



from North Carolina State University at Raleigh / Extension Poultry Science

FEED MILLING SERIES A Brief Outline of a Feed Quality Assurance Program

- I. Goals of the Quality Assurance Program
 - A. To produce and correctly deliver feeds which consistently meet formulated nutrient levels.
 - B. To produce and deliver feeds which are free of toxic substances and pathogenic microorganisms.
 - C. To produce and deliver feeds as safely and inexpensively as possible.
- II. An Outline of a Feed Quality Assurance Program
 - A. Ingredient Quality
 1. What do you want in ingredients?
 - a. Put *in writing* the assay values you expect to receive in your ingredients.
 - b. Describe how each ingredient should look, smell and feel.
 2. Send a *written* copy of your ingredient needs to your suppliers. Let each supplier know you are concerned about quality and are checking the quality of his product.
 3. Inspect incoming ingredients *before* unloading for:
 - a. Dampness
 - b. Color
 - c. Odor
 - d. Texture
 - e. Caking
 - f. Foreign Material
 - g. Infestation
 4. Collect a representative sample of each ingredient load received at the mill for laboratory analysis and send samples off promptly.
 5. File deficiency claims on every product you can.
 - B. Production and Processing of Feeds
 1. Impress upon your personnel the importance of quality in your feed products. Be certain that they have the knowledge and materials necessary to perform their jobs.
 2. Be certain that the panel equipment and bin controls are adequately and clearly labeled.
 3. Machinery checks
 - a. Hammer mills (including magnets, screens, hammers and fan blades) should be checked at least once a day. If corn is used in pelleted feeds it should all pass through a No. 7 screen.
 - b. Mixer tests should be done at least once a quarter.
 - c. Pelleting equipment should be checked at least weekly. This check should include cleaning magnets and the following:
 - (1) Mash conditioning
 - (a) Catch a few pellets as they come out of the mill and squeeze them between your fingers. If conditioning is adequate, pellets should remain soft and plastic when squeezed. If pellets immediately break up and go back to fines, conditioning may be inadequate.
 - (b) For most formulas, the temperature of the mash as it enters the die should be between 170 and 190°F.
 - (2) Roller to die clearance. Place a feed tag between each roll and the die surface with the mill stopped. Jog the mill with the electrical switch to run the tag between the roll and the die face. The tag should show a good imprint on the die face but should *not* show any points where it has been cut through.
 - (3) Cooling. Collect a sample of mash feed as it leaves the mixer and a sample of pellets as they leave the cooler. Run moisture on both samples. If the pellet sample is higher in moisture, the cooling system should be cleaned and checked.
 - d. Conveying equipment. Each piece of conveying equipment should be *sealed* to prevent dust from escaping. In addition, each piece should be checked once a quarter for worn screw flights, paddles or buckets as well as for leaks.
 - e. Fat and liquid addition systems should be checked and calibrated daily.
 - f. Scales and weighing devices should be on a regular service contract with a reputable firm. In addition, they should be checked for accuracy once a week.
 4. Production scheduling. Feeds should be produced so that all medicated feeds having the same drug(s) are produced in sequence having the highest levels first and ending with the lowest levels. Follow this production sequence with a non-medicated feed for the same animal species.

5. The necessary records
 - a. Ingredient receiving records. The condition, weight, car number and other particulars should be noted on each ingredient load.
 - b. Ingredient assay records. The assay records received from the laboratory should be entered as received and averaged once a month. This information is vital to both the purchasing agent and the nutritionist.
 - c. Major ingredient inventory should be done weekly. Compare actual usage and theoretical usage. There should be a less than 5 percent difference.
 - d. Micro ingredient inventory should be done *daily*. Compare actual and theoretical usage. There should be less than 5 percent difference.
 - e. Batch records. Keep a running total of the batches of the various kinds of feeds during the day. This should include: The time made, the amount, number and type of premix used, the bin to which the finished feed was routed and any comments about the batch of feed.
 - f. Distribution records. These records should include the destination weight, driver, time dispatched and storage bin from which the feed was drawn.
 - g. Feed delivery investigation records. Compare the amount of the various feeds produced with the amount on hand plus the amount shipped. There should be a less than 5 percent difference between these figures.
- C. Finished Feed Quality
1. Samples should be collected from the same place within the mill each time since assays will tend to vary if collected from various places.
 2. One sample of each feed should be collected each week or one sample per 100 tons of production, which ever occurs most often. These samples should be sent promptly to the lab for analysis.
 3. Laboratory assays on finished feeds should be compared with formulated values and, as a rough rule of thumb, there should be a less than 5 percent difference between the two.
- D. Toxic Substances
1. "Check samples" of the following ingredients should be maintained until the animals consuming the feed are sent to market.

a. Fat	d. Alfalfa Meal
b. Fish Meal	e. Coastal Bermuda Meal
c. Meat Meal	f. Dried Bakery Product
 2. At least once a month spot checks for pesticide residue should be run on fat and finished feeds.
 3. Mycotoxin control
 - a. Examine all corn shipments carefully and reject any poor quality corn. This examination should include a check of moisture, corn grade and a check for aflatoxin.
 - b. If corn is to be stored for more than a few weeks, it should be dried as quickly as possible to less than 13 percent moisture for storage.
 - c. Insist on the periodic cleaning of all feed handling and delivery equipment.
 - d. Keep finished feed storage times as short as possible.
 4. Control of pathogens
 - a. Buy ingredients from reputable suppliers and do *not* look for "bargains".
 - b. Check all ingredients derived from animals at least once a month for *Salmonella*.

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Published by
THE NORTH CAROLINA AGRICULTURAL EXTENSION SERVICE

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