

Activity and Advances in Seed Coating Technology

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March 5, 2013

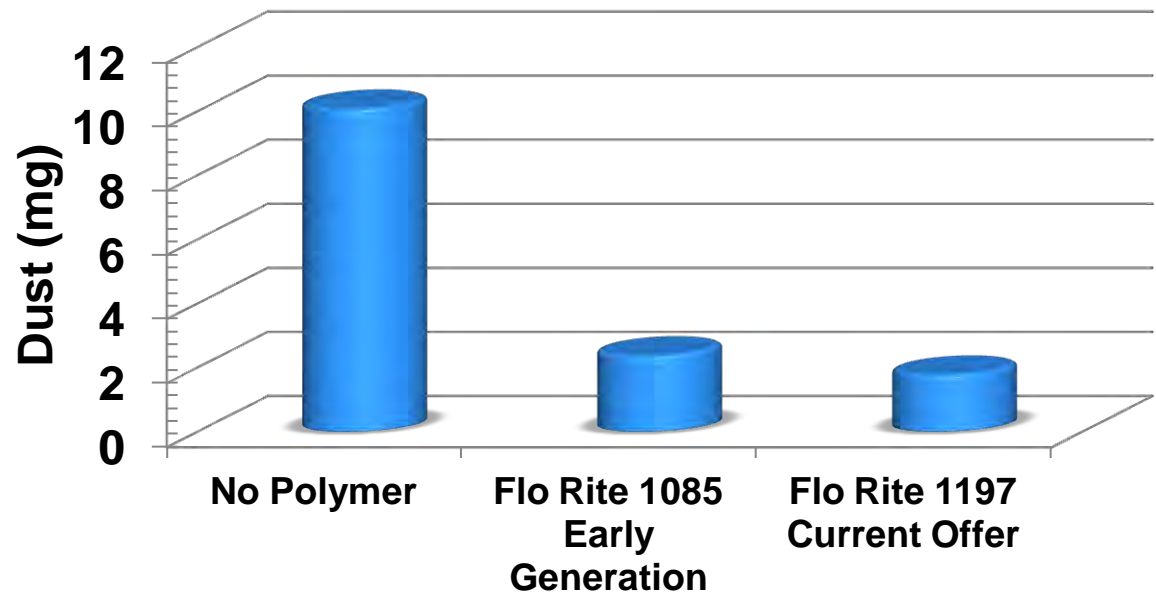
Seed Coating Technology

There are seed amendment technologies which are applied in conjunction with “seed treatments” (Seed Applied Insecticides and Seed Applied Fungicides – SAI/SAF) which complement the use and function of those seed treatments (SAI/SAF). The amendments are polymers which are applied with seed treatments and become integrated with the SAI/SAF to coat the seed.

Status of Seed Coating Technology

- Seed coating polymers are utilized in combination with Seed Applied Insecticides and Seed Applied Fungicides (SAI/SAF) to enhance the retention of the SAI/SAF and contribute to improved plantability.
- Seed coating polymers have evolved and will continue to improve SAI/SAF utilization while addressing the needs of the grower to manage their planting rate/seed population.
- Seed polymer technology is used to complement the function of SAI/SAF and also contribute to seed flow through the conditioning facility.

