (Situation)

There are lots of containers to water animals in. Having the correct size that holds enough and keeps it clean and cool is important. What type of container is best for your animal?

Write your hypotheses

1. I think _____ will be the best water container

Testing your hypothesis (Methods)

Test different water containers determining how much they each hold, calculating how many times it would have to be filled on a daily or weekly basis.

What you need

Water
Different types of water containers
Journal for recording data

Set up the experiment

Gather up different types of water containers and determine the capacity of each one. Figure how many times you would have to fill the container to meet animal's daily requirements. If it holds more than required, how many days would it take to empty it.

Change and Re-do the Experiment

What happened? (Results/Observations)

Record how often the container had to be filled or how long the water lasted. Determine the best container for your animal.

Apply what we found out (Conclusions)

What did members find out? When horses don't drink do they perform as well?

Credit: written by Shannon K. Williams, University of Idaho Extension Educator

Science Experiment Template

Topic Title:

What we know. Look it up! (Research)

Problem (Situation)

Write your hypotheses

Testing your hypothesis (Methods)

What you need

Set up the experiment

Change and Re-do the Experiment

What happened? (Results/Observations)

Apply what we found out (Conclusions)