



PROPER ON-FARM RATION PREPARATION

Producers who prepare livestock feeds on-farm must accept responsibility for ensuring quality control of their feeding program. Excessive variations in nutrient levels of complete feeds can increase the cost of production by (1) reducing performance if the animal's nutrient requirements are not met or (2) increasing diet cost through excessive nutrient levels. Furthermore, improved on-farm quality control is essential to avoid drug residue problems so that safe and wholesome products are provided to consumers.

Developing an on-farm feed quality control program involves following these important steps.

1. *Formulate diets correctly*

Nutrient requirements and recommended levels of nutrients for all classes of livestock are available. The quality of the finished feed can be no better than that of its ingredients. Purchased components should be purchased on the basis of quality assurance. Feed-stuffs should be analyzed before formulating diets. Your Vigortone representative can help with sampling and formulation.

2. *Follow directions precisely*

Each Vigortone product is specifically designed to meet the nutrient needs of a class of livestock when mixed and fed according to directions. Any deviations from specified mixing directions should be discussed with your Vigortone nutritionist.

Use of scales for batch mixers is necessary to ensure that proper amounts of ingredients are mixed. If a volumetric system is used to measure ingredients, check the bulk density of every load received and recalibrate proportioner.

Have a checklist located on or near the mixer to record the addition of ingredients to the mix and monitor ingredient usage. (Use Form No. 1071 — On-Farm Ration Preparation: Feed Mixing Checklist or Vigortone crack-and-peel mixer decal [Form No. 1098].) All bagged ingredients

should be labeled clearly to prevent adding incorrect ingredients.

3. *Use the proper equipment*

Older grinder/mixers should be checked for wear. If hammer edges are rounded, turn hammers. Rehole or replace screen when hole surface becomes rounded or dull. Smaller, more uniform particle size decreases segregation and increases digestibility. Appropriate particle size for swine diets (600-900 microns) can be obtained by using a $\frac{3}{16}$ to $\frac{1}{4}$ -inch screen.

4. *Add ingredients in proper sequence*

Add major feed ingredients (grain and protein ingredients) to the mixer first. Premixes and feed additives that are added at less than 40 lbs/ton of complete feed should be mixed with a small amount of grain or protein ingredient to equal 40 lbs before adding to a vertical mixer. All ingredients should be added with the mixer running. Leave at least 8-12 inches clearance at the top of the vertical mixer because overfilling seriously limits mixing action.

5. *Use adequate time for mixing*

Proper mixing allows even distribution of particles from every feed ingredient throughout the entire batch. Recommended mixing times are 15 minutes for a vertical, single screw mixer and 5 minutes for a horizontal mixer after the addition of the last ingredient. Operate the mixer at the recommended rpms for maximum mixing. Older mixers may require more mixing time. In a vertical, single screw mixer, wear of 0.25-0.5 inches on the screw increases required mixing time 50%. When wear exceeds 0.5 inches, replace the screw. A good mixer is designed for mixing, and if operated at the recommended speed, extended mixing time will not unmix feed. After the batch is discharged from the mixer, clean the mixer by flushing it with a small amount of ground grain and by cleaning out the trap between batches of feed that contain feed additives.

(continued)

6. *Check accuracy of mixing*

The accuracy of mixing should be checked periodically, and especially when the formulation or equipment is changed, by obtaining feed samples from a single batch and sending them to a feed analysis laboratory (see Timely Topic No. 1070 — Feed Sampling Procedures and Evaluation of Feed Test).

7. *Evaluate feed test results*

If the nutrient content of the ration is different from the targeted values, the differ-

ences could occur from incorrect quantity of ingredients added to the ration, incorrect nutrient content of ingredients used in formulation, improper mixing or sampling, laboratory analytical error or a combination of these factors. Check the items on the following On-Farm Ration Preparation Troubleshooting Guide or contact your Vigortone representative to assist you in determining which factors are contributing to the differences between formulation and feed test values.

On-Farm Ration Preparation Troubleshooting Guide

<u>Problem</u>	<u>Solution</u>
A. Improper mixing	A. Add ingredients in proper order with mixer running. Mix for at least 15 minutes. Mix at recommended rpms. Do not overfill the mixer.
B. Hammer edges rounded	B. Turn or replace hammers.
C. Screen hole edges rounded	C. Rehole or replace screen.
D. Vertical screw edges worn 0.25-0.50 inches	D. Increase mixing time to 25 minutes.
E. Vertical screw edges worn more than 0.50 inches	E. Replace screw.
F. Particle segregation or dusty feed	F. Check particle size of grain. Check hammers and screen. Add 20 lbs fat/ton complete feed.
G. Drug residue	G. Mix nonmedicated feeds first. Clean mixer after medicated feeds.
H. Ration nutrient content unequal to targeted values	H. Incorrect nutrient values used in formulation. Incorrect quantity of ingredients added to ration. Improper mixing (see A.) Separation of ingredients during delivery process to feeder. Improper sampling procedure. Laboratory analytical error.