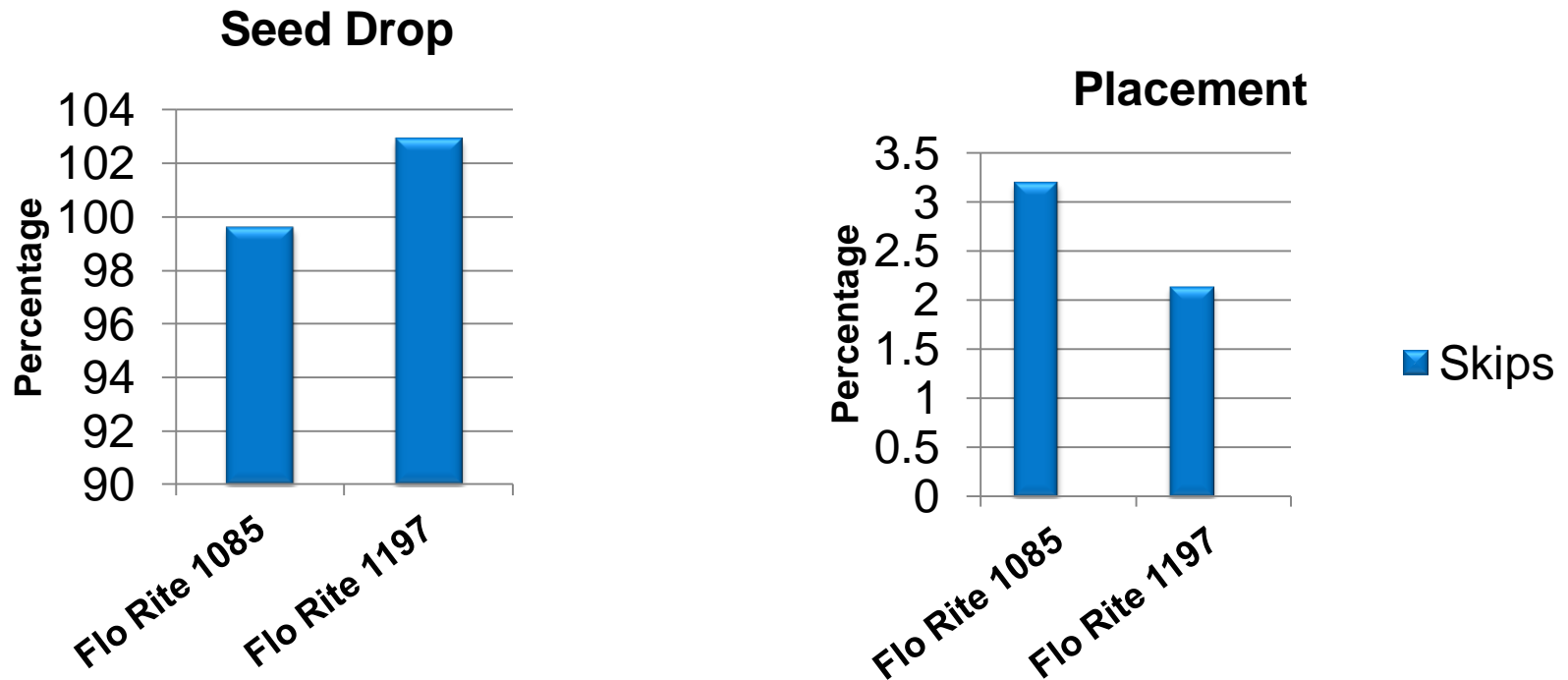
Effect of Flo Rite® 1085 and Flo Rite® 1197 on dust-off suppression of hybrid corn seed treated with a *common neonicotinoid 1*



¹ Values are means of dust collected on Whatman #1 filters from 50 gram seed samples agitated for 5 minutes at 100 rpm in a rotating flask while simultaneously aspirated at 1.2 cubic feet per minute.

² Flo Rite 1085 (0.7 mg/seed), Flo Rite 1197. All seed additionally treated with seed applied fungicides, and Color Coat™ Red (0.33 fl. oz./cwt).

