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Problems Identification and Solutions

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PROBLEM IDENTIFICATION AND SOLUTIONS

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Quite frequently, a seedsman does not realize he has a problem until the end product is analyzed. When he gets a report from a testing laboratory or views the results of some of his own tests and finds germination is low or weed seed content is high or inert matter is higher, then he realizes that things have not gone the way he thought they were going and may have no idea where the problem might have occurred.

Problems can and do occur anywhere from the field to the bag, and unless the entire operation is monitored, it may not be possible to identify problems or causes of problems. Suppose the problem is low germination. How many things can you think of that might cause a drop in germination: (1) field exposure, (2) mechanical damage, (3) harvesting at too high a moisture content without drying, (4) improper storage, and others. Or, the problem may be weed content. We may tend to think of this as a processing problem, but most weed seed problems could and should have been prevented in the field. Inert matter, on the other hand, may be a harvesting or processing problem.

Let's examine two problems frequently encountered by seedsmen and how they might be identified and solved.

Problem 1. Soybeans germinate 90% or better at harvest time but germination has dropped into the 60's by April. This problem had occurred for more than one year.

In an attempt to solve the problem, a sample of beans was hand harvested. Since germination was high at harvest, you might ask, why sample from the field? The reason was to determine the amount of deterioration that had occurred prior to harvest. Seed might germinate well at harvest time but be so deteriorated that viability in storage is not maintained. Estimated germination of the hand harvested sample based on a tetrazolium test was 89%.

The second point of sampling was the combine. Samples were collected from the grain tank and truck or grain wagon used to transport seed to bulk storage. Seed were checked for mechanical damage and a second tetrazolium test conducted. Seed had only 7% mechanical damage and estimated germination was 89%.

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Beans were stored in bulk tanks and aerated periodically. Samples were taken in late November or early December before processing. Germination of beans from four storage tanks ranged from the high 80's to the low 90's.

Beans were processed, bagged, and stored on flats in an open warehouse. Samples were taken from the several lots periodically until the beans were sold. These tests up to the time of sale showed germination in the high 80's to the low 90's.

Over a period of several months and numerous tests, we learned very little about where this seedsman's problem of loss of germination of soybeans in storage might be occurring. We might suspect that since a hand harvested sample germinated only 89%, and from deteriorated areas on the bean radicles and cotyledons of the hand harvested beans, that field deterioration might contribute to the problems since the pattern of loss of germination occurred as it did previously. The only recourse is to follow a similar testing program in subsequent years.

Problem 2. Weed seed contamination of bahiagrass seed.

Bahiagrass is widely grown throughout south Mississippi as a permanent pasture grass. Seed are harvested from pastures by direct combining. Very few farmers manage bahiagrass for seed only; rather, seed are a by-product of pastures managed primarily for forage.

In unprocessed seed of bahiagrass, the primary weed seed contaminant was bracted plantain (*Plantago aristata*). Use of hand screens led to a selection of screens that would remove most of the plantain seed.

A closer examination of the weed seed occurring in the bahiagrass seed in this particular area of the state revealed that almost all of the weeds were species that produced seed in the spring (May and June), well ahead of bahiagrass. Good pasture management practices should eliminate these species, or at least keep seed from them from contaminating bahiagrass seed which are not ready for harvest until July.

Meetings with seedsmen and farmers resulted in some farmers improving pasture management practices. The following year, analysis of spot-checked seed lots revealed that combine-run seed from some of these properly managed areas ran as high as 98% purity, with very few weed seeds.