SOYBEAN SEED SERVICES

MAKING THE DIFFERENCE

BEST PRACTICES FOR SOYBEAN QUALITY ASSURANCE TESTING

QUALITY: WHAT IT MEANS TO YOU

In today's precision farming environment, seedsmen and growers are most concerned with reducing risk to secure their target field populations and evaluate end products.

RECOMMENDED SOYBEAN TESTING STRATEGY

Knowing your seed's potential and ability to withstand stressful conditions is a crucial component to understanding performance.

Selecting SGS as your Quality Assurance Laboratory means you are committed to stringent seed quality assessments so you can provide your customer seed which will produce the target field populations that are accurate and create satisfied customers and quality end products.

Diagnostic testing strategies can be employed to meet your specific requirements for performance. The seed is tested using the best diagnostic laboratory methods and subjected to vigor tests that help you rank and control your inventory.

NEWLY HARVESTED SEED LOTS

Standard Germination (warm) – based on 400 seed to establish the maximum germination potential of the seed under ideal growing conditions.

The warm germination helps assess mechanical damage and can identify fungal species colonizing the seed. When warm tests dip below company standards, SGS recommends conducting a 400 seed sand germination test or when fungus is prevalent.

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Accelerated Aging Test (AA) – The AA is an excellent vigor test utilizing 42 grams of seed aged at 95% (relative humidity) for 72 hours at 41°C. The seed rehydrates to 28-32% moisture during this period, stimulating rapid seed aging/deterioration. This test is an excellent predictor of seed vigor. The AA test should be run in the fall on freshly harvested soybeans in the bin and again in the spring. Ideally in Midwestern states, the AA test value should be within 15 points of the warm germination result but not lower than 70%.

Herbicide Tolerance Trait Test– For soybeans, SGS offers Glyphosate tolerant (GT) and Glufosinate tolerant (LL) bioassays on 400 seeds. Germination and trait percentages are reported. Multiple other commercially available herbicide trait tests are also performed to verify presence or absence of the trait.

Visual Seed Defect (VSD) Exam – The VSD exam is a physical examination of a submitted sample. When performed along with our standard Varietal Purity (VP) examination, the VSD test provides a greater understanding of seed with undesirable characteristics (Bleeding Hilums, Purple Seed-Stained Beans and Diseased/Discolored Beans). The seed is examined and affected portions are weighed with overall percentages of each type reported. This test is an excellent tool for determining lots that may contain seed deemed undesirable to the buyer. Estimates of seed moisture and seed count should also be performed to gain additional information on your lot.

CONDITIONED SEED LOTS

Standard Germination (Warm)– based on 400 seed and a purity/noxious seed examination on 500 grams are the official tests required for labeling the seed lot. USA-bought seed should be tested in accordance with the Association of Seed Analysts (AOSA), since regulatory officials will check seed using this same set of rules.

Soybean Sand Germination – This test can average higher than a standard germination on top of Creped Cellulose Paper (CCP) or standard rolled towel test. 400 seeds are grown for 7 days at 25°C, in which the sand acts as a buffer between seeds, thus preventing cross contamination from any fungal growth.

Herbicide Tolerance Trait Test – SGS offers Glyphosate tolerant (GT) and Glufosinate tolerant (LL) bioassays on 400 seeds. Germination and trait percentages are reported. Multiple other herbicide trait tests are available.

Accelerated Aging Test (AA) - The AA is an excellent vigor test utilizing 42 grams of seed aged at 95% (relative humidity) for 72 hours at 41°C. The seed rehydrates to 28-32% moisture during this period, stimulating rapid seed aging/deterioration. This test is an excellent predictor of seed vigor.

Seed Count

Varietal Purity – Hilum check on untreated seed only.

SAI Loading – Loading rates of seed applied insecticides should be confirmed.

Seed Moisture

Tetrazolium (TZ) Testing

Hypochlorite Soak Test – The hypochlorite soak test is used to quickly reveal seed coat damage during steps of processing. Adjustments can then be made to help minimize damage to seed coats.

Treated Sand Germination – This test will tell the producer/retailer the maximum germination potential of a seed lot. This is a predictive germination test, not an official test, since soybeans are treated in the laboratory.

Additional Tests: Analyses for quality, purity, DNA, protein, oil, etc.

	# SEED INITIAL TEST	# SEED ADD'L TEST	HIGH THRESHOLD % (SUGGESTED)	LOW THRESHOLD % (SUGGESTED)	COMPANY THRESHOLD	
					HIGH	LOW
Soybean Germination (Standard Warm)	400	***	89	79		
Soybean Accelerated Aging (AA)	200	***	75	60		
Soybean GT (Glyphosate), STS (Sulfonylurea)***	400	400	98.9 94.9	97 89		
Soybean LL (Glufosinate)	400	400 (Grow-out)	97.9 tolerant	95 tolerant		
***GT and STS additional seeds are planted (no additional charge) when tolerance is 90% - 99% and 85% - 95% respectively.						