Mean effect of Flo Rite® 1085, and Flo Rite® 1197 on plantability of three corn hybrids treated with a common neonicotinoid 1,1,2

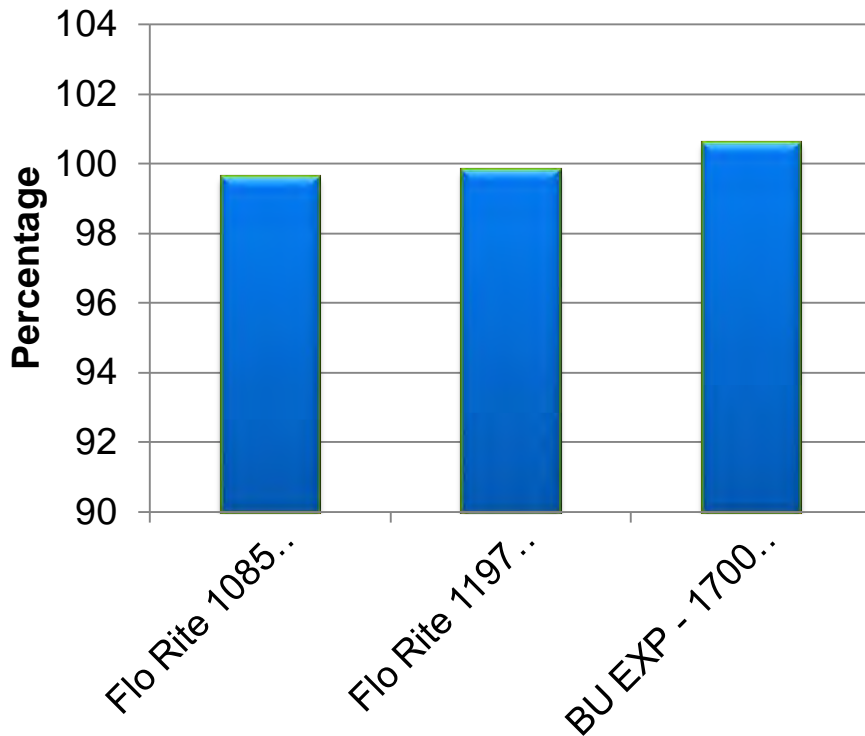


¹ Flo Rite 1085 (0.7 mg/seed), Flo Rite 1197 (0.46 mg/seed). All seed additionally treated with seed applied fungicides, and Color Coat™ Red (0.33 fl. oz./cwt.).

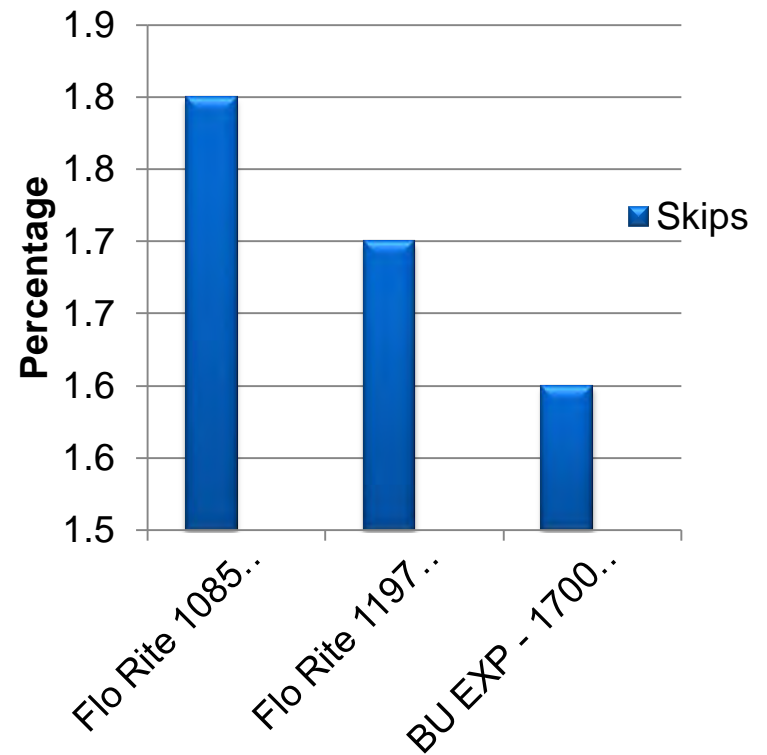
² Averages based on means of 3 replicates per hybrid. 30,000 seeds/acre target, 5 mph ground speed, 10 PSI, small corn plate.

