

## Proper Sampling Procedures for Bulk Ingredients

### Receiving Requirements

Receiving may be the most important step in making a quality feed. No feed can be better than the quality of the ingredients of which it is composed. Therefore, it is imperative that those performing the receiving function adhere to strict guidelines pertaining to ingredient specifications and inspection. The greatest need is for automated sampling of grains and dry bulk materials because these ingredients constitute, by far, the largest volume requiring sampling in most mills.

### Manual Sampling Equipment

Where automated sampling systems are not available, the following procedures are recommended: Compartmentalized probes allow for accurate representations and views of all layers of a lot of ingredients. The choice of probe type notwithstanding, the need to reach portions throughout a truck or carload gives ample reason for several sizes of probes.

Probes used for sampling are typically constructed of brass or aluminum and come in various sizes with standard lengths of 5, 6, 8, 10 and 12 feet. The type of carrier dictates which probe length is used. Probes consist of two tubes, one inside the other. The inner tube is divided into compartments. The outer tube has slots which match the compartment openings of the inner tube. When the tubes are aligned, grain may enter into or be emptied from the compartments of the probe. Mechanical probes, like hand probes, are used to sample stationary lots of grain in trucks and other open-top carriers. Each lot should be probed in as many locations as necessary to ensure the sample is the required size and representative of the lot of product being sampled. The following diagrams indicate the standard sampling patterns. Insert the probe at the points marked, with the tip of the probe angled ten degrees.

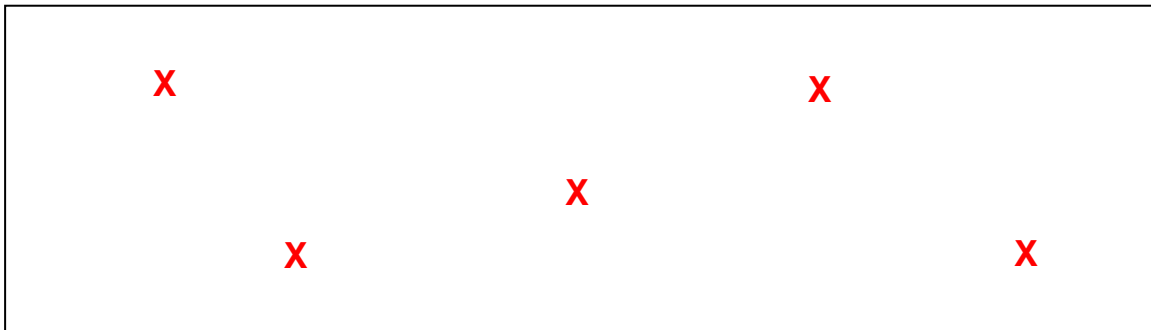


For open-truck shipments, the probe described can be used. The probe is inserted at an angle of 10 degrees to vertical with slots closed and facing up. The slots are opened and the probe is moved up and down twice to fill it. The slots then are closed and the probe is withdrawn. At least five locations spaced over the load should be probed with not more than one probe in the centerline of the load and all cores combined in a container until tested.

Many hopper cars and trucks are impossible to sample completely through the loading ports. If a sample, as described above, cannot be obtained, the sample should be taken and inspected before material is allowed into the receiving pit. Cover the receiving pit and allow enough material to drop onto the cover to obtain a sample.

**Probe Sizes for Sampling Stationary Lots of Grain**

Carrier	Length in Feet
Flat-bed truck/trailer	5 or 6
Hopper-bottom trailer	6, 8, or 10
Box Car	6
Hopper Car	10 or 12
Barge	12



**Automated or Mechanized Samplers**

Automated samplers offer several benefits and allow for more accurate sampling results by taking samples at designated intervals. Mechanized probes make reaching the bottom of transport vehicles much easier. Splitting also can be done mechanically to create a more representative sample. Automatic samplers can be placed where employee safety is a concern. They often are recommended over manual sampling techniques for both bulk feeds and ingredients. In addition, the U.S. Department of Agriculture has approved certain models of automatic samplers for official use (GIPSA, 2001a).

**Ingredient Rejection**

Rejection procedures must be established. Inevitably, at any firm, a shipment will arrive that is either damaged or so far out of specification that it cannot be used and must be rejected. Each firm must decide, in advance, what it will or will not accept and establish a rejection procedure before the problem arises. The authority to make the final decision must rest with one department and usually one person, whether the head of quality

assurance and feed safety, the purchasing agent, or the president of the company. If rejection becomes necessary, the original shipper should be required to reship the railcar or truck. This keeps the responsibility for a rejected load out of the hands of the receiving firm that rejected it.

Once the decision to reject a shipment has been made, it should be adhered to each and every time. Bending to pressure from one supplier soon will brand a firm with a reputation for accepting and using off-grade ingredients. This reputation can be very damaging. On the other hand, a reputation for sampling and inspecting all ingredients greatly reduces the chances of receiving damaged or out-of-specification ingredients from most suppliers.