

# Feed Rations Lab

Activity from Kelsey Lichtenwalner, Livestock Agent  
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## Opening Question:

- What do you think livestock (horses, cattle, pigs, sheep, and goats) eat? Do you eat the same thing as them?

## Introduction

Did you know livestock are the ultimate recyclers? Instead of taking **by-products** that we cannot eat or use – like **cottonseed**, **soybean hulls**, **distillers' grain**, and even **cookie crumbs** - to the landfill, we can feed them to our livestock!

However, farmers have to make sure they are feeding their livestock a balanced, healthy diet. Farmers combine different feedstuffs and by-products to make a **feed ration** that meets their livestock's needs in four basic categories – **Energy**, **Protein**, **Fat**, and **Minerals**. All feedstuff and by-products for livestock fall in one or more of these categories! For example:

- Oats, Wheat, Barley, Corn, and Distillers Grain are high in – **ENERGY**
- Soybeans, Cottonseed, and Alfalfa Meal are high in – **PROTEIN**
- Cottonseed and Peanut Skins are high in - **FAT**

Feedstuff that is high in energy is the biggest component of a healthy feed ration. Usually up 70-80%! Protein is the second biggest, making up 10-20% of the feed ration. Fat and minerals are the smallest part of a healthy feed ration – just like us! – at only 1-3%.

## Materials List

- Sealable Ziploc Sandwich Bags – 1 per child
- 1/3 measuring cup
- ¼ measuring cup
- 1 tablespoon
- Permanent marker (1 per group to write the surface name on each bag)
- Trail Mix Ingredients
  - 1 or 2 Energy Options – Cheerios, Life Cereal, Pretzels, Popcorn or Goldfish
  - 1 Protein Option – Almonds, Pistachios, Peanuts, or Pepitas
  - 1 Fat Option – Raisins, M&M's, or Chocolate Chips
  - 1 Mineral Option – Old Bay Seasoning or Popcorn Seasoning (ex: White Cheddar)

## Instructions

1. Give each participant a plastic, sealable Ziploc bag and have them write their name on it.
2. Ingredients high in energy make up 70-80% of a feed ration! Give each participant two 1/3 cup scoops of an ENERGY ingredient (or have 2 ENERGY ingredients and give them 1 of each!).

3. Ingredients high in protein make up 10-20% of a feed ration! Give each participant one ¼ cup scoop of a **PROTEIN** ingredient.
4. Ingredients high in fat are important in a healthy, well-balanced feed ration, but only in small doses! Give each participant two tablespoons of a **FAT** ingredient.
5. Sprinkle each participants' trail mix with a **MINERAL**.
6. Did you know livestock are picky eaters? In order to make sure they eat ALL of their feed ration, farmers mix the ingredients together! For this step, have each participant seal their Ziploc bags (you may want to check behind them) and shake their trail mix until combined.
7. Enjoy!



### Talk It Over:

- **What are some other ingredients we could add or substitute in our trail mix that would be an example of ENERGY, PROTEIN, FAT, or MINERAL?**
- **What are some other waste or by-products that we could feed to livestock?**
  - **Food Scraps**
  - **Expired Bread**
  - **Wheat Straw**

### Definitions

- **By-Products** – By-Product feeds come from a variety of sources, including grain processing, production of human foods and beverages, and manufacturing of fiber products.
- **Cottonseed** – the seed of a cotton plant. Can be pressed for oil, or fed to livestock either whole or crushed into a meal.
- **Soybean Hulls** – are a by-product from extracting oil from soybeans. Soybean Hulls are light, flaky and bulky.
- **Distillers Grain** – is a by-product from distilling alcohols, such as whiskey or rum, and is usually a mix of corn, rice, and other grains (wheat, barley, rye, etc).
- **Cookie Crumbs** – Stale bread and bakery crumbs from large food manufacturers are often combined with other feed ingredients to make a highly palatable feed. This is most often found on hog farms to encourage young, newly weaned piglets to eat feed.
- **Feed Ration** – the daily feed portion prepared from various ingredients to meet livestock's daily nutritional requirements.
- **Energy** – Typically ingredients high in Carbohydrates.
- **Protein** -Essential for the growth, production and reproduction of livestock.
- **Fat** – Made of lipids and are often oily, fats are very high in energy and fed sparingly.
- **Minerals** – Essential for life, common minerals found in livestock feed rations are salt, calcium, phosphorus, potassium, magnesium, and manganese.