Comparative effects of Flo Rite® 1085, Flo Rite 1197, and BU EXP-1700 on plantability of corn seed treated with a *common neonicotinoid* 2,1,2

Seed Drop



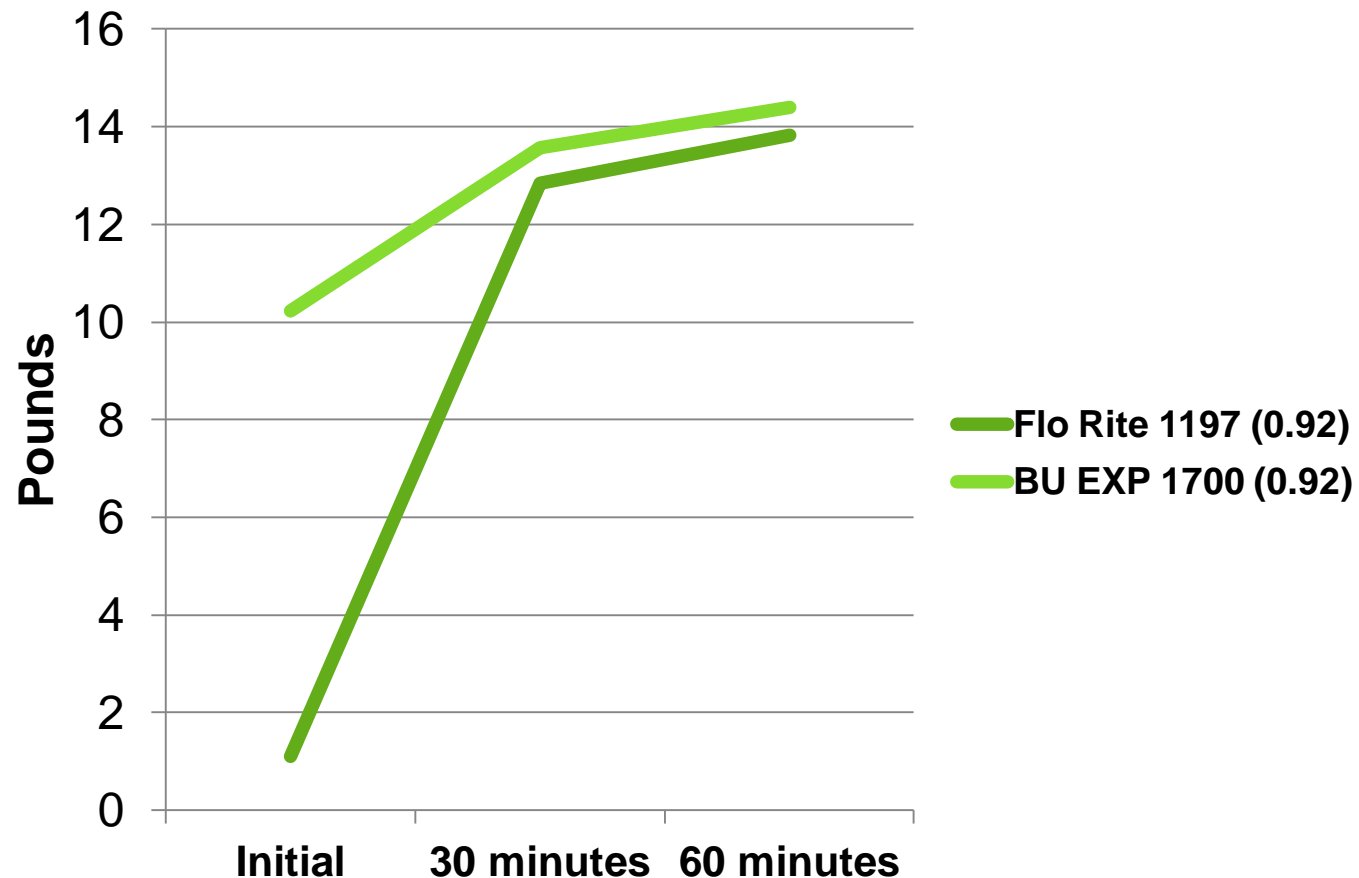
Placement



¹Flo Rite 1085 (0.7 mg/seed). Flo Rite 1197 or BU EXP-1700 (0.46 mg/seed) the “Next Generation “product. All seed additionally treated with seed applied fungicides, and Color Coat™ Green (0.33 fl. oz./cwt).

