Rule Change Proposal No. 10

PURPOSE: To add a substratum method to the germination testing method for *Glycine max* (soybean).

PRESENT RULE

Kind of Seed	Substrata	Temp. C°	First Count Days	Final Count Days	Additional Directions
Glycine max Soybean	B, T, S, TC	20-30; 25	5	8	Hard seed: see sec. 4.2 d and 4.9 k (6).

PROPOSED RULE

Kind of Seed	Substrata	Temp. C°	First Count Days	Final Count Days	Additional Directions
Glycine max Soybean	B, T, S, TC, TCS	20-30; 25	5	8	Hard seed: see sec. 4.2 d and 4.9 k (6).

SUPPORTING EVIDENCE

The proposed substrate method of TCS (top of creped cellulose paper without a blotter and covered with ½ to ¾ inch of sand) was compared to TC (top of creped cellulose paper without blotter) and S (sand) as an alternative method for soybeans.

The proposed TCS method has been in use at the Iowa State Seed Science Center and Mid-West Seed Services, Inc. (MWSS) for twenty-three and nine years, respectively. In practice this test is called a "Sand Test" by both laboratories; we are documenting the "Sand Test" method. The test is conducted at MWSS by placing a sheet of creped cellulose paper on a tray and applying a standard amount of water, seeds are placed on the moistened paper and then dry sand (no moisture) is used to cover the seeds, the moisture migrates upward wetting the sand. This method is very reproducible since the moisture content of the sand is standardized.

Testing was conducted at Iowa State Seed Testing Laboratory and Mid-West Seed Services, Inc. on four seedlots utilizing germination temperatures of both 20-30˚C and 25˚C. Each laboratory tested eight replicates of 100 seeds for each seed lot and substrate method. Germination of the four seed lots varied between 48% and 94% (Table 1.) The two laboratories participating in this study had significantly different (P=0.05) germination means of 80 and 82 percentage (Table 2). No significant differences in germination were found between the three different substrata methods (Table 3). The germination temperature of 25˚C produced a mean germination two percentage points higher than the 20-30˚C germination temperature.

Table 1. Mean germination of four seed lots averaged across two laboratories, three substrata methods and two temperatures.

Soybean (N=384)	
Lot	**% Germ**
1	48 A
2	91 B
3	94 C
4	90 B
LSD(0.05)	1.176

Table 2. Mean germination of two laboratories averaged across four seed lots, three substrata methods and two temperatures.

	Soybean (N=384)
Lab	**% Germ**
Iowa State Seed Laboratory	80 A
Mid-West Seed Services, Inc	82 B
LSD(0.05)	0.8317

Table 3. Mean germination of three substrata methods averaged across four seed lots, two laboratories and two temperatures.

	Soybean (N=384)
Method	**% Germ**
Top of creped cellulose paper (TC)	81 A
Sand (S)	81 A
Top of creped cellulose paper with sand (TCS)	81 A
LSD(0.05)	1.019

Table 4. Mean germination of two temperatures averaged across two laboratories, three substrata methods and four seed lots.

	Soybean (N=384)
Temperature ° C	**% Germ**
20-30	80 A
25	82 B
LSD(0.05)	0.8317

SUBMITTED BY
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