



Seed Vigor: Reap the Rewards

by Matt Hagny, agronomy consultant since '94.

In tandem with the *mechanical* aspects of attaining consistently good stand establishment, the oft-overlooked *biological* aspect of seed vigor plays a crucial role.

Great differences in health exist amongst seeds, and particularly amongst different seed lots. These differences in health (vigor) are due to things such as nutrient availability during grain fill, weather conditions during grain fill, weather during harvest (rainy and damp is detrimental), mechanical damage during harvest or afterwards in handling, and pathogens present (these get onto the grain both in the field and during handling, often residing in small fissures in the seed coat).

You probably are quite familiar with the most basic measurement of seed viability: Warm Germ(ination) scores, which are required by law in many states & provinces. But this is a low hurdle: Seeds in the field often encounter far worse conditions for germination and establishment than what occur during a standardized Warm Germ for any given crop. For a much more strict test of vigor, we need to use the tests called Accelerated Aging (AA) and Cold Germ. Cold Germ is simply carried out at colder temps than Warm Germ, which are different for each crop species. Accelerated Aging does what it says, by subjecting the seeds to cycles of temperature and humidity changes, followed by a Warm Germ test. Although measuring slightly different things, Cold Germ and AA should be used together, since they're both important predictors of viability in the field. (Note that test weight is a rather poor predictor of seed vigor.)

Readers in the Northern Hemisphere might wonder why this topic is presented at this calendar date—doesn't Cold Germ & AA pertain only to corn and soybeans? Actually, these vigor tests are available for a number of crops,* and are *particularly useful for winter wheat*.

Given that it takes 4+ weeks to get the results of these more intensive tests, it's time to get those winter wheat samples shipped off ASAP.

And since you might find some unpleasant surprises, I would strongly recommend that you test not just the seed lots you intend to plant, but several other back-up options from your seed suppliers or your grain bins.

One laboratory that has excellent creditability in the industry and has proven itself among the most stringent for AA and Cold Germ is SGS-Brookings (formerly Mid West Seed Services, but still under the same manager, Tim Gutormson, Ph.D.):



SGS / Mid West Seed Services
236 - 32nd Avenue
Brookings, SD 57006-4701
(605) 692-7611

For no-till conditions, a person should be leery of any wheat seed lots testing below 90% on *either* Cold Germ or AA. Once you have good seed lots verified, the next step is to protect and promote that vigor with an effective seed-applied fungicide. This way, when you take your finely tuned drill to the field, you can be assured the biological odds are stacked in your favor, too.

For a refresher on maintenance and adjustment of no-till drills, see: [Tech Tips for Drills](#), previous e-letters especially [Sept '08 \('Good Results at Harvest...'\)](#), and also our [DVD: No-Till Seeding Explained](#), which goes through the step-by-step process of adjusting your no-till drill in the field, as well as set up and maintenance.

*In addition to corn, soybeans, and wheat, SGS routinely conducts Cold Germ & AA on sunflowers, milo (sorghum), and cotton. Other species by request.

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Ideas in Action

by Matt Hagny

Kent Stones, a longtime no-tiller near Lebanon & Cawker City, KS, had far too many cases of stand failure or partial failure in his milo in '04-'05. "There were a couple years where I planted hundreds of milo acres not once, but twice. It literally cost me tens of thousands of dollars." One agronomist spent an entire day working with Kent's JD 1890 drill, under the assumption it was a seed placement problem.

While the seed placement no doubt could've been better, I suspected the primary culprit was seedling disease (*Fusarium* spp. & *Pythium* spp.). And having been down this road many times before, I knew that seed vigor was a key factor in the percentage of plants succumbing to those diseases (or being stunted).

So I persuaded Kent to get in the habit of taking delivery of his milo seed about 6 weeks early and pulling his own samples to run through SGS-Brookings, which is precisely what I had been emphasizing to clients for their corn seed for many years. Kent describes the results after several years of putting it in practice: "Once we went to testing our milo seed for Cold Germ and AA, and rejecting any seed lots that were less than 90% on either test, we completely eliminated our stand issues in milo." He continues, "It's one of the biggest money-making pieces of technological advice that we've found for milo production... My recommendation would be to encourage every producer to follow this advice for all crops."