²Averages based on means of 3 replicates per hybrid. 30,000 seeds/acre target, 5 mph ground speed, 7 PSI, small corn plate.

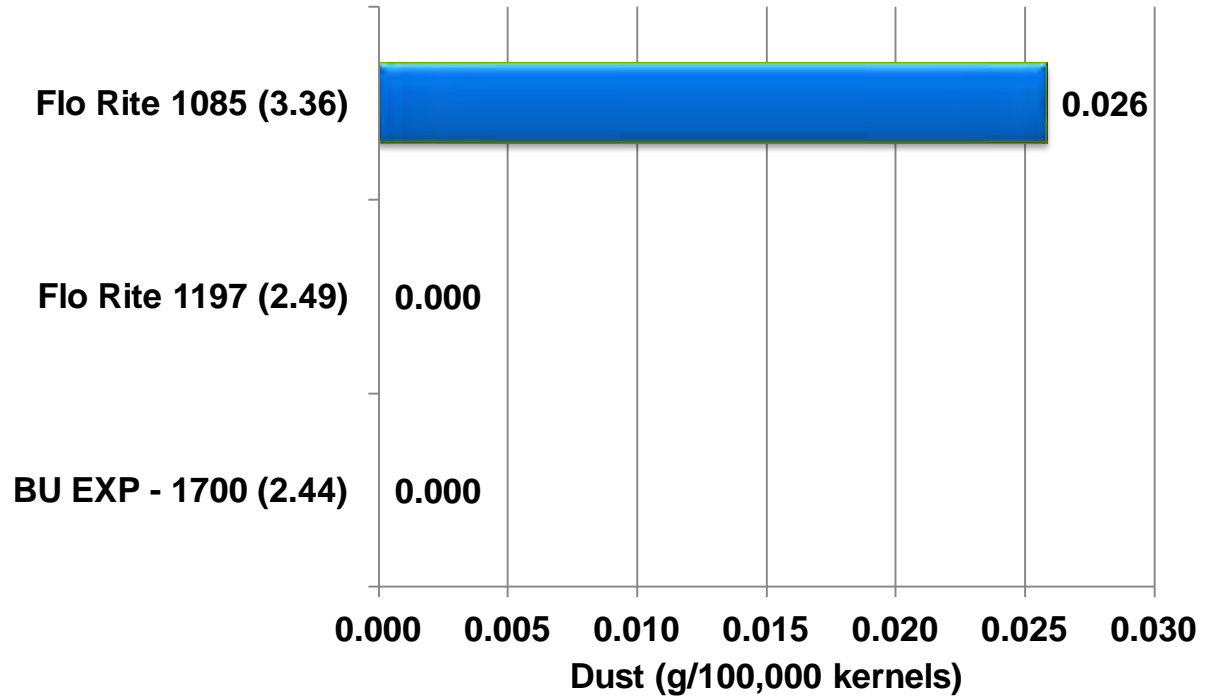
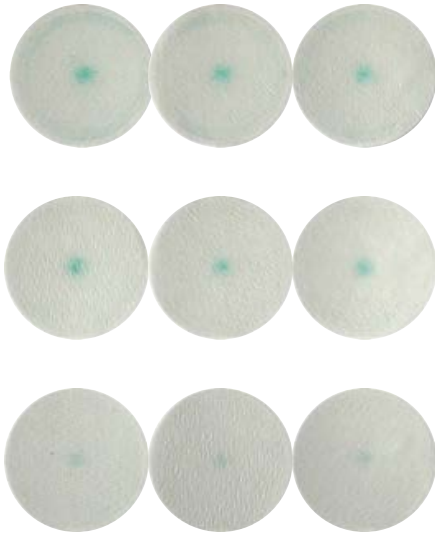
Effect of Flo Rite[®] 1197, and BU EXP 1855 on flowability of corn treated with a *common neonicotinoid* 3.^{1,2}



