

Sunflower Germination

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WHEN YOU NEED TO BE SURE

SGS

Acknowledgements



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SUNFIELD SEEDS
California

Crystal Dentman	BioVision Seed Labs, Edmonton, AB
Patsy Jackson	USDA-ARS Federal Seed Lab
Scott Hobby	GA Dept of Ag, Tifton
Margaret Hagemeister	Interstate Seed Lab, Fargo ND
Majorie Johnson	Tallahasee Seed Testing
Harold Armstrong	Monsanto, Waterman IL
Tara Barkes	Harris Moran, Nampa ID
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Denise Theide	BioDiagnostics Inc., River Falls WI
Kari Fiedler, Sarah Dammen	SGS MWSS, Brookings SD



- Objective: look at germination methods on dormant sunflower seeds.
- Why?... Current germinations methods and dormancy breaking methods are inadequate on some seed lots.
- What works is the passage of time, eventually the dormancy will rapidly diminish and the germination will equal the TZ.

- Warm Germination with no prechill
- Warm Germination with prechill
- Warm Germination with GA3
- Check viability of firm ungerminated seeds with TZ.
- Report Germ normals, abs, dead, dormant and total.
- Forms were provided so that data would be standardized.

SGS Procedure



- Obtained 5 seed lots from seed company, that were freshly harvested. They had been harvested approximately 1 week total before shipping them to participants.
- Hand screened the seed for uniformity of seed size and to remove debris prior to weighing it out.
- The labs were asked to germinate them once upon arrival and to wait one month and redo the germinations.

- The 5 seed lots had little to no dormancy, thus the experiment failed to produce a clearer idea of what helped the germination.
- Some participants had little to no experience with testing sunflowers, some with a lot.
- The variability in the results could be primarily attributed to the number of abnormalities found.
- Hopefully it was good practice and a learning tool, or good review for others.



Warm Germinations



STDEV	4.126	4.789	1.570	6.030	3.519
1 STDEV	96.14	96.50	96.43	92.76	96.79
	87.88	86.92	93.29	80.70	89.75
2 STDEV	100.26	101.29	98.00	98.79	100.31
	83.76	82.13	91.72	74.67	86.23
Range					
Min	81.75	79.50	91.50	72.25	85.00
Max	96.75	98.25	97.25	94.25	97.00



Warm Germination only



Lot #	1	2	3	4	5
Lab	----- % -----				
1	91.00	82.75	96.50	76.50	90.25
2	91.25	89.75	94.50	76.25	93.25
4	92.00	95.25	96.00	90.25	95.25
5	93.00	90.00	96.50	84.25	90.50
8	95.50	93.50	95.75	85.75	95.25
9	90.75	87.75	95.25	86.75	92.25
10	88.25	79.50	91.50	72.25	85.00
11	90.00	89.00	94.00	92.25	92.00
15	83.50	90.50	93.25	85.25	86.75
16	96.50	96.50	97.25	89.25	96.50
17	95.50	97.50	94.25	91.00	95.75
20	94.75	96.50	95.50	90.00	97.00
21	88.50	89.75	93.25	84.75	91.25
22	95.75	94.50	95.75	82.75	96.75
23	96.75	94.50	96.75	94.25	97.00
24	95.00	95.50	96.25	94.25	94.75
25	90.50	89.25	92.25	90.75	95.25
26	91.00	93.75	93.75	90.75	95.00
27	96.75	98.25	94.25	92.50	96.50
28	81.75	88.25	93.50	83.00	88.00
30	94.25	93.75	96.00	88.50	94.50
Mean	92.01	91.71	94.86	86.73	93.27



GA₃ Germination



STDEV	5.96	6.34	4.85	6.86	6.79
1 STDEV	97.23	97.91	97.05	93.93	99.29
	85.31	85.22	87.35	80.21	85.71
2 STDEV	103.19	104.25	101.90	100.79	106.08
	79	79	82	73	79
Min	75	74	83	69	74
Max	98	99	98	96	98

GA3 Germination

Lab	method	Lot 1	Lot 2	Lot 3	Lot 4	Lot 5
2	GA3	91	89	96	85	94
3	GA3	75	74	83	69	81
4	GA3	85	95	87	89	91
6	GA3	92	86	87	75	74
8	GA3	85	95	87	89	91
11	GA3	89	93	97	90	94
16	GA3	96	93	96	85	94
17	GA3	98	99	98	96	98
20	GA3	93	94	95	93	97
21	GA3	92	86	97	91	95
23	GA3	95	95	95	92	98
24	GA3	95	98	89	89	98
27	GA3	98	96	92	92	98
28	GA3	94	88	91	86	92
30	GA3	94	95	97	89	96
	Mean	91	92	92	87	93



Germination/prechill



STDEV	7.11	12.53	2.86	6.05	4.63
1 STDEV	98.80	102.49	97.28	97.54	99.22
	84.58	77.44	91.55	85.44	89.97
2 STDEV	105.92	115.02	100.14	103.58	103.85
	77.46	64.91	88.69	79.39	85.34
Min	64	44	87	76	84
Max	99	99	98	98	100

Germination/prechill

Lab	Lot 1	Lot 2	Lot 3	Lot 4	Lot 5
1	87	71	89	76	85
2	94	89	96	86	92
3	90	91	90	87	97
4	93	91	95	92	97
5	91	97	94	92	95
6	99	99	98	98	99
8	93	96	95	92	97
9	94	93	96	93	95
10	91	81	94	81	92
11	64	44	87	89	89
16	97	95	96	93	98
17	96	99	97	97	100
20	98	97	98	96	100
21	93	90	94	96	98
22	92	94	97	97	97
23	97	96	97	98	97
24	96	96	97	97	98
25	90	95	95	94	97
27	90	98	93	95	88
28	89	87	93	82	84
30	95	96	95	93	97
Mean	92	90	94	91	95



Means by Method



Means	Lot 1	Lot 2	Lot 3	Lot 4	Lot 5
Germ only	92	92	95	87	93
Germ + GA3	91	92	92	87	93
Germ + prechill	92	90	94	91	95



Thank you again to:



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