2009 Soybean Drying Tips

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Soybeans

Week Ending	Oct. 11, 2009	Oct. 4, 2009	Oct. 11, 2008	Average 2004-2008
	Percent	*Percent*	*Percent*	*Percent*
Dropping Leaves	98%	93%	100%	99%
Harvested	17%	13%	57%	68%

USDA, NASS, ND

Maximum Moisture Contents for Safe Soybean Storage with Aeration

Sold by Spring	14% (13%)
Stored up to 1 year	12%
Long-term Storage	11%

EMC @ 70ºF & 60% RH

- Corn 12.8%
- Hard Wheat 13.3%
- Soybeans 10.8%

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"Approximate" Allowable Storage Time for Cereal Grains (Days)

Moisture	----- Grain Temperature (°F) -----					
Content	30°	40°	50°	60°	70°	80°
(%)	Approximate Allowable Storage Time (Days)					
14	*	*	*	*	200	140
15	*	*	*	240	125	70
16	*	*	230	120	70	40
17	*	280	130	75	45	20
18	*	200	90	50	30	15
19	*	140	70	35	20	10
20	*	90	50	25	14	7
22	190	60	30	15	8	3
24	130	40	15	10	6	2
26	90	35	12	8	5	2
28	70	30	10	7	4	2
30	60	25	5	5	3	1

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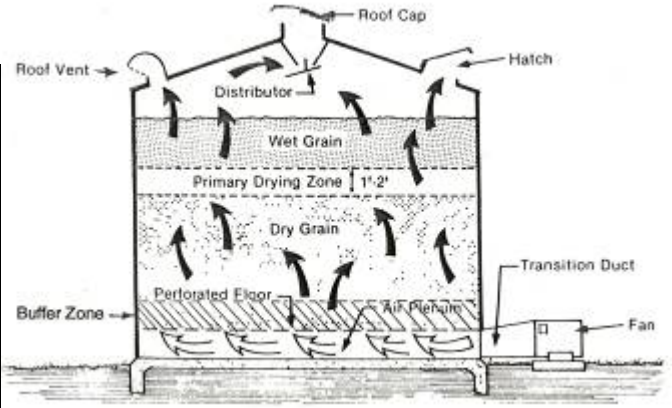
NA Drying Soybeans

October 47°F & 65% RH EMC = 12.0%

	cfm/bu	Drying Time (days)
18%	1.0	58
	1.5	39
	2.0	29
16%	1.0	50
	1.5	34
	2.0	25



October 15 – November 15 37°F & 70% RH EMC = 13.7%

	Cfm/bu	Drying Time (days)
18%	2.0	36
16%	2.0	39

April 42°F & 71% RH, May 56°F & 63% RH

LT Drying Soybeans

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October 15 – November 15 +5°F

42°F & 58% RH EMC = 11.0%

	cfm/bu	Drying Time (days)
18%	**1.0**	**58**
	1.5	**39**
	2.0	**29**
16%	**1.0**	**50**
	1.5	**34**
	2.0	**25**

April 42°F & 71% RH, May 56°F & 63% RH

Fan Power Required

	Soybean Depth (ft)				
Airflow Rate	16	18	20	22	24
(cfm/bu)	--- hp per 1,000 bu ---				
1.0	0.5	0.6	0.8	1.0	1.2
1.25	0.8	1.0	1.3	1.6	2.0
1.5	1.2	1.6	2.0	2.5	3.1
2.0	2.4	3.1	4.0	5.1	6.3

Limit Depth

42 ft diameter bin, soybean 36 ft deep, 1.5 cfm/bu

Fan = 340 hp, static pressure = 21-inches wg.

Not feasible!

High Temperature Drying Soybeans

- Some varieties split worse than others.
- Initial moisture has no effect on splitting.
- Avoid recirculating dryers.
- Maximum Drying Temperature

  (non-food soybeans)

Continuous flow	130°F
Batch Dryer	110°F
Seed	110°F

- Relative humidity above 40% reduces cracks.

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Damage Occurring to Soybeans as Function of Drying Temperature

Drying Temperature (°F)	Skins Cracked (%)	Beans Cracked (%)
100	10 – 60	5 – 20
130	50 – 90	20 – 70
160	80 – 100	30 - 80

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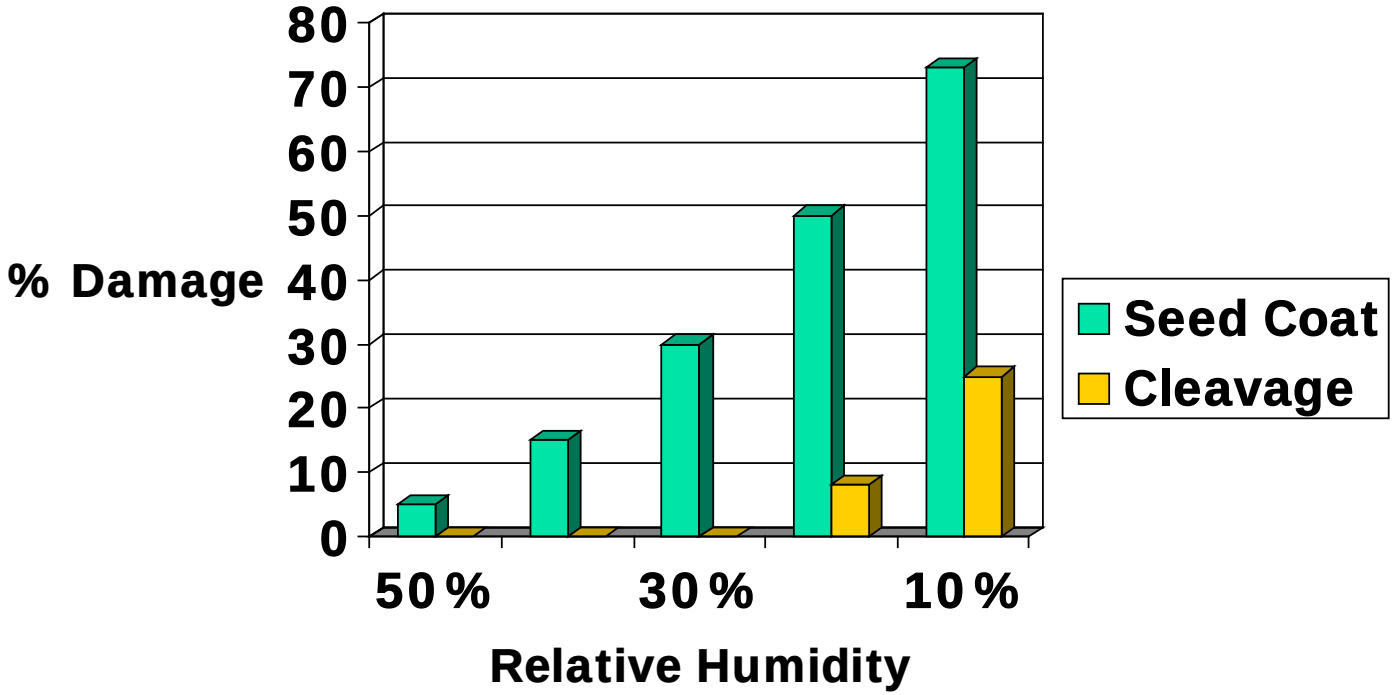
Soybean Seed Coat Damage and Cleavage



20ºF Temperature Increase Reduces Relative Humidity to ½ (80% ⇨ 40%)

For More Information

http://www.ag.ndsu.nodak.edu/abeng

Google: NDSU Corn Drying

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