¹ Values are weight of seed corn collected from 18 lb. samples flowing through a Niklas flow funnel for 5 seconds.

² Flo Rite 1197 (0.92 mg/seed). BU EXP 1855 (0.92 mg/seed). All seed additionally treated with Color Coat™ Red (0.33 fl. oz./cwt.).

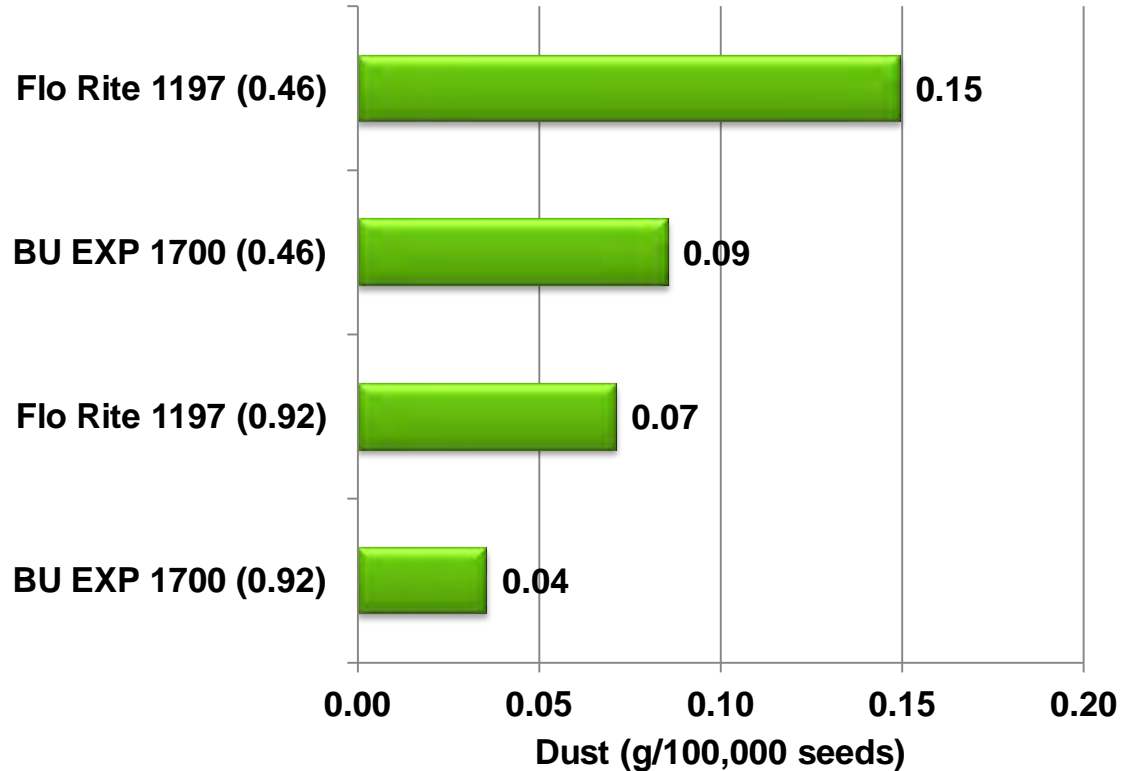
Comparative effects of Flo Rite® 1085, Flo Rite 1197, and BU EXP-1700 on dust-off suppression of corn seed treated with a *common neonicotinoid* 2. ^{1,2}



¹ Values are means of dust collected on glass micro-fiber filters from 100 gram seed samples agitated for 2 minutes at 30 rpm in a rotating flask while simultaneously aspirated at 20 L/minute using a **Heubach dust meter**.

