

## **Putting Science into Animal Science Projects**

**Area:** Feeding Livestock

**Activity:** Interpreting Feed Labels

**Goal:** Learn to read and compare feed labels

**Materials Needed:** Attached copies of feed labels and worksheet

### **How to do the activity:**

- Discuss the background information with members using the leading questions.
- Divide members into pairs. Give each pair a set of feed labels and a worksheet.
- Have pairs work together to fill out the worksheet.
- Discuss worksheet answers and use the leading questions.
- Think beyond the worksheet to relate the information to the member's actual projects.

### **Conclusion:**

By completing this activity, 4-H members have been able to explore some concepts of science. They have asked questions, answered questions, gained some factual knowledge, and have hopefully been prompted/encouraged to ask more questions. *How else might this \_\_\_\_\_? What if \_\_\_\_\_ were done? Why did I get these results?* As they grow/expand their knowledge with Inquiry Based Learning, they are learning life skills that they will use again and again as capable adults.

### **RESOURCES:**

American Pork Producers Association.2009.Pork Quality Assurance Youth Program.

Blauwikel R, Hansen D.E., Froseth J.A., Newman J.A. 1999. Quality Assurance and Animal Care Youth Education Program, Unit IV: Livestock Feeds and Feeding to Promote Animal Well-Being and Product Quality.

## Interpreting Feed Labels

### Background :

Feeds mixed by a feed company must have a label that lists the ingredients in the feed. The actual amount of ingredients is not usually given, but the most prevalent ingredient is usually listed first.

The label must also state the analysis of the feed. This part of the label explains what nutrients are in the feed. Nutrients are the building blocks contained in the feed. Nutrients are chemical substances required by animals in order to live, grow, reproduce and make milk. Every living thing requires these nutrients:

- WATER carries other substances around in the body and helps to regulate body temperature.
- CARBOHYDRATES furnish energy for moving, working, growing and generating heat.
- FATS are used to store energy.
- PROTEINS are used to build parts of the animal's body, like muscle or skin.
- MINERALS make the animal's skeleton strong and regulate movement of water in the body.
- VITAMINS are only needed in very small amounts in the diet, but they are important because they "catalyze" or start necessary chemical reactions in the body.

The label on an animal feed tells the ingredients and nutrients in the feed. The actual amount of nutrients (and feed) required depends on the type of animal, its age, how fast it is growing, and its environment.

The label also includes directions that explain how much of the product to feed and if there is a withdrawal time for the feed. Sometimes feed contains medication to protect the animal from diseases or to make the animal grow more quickly. It is important that these medications are not present in your animal's meat when the animal goes to market. People who eat meat (or consume other animal products) do not want to eat chemicals other than the normal substances present.

### Questions to Ask:

- Why don't feed companies list exact formulations on their feed labels?
  - Proprietary formulas that they do not want duplicated
  - Formulation may change based on least cost as the prices of ingredients fluctuate
- What are some specific things that might affect an animal's nutrient requirements?
- What is the difference between ingredients and nutrients?
- If nutrients are chemical substances, doesn't that mean that every animal contains chemicals no matter what we do?
- Why are we concerned about added chemicals (medication) in feed, but not about chemicals that are nutrients?

# Pig Grower

## Medicated for pigs between 30 and 75 pounds

Administer to swine in complete feed for reduction of the incidence of cervical abscesses; treatment of BACTERIAL SWINE ENTERITIS (SALMONELLA or NECROTIC ENTERITIS caused by *Salmonella choleraesuis* or VIBRONIC DYSENTERY), maintenance of weight gains in the presence of ATROPHIC RHINITIS.

### Active Drug Ingredients

Chloretracycline .....	100G/Ton
Sulfathiazole .....	0.011%(100G/Ton)
Penicilin .....	50G/Ton

### Guaranteed Analysis

Crude Protein.....	min 18.00%
Lysine.....	min 1.10%
Crude Fat.....	min 6.50%
Crude Fiber.....	max 4.00%
Calcium.....	min 0.60%
Calcium.....	max 1.10%
Phosphorus.....	min 0.40%
Salt.....	min 0.40%
Salt.....	max 0.90%
Selenium.....	min 0.30 PPM
Zinc.....	min 0.30 PPM