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SEED SERVICES

MAKING THE DIFFERENCE

BEST PRACTICES FOR CORN QUALITY ASSURANCE TESTING

KNOW YOUR SEED QUALITY NUMBERS

In today's precision farming environment, seedsman and growers are concerned with reducing risk and securing the target field populations.

Selecting SGS as your Quality Assurance Laboratory means you are committed to stringent seed quality assessments so you can provide your customer seed which will produce the target field populations.

Seed is tested using the best diagnostic laboratory methods and subjected to vigor tests that closely simulate stressful field conditions to help rank your seed inventory and to promote more effective selling and planting strategies.

SHELLER-RUN OR PRE-CONDITIONING SAMPLES

Standard Germination (warm) – based on 400 seed is recommended to establish the maximum germination potential of the seed. Some companies will perform pericarp damage tests after shelling to establish the level of mechanical damage.

The warm germination is a good measure of mechanical damage and can identify fungal species colonizing the seed and a rating of sugar leakage is provided. When warm tests dip below company standards, SGS recommends conducting a 400 seed sand germination test.

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SHELLER-RUN OR PRE-CONDITIONING SAMPLES

Cold Tests – Tray colds and saturated colds are the recommended vigor tests for corn. Both these methods have imbibitional chilling and respiratory stress. The saturated cold is a high stress test that will separate hybrids on innate quality and will give a wider separation of seed lots.

The minimum quality value is 70 - 75% for saturated colds. Tray colds are widely used and have minimum quality value of 85%.

Trait Confirmation – When traits are donated from the female parent, 90 and/or a 400 seed sample from the bulk lot is checked for insecticide and herbicide trait percentages, respectively.

Hybrid Purity and Fertility – Electrophoresis purity checks of 100 seed on round grade sizes (SR and MR) is the recommended first step. Hybrid fertility checks can be done by PCR - Fertility and also done during a field growout.

Adventitious Presence (AP) – SGS recommends checking the bulk seed for trait and conventional hybrids for Advenitious Presence (AP1200 is the recommended test and utlitzes 1200 seed for herbicide traits and 2400 seed for insecticide traits).

CONDITIONED OR FINISHED SEED LOTS

Standard Germination (warm) – based on 400 seed and a purity/noxious seed examination on 500 grams are the official tests needed for labeling the seed lot. Tests should be conducted in accordance with the Association of Official Seed Analysts (AOSA), since regulatory officials will check seed using this same set of rules.

Cold Tests – Check seed lots quality using cold tray and/or saturated cold methods, minimum quality values of 85% & 70%, respectively.

Trait Confirmation – Herbicide trait confirmation on a 200 seed sample per seed size is recommended to assure no contamination has occurred. Insecticide trait confirmation requires a 30 seed test per seed size for each respective event. If trait testing was not conducted on the sheller run seed, a 400 seed herbicide and/or a 90 seed insecticide is required for each respective grade size marketed.

Hybrid Verify – a 24 seed electrophoresis analysis of the seed lot is recommended to confirm hybrid pedigree. Hybrid purity for South American production should be checked using a 100 seed electrophoresis test.

Adventitious Presence – Recheck conventional graded lots with AP1200, organic seed lots should use AP2400.

SAI Loading – Loading rates of seed applied insecticides should be checked.

Carry Over Seed Lots – warm germ (400 seed) tray or saturated colds are recommended.

Re-Bagged Lots – warm germ (400 seed) tray or saturated colds, 200 seed herbicide trait tests, 30 seed insecticide traits should all be checked to assure quality and as a precaution against "gross contamination" of the lot during the re-bagging process.

Additional Tests - Additional analyses for environmentally impacted seed lots: tetrazolium testing (TZ), pericarp damage determination, accelerated aging, cold shock evaluation, treated standard germination and treated sand germination.

	# SEED INITIAL TEST	# SEED ADD'L TEST	HIGH THRESHOLD % (SUGGESTED)	LOW THRESHOLD % (SUGGESTED)	COMPANY THRESHOLD	
					HIGH	LOW
Corn Germination (warm)	400	400 (sand)	93	88		
Corn Cold	200	400	85	78		
Corn Saturated Cold	200	400	75	60		
Corn BT*	30 or 90	**90, 180, or 270	86 out of 90 seeds	82 out of 90 seeds		
Corn GT (Glyphosate)	400	400	97.9 tolerant	95.9 tolerant		
Corn LL (Glufosinate)	400	400	97.9 tolerant	92.5 tolerant		

** BT corn: When a seed lot falls below 87 out of 90 seeds tested, additional testing is required prior to sale of seed. The results of the additional test are added to the original test and calculated to report the number of positive seeds out of total seeds tested.*
***SGS recommends testing on additional 90 and 270 seeds if original results are 83/90 and below.*

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WHEN YOU NEED TO BE SURE