² Flo Rite 1085 (0.7 mg/seed). Flo Rite 1197 or BU EXP-1700 (0.46 mg/seed fl. oz./cwt). All seed additionally treated with seed applied fungicides, and Color Coat™ Green (0.33 fl. oz./cwt).

Comparative effects of Flo Rite® 1197 and BU EXP-1700 on dust-off suppression of corn seed treated with a *common neonicotinoid* 2.^{1,2}



¹ Values are means of dust collected on glass micro-fiber filters from 100 gram seed samples agitated for 2 minutes at 30 rpm in a rotating flask while simultaneously aspirated at 20 L/minute using a **Heubach dust meter**.

² Flo Rite 1197 or BU EXP-1700 (0.46 or 0.92 mg/seed). All seed additionally treated with an “elite” seed applied fungicide (0.064 mg a.i./seed) and Color Coat™ Red (0.33 fl.oz./cwt).

Mean effect of Flo Rite® 1197 and BU EXP 1700 on cold and saturated cold germination values of three corn hybrids after 12 months storage.

Treatment*	Cold	Saturated Cold
Base treatment + neonicotinoid 1 + Flo Rite 1197 (0.46 mg/seed)	91	92
Base treatment + neonicotinoid 1 + BU EXP-1700 (0.46 mg/seed)	89	92
Base treatment + neonicotinoid 1 + Flo Rite 1197 (2.2 mg/seed)	89	85
Base treatment + neonicotinoid 1 + BU EXP-1700 (2.2 mg/seed)	90	87