### Ingredients

Grain Products, Plant protein Products, Processed Grain By-Products, Animal Fat, Animal Protein Products, Calcium Phosphate, Lignin, Sulfonate, Ground Limestone, Salt, L-Lysine Monohydrochloride, Methionine Supplement, Zinc Oxide, Zinc Sulfate, Ferrous Sulfate, Manganous Oxide, Copper Sulfate, Calcium Iodate, Sodium Selenite, Vitamin A Acetate, Vitamin D-3 Supplement, Menadione Dimethylpyrimidinal Bisulphate, Riboflavin Supplement, Niacin, Calcium Pantothenate, Vitamin B-12 Supplement, Thiamine Mononitrate, Folic Acid, Choline Chloride, Pyridoxine Hydrochloride, Biotin, Ethoxyquin (as a preservative)

### Feeding Directions

Feed as the only ration to pigs weighing from 30 to 75 pounds body-weight.

**Caution:** In order to obtain the desired performance results, the animal should be self-fed.

**Warning:** Withdrawal 7 days prior to slaughter; contains high levels of cooper, do not feed to sheep.

Manufactured By:  
Skill-a-thon Feed Mills

Net Weight 50 pounds (2.7 Kilograms)  
or as shown on shipping document

# SWINE TIME BMD

COMPLETE SWINE GROWER  
FOR PIGS WEIGHING 125-190 LBS.  
For increased rate of weight gain and  
improved feed efficiency.

### ACTIVE DRUG INGREDIENT

Bacitracin Methylene Disalicylate...30 grams/ton

### GUARANTEED ANALYSIS

Crude Protein, Not less than.....	14.0 %
L-Lysine, Not less than.....	0.80%
Crude Fat, Not less than.....	4.5 %
Crude Fiber, Not more than.....	5.0 %
Calcium (Ca), Not less than.....	0.4 %
Calcium (Ca), Not more than.....	0.9 %
Phosphorus (P), Not less than.....	0.55%
Salt (NaCl), Not less than.....	0.30%
Salt (NaCl), Not more than.....	0.80%
Selenium (Se), ppm, Not less than.....	0.3
Zinc (Zn), ppm, Not less than.....	100

### INGREDIENTS

Grain Products, Plant Protein Products, Animal Protein Products, Processed Grain By-Products, L-Lysine, Hydrolyzed Animal and Vegetable Fat, Calcium Carbonate, Monocalcium/Dicalcium Phosphate, Salt, Copper Sulfate, Basic Copper Chloride, Calcium Iodate, Ferrous Sulfate, Manganous Oxide, Sodium Selenite, Zinc Oxide, Vitamin A Acetate, Vitamin D<sub>3</sub> Supplement, Vitamin E Supplement, Menadione Sodium Bisulfite Complex, Riboflavin, Niacin Supplement, Calcium Pantothenate, Vitamin B<sub>12</sub> Supplement, Choline Chloride

### FEEDING DIRECTIONS

Feed continuously as the sole ration to pigs according to the body weight range and conditions where a 0.80% (approximate) total lysine level is appropriate. Swine Time is generally fed to pigs weighing between 125 lbs. and 190 lbs.

### →WARNING←

Do not feed to cattle or other ruminants.

Manufactured By  
4H Incorporated  
P.O. Box 999  
Wherever, USA

50 Lb (22.68 kg) Net Weight  
77777

WORKSHEET  
Interpreting a Feed Label

Answer the following questions using the feed labels provided:

PIG GROWER	SWINE TIME BMD
What is the major ingredient in this feed?	What is the major ingredient in this feed?
How many active drug ingredients are in this feed?	How many active drug ingredients are in this feed?
What is the purpose of the medication (active drug ingredients) in this feed?	What is the purpose of the medication (active drug ingredients) in this feed?
How many days prior to slaughter should this feed be removed?	How many days prior to slaughter should this feed be removed?
At what weight range should this ration be fed?	At what weight range should this ration be fed?
If I run out of sheep feed, is it okay to give my market lamb some of this feed?	If I run out of sheep feed, is it okay to give my market lamb some of this feed?
While feeding this ration, what other nutrients does your pig require?	While feeding this ration, what other nutrients does your pig require?
How much of this feed should be fed each day?	How much of this feed should be fed each day?

