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## ON-FARM FEED UNIFORMITY SURVEY

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### Summary

An on-farm feed manufacturing survey was conducted in conjunction with a mixer uniformity analysis. The survey collected information on producer size and type of operation, mixer type, manufacturing practices, and feed production. The survey represents 43 participants from across the U.S. Results indicate that 42% of the participants had mixer uniformity coefficients of variation of less than 10%, 47% were between 10-20%, and 11% had CV's greater than 20%.

(Key Words: On-Farm Feed Manufacturing, Feed Uniformity, Mixers.)

### Procedures

Mixer analysis kits were sent out upon request to producers to test their mixing efficiency. The producer had to obtain 10 samples at evenly spaced intervals as the feed was removed from the mixer. In addition, each producer had to complete a survey form. Information was collected on producer size and type of operation, mixer type, manufacturing practices, and feed production.

The samples were analyzed for uniformity of salt distribution by the Quantab<sup>R</sup> Ion strip test. Coefficient of variation (CV) was calculated for each producer. When using the Quantab<sup>R</sup> Ion test, CV's less than 10% indicated a uniformly mixed diet (a CV of 10% takes into account sampling errors and analytical errors).

### Results and Discussion

Results indicate that a majority of on-farm feed manufacturers may not be producing a uniformly mixed feed (Table 1) with desired CV's of less than 10%. Non-uniformity becomes more critical when medicated feed additives are included in the feed. The survey indicated that production size had no significant effect on uniformity results. Results did not favor any particular mixer type.

Feed uniformity can be improved by proper ingredient sequencing. A proper ingredient sequence would be: protein source, premix, flush after the premix (protein source or ground grain), then grain. Grinding to a particle size of less than 800 microns also will help improve feed uniformity. Periodic inspec-

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<sup>1</sup>To obtain a mixer analysis kit send your name and address to:

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tion and repair of worn equipment will help prevent poor feed uniformity. Finally, mixers should be tested annually to determine if the feed manufacturing protocol is sufficient or if

it should be changed. However, the first step is to develop a feed manufacturing protocol that assures a uniform feed.

**Table 1. Results of Mixer Uniformity Analysis for Each Mixer Type**

Mixer Type	Coefficient of Variation <sup>a</sup>		
	< 10 %	10-20 %	20+ %
Vertical Portable	13	13	3
Vertical Stationary	1	1	1
Horizontal Paddle	2	2	--
Horizontal Double Ribbon	2	--	1
Drum	--	2	--
Other	--	2	--
Total	18	20	5

<sup>a</sup>A coefficient of variation less than 10% indicates a uniformly mixed diet.



**Lyell Nelson, Dr. Don Kropf, and John Wolf evaluate carcasses in the KSU Meats Lab,**