Answer the following questions using the feed labels provided:

PIG GROWER	SWINE TIME BMD
Minimum Crude Protein Level?	Minimum Crude Protein Level?
Minimum Lysine Level?	Minimum Lysine Level?
Minimum Crude Fat Level?	Minimum Crude Fat Level?
Maximum Crude Fiber Level?	Maximum Crude Fiber Level?
Range of Calcium Level?	Range of Calcium Level?
Minimum Phosphorus Level?	Minimum Phosphorus Level?
Range of Salt Level?	Range of Salt Level?
Minimum Selenium?	Minimum Selenium?

ANSWER KEY FOR WORKSHEET

PIG GROWER	SWINE TIME BMD
<p>What is the major ingredient in this feed?</p> <p>GRAIN PRODUCTS</p>	<p>What is the major ingredient in this feed?</p> <p>GRAIN PRODUCTS</p>
<p>How many active drug ingredients are in this feed?</p> <p>THREE</p>	<p>How many active drug ingredients are in this feed?</p> <p>ONE</p>
<p>What is the purpose of the medication (active drug ingredients) in this feed?</p> <p>REDUCTION OF CERVICAL ABCESES; TREATMENT OF BACTERIAL SWINE ENTERITIS; MAINTENANCE OF WEIGHT GAINS IN THE PRESENCE OF ATROPHIC RHINITIS</p>	<p>What is the purpose of the medication (active drug ingredients) in this feed?</p> <p>INCREASED RATE OF WEIGHT GAIN AND IMPROVED FEED EFFICIENCY</p>
<p>How many days prior to slaughter should this feed be removed?</p> <p>7</p>	<p>How many days prior to slaughter should this feed be removed?</p> <p>0 (no withdrawal)</p>
<p>At what weight range should this ration be fed?</p> <p>30 – 75 pounds</p>	<p>At what weight range should this ration be fed?</p> <p>125 – 190 pounds</p>
<p>If I run out of sheep feed, is it okay to give my market lamb some of this feed?</p> <p>No, contains high levels of copper</p>	<p>If I run out of sheep feed, is it okay to give my market lamb some of this feed?</p> <p>No, do not feed to ruminants</p>
<p>While feeding this ration, what other nutrients does your pig require?</p> <p>Complete ration, only requires water</p>	<p>While feeding this ration, what other nutrients does your pig require?</p> <p>Complete ration, only requires water</p>
<p>How much of this feed should be fed each day?</p> <p>Self-fed (free choice)</p>	<p>How much of this feed should be fed each day?</p> <p>Continuously (free choice)</p>

PIG GROWER	SWINE TIME BMD
Minimum Crude Protein Level? 18%	Minimum Crude Protein Level? 14%
Minimum Lysine Level? 1.1%	Minimum Lysine Level? .8%
Minimum Crude Fat Level? 6.5%	Minimum Crude Fat Level? 4.5%
Maximum Crude Fiber Level? 4%	Maximum Crude Fiber Level? 5%
Range of Calcium Level? .6 – 1.1%	Range of Calcium Level? .4 - .9%
Minimum Phosphorus Level? .4%	Minimum Phosphorus Level? .55%
Range of Salt Level? .4 - .9%	Range of Salt Level? .3 - .8%
Minimum Selenium? .3 PPM	Minimum Selenium? .3PPM

#### Leading Questions:

- Why is the protein level in the Pig Grower higher than the level in the Swine Time BMD?
  - It is designed for younger pigs and younger animals require a higher protein level.
- Why is the lysine level in the Pig Grower higher than the level in the Swine Time BMD?
  - Lysine is an essential amino acid that helps animals grow. Animals cannot produce lysine, but get it by ingesting plant proteins.
  - Adding lysine to a pig's diet allows it to grow using lower cost protein sources.
  - The growth rate slows as an animal grows, so the larger pigs do not need as much lysine in their diet as the smaller pigs.
- Why is it important to read the labels provided with a feed?
  - Make sure it is appropriate for the type and size of livestock you are feeding.
  - Know if there is a withdrawal time to be considered.
  - Determine how the feed is to be fed and how much.
- How can not following the directions on a feed tag affect the quality of meat produced from your animal?
  - Could end up with residues in the meat if withdrawal times are not followed or if the feed is fed differently than on the feed label.