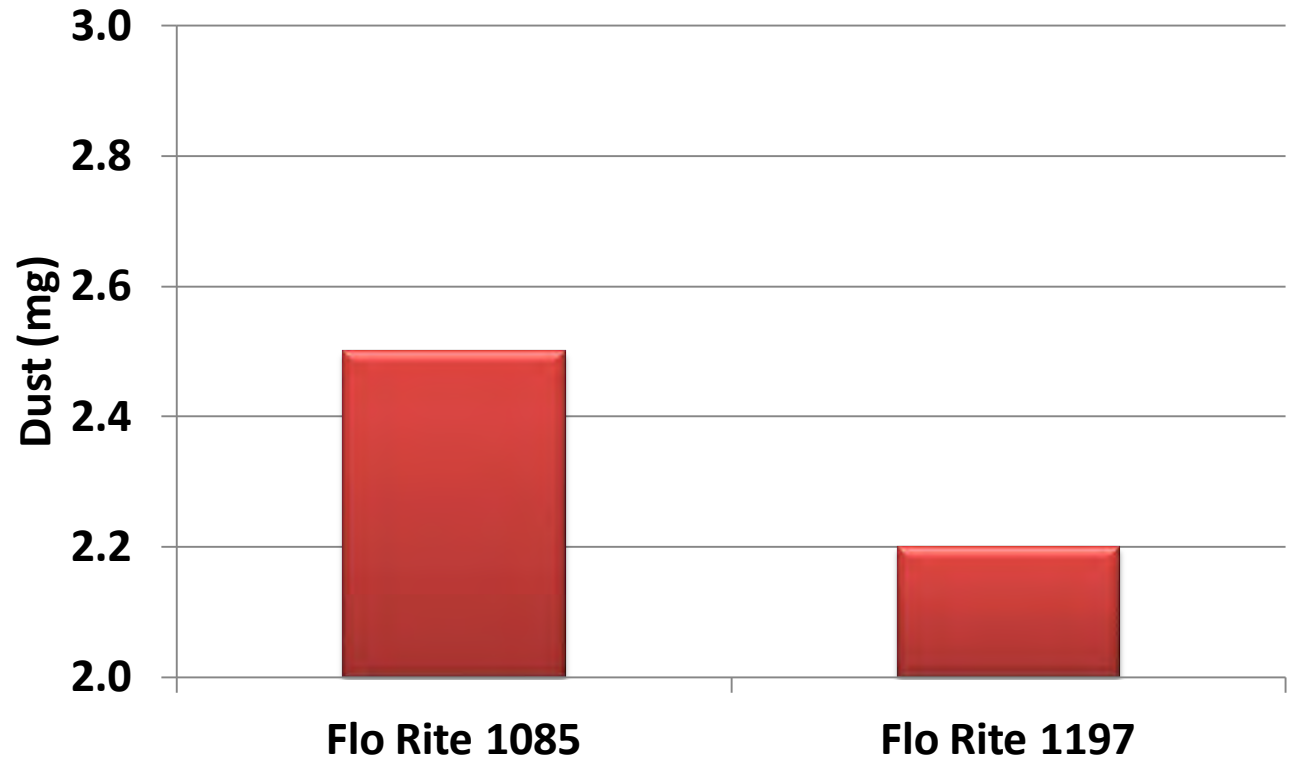


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* Base Treatment: An "elite seed applied fungicide (0.064 mg a.i./seed), Color Coat™ Red (0.33 fl.oz./cwt).

All tests conducted by SGS Mid-West Seed Services, Brookings, SD

Comparative effects of Flo Rite[®] 1085 and Flo Rite[®] 1197 on dust-off suppression of sunflowers treated with a *common neonicotinoid 4*.^{1,2}

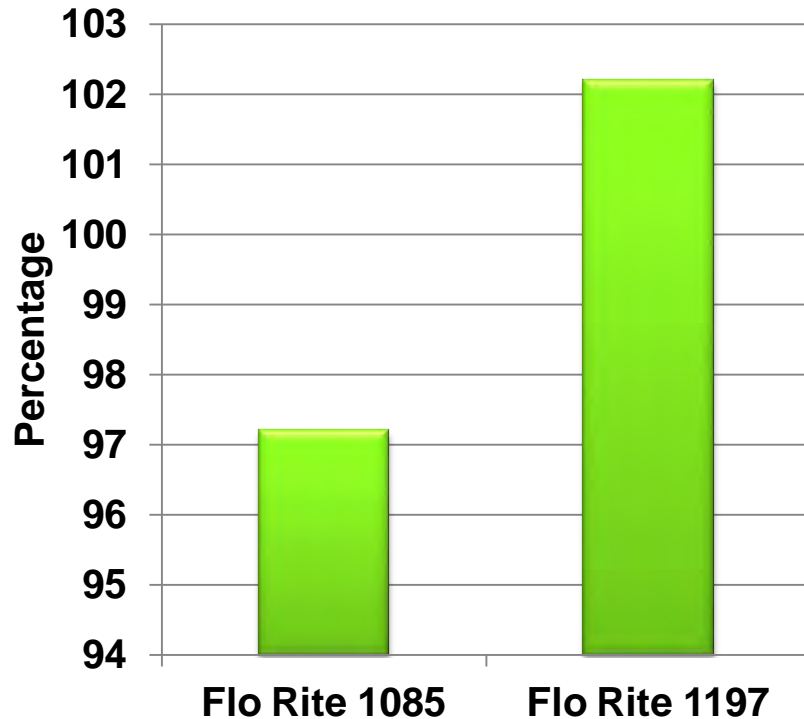


¹ Values are means of dust collected on Whatman #1 filters from 30 gram seed samples agitated for 5 minutes at 100 rpm in a rotating flask while simultaneously aspirated at 1.2 cubic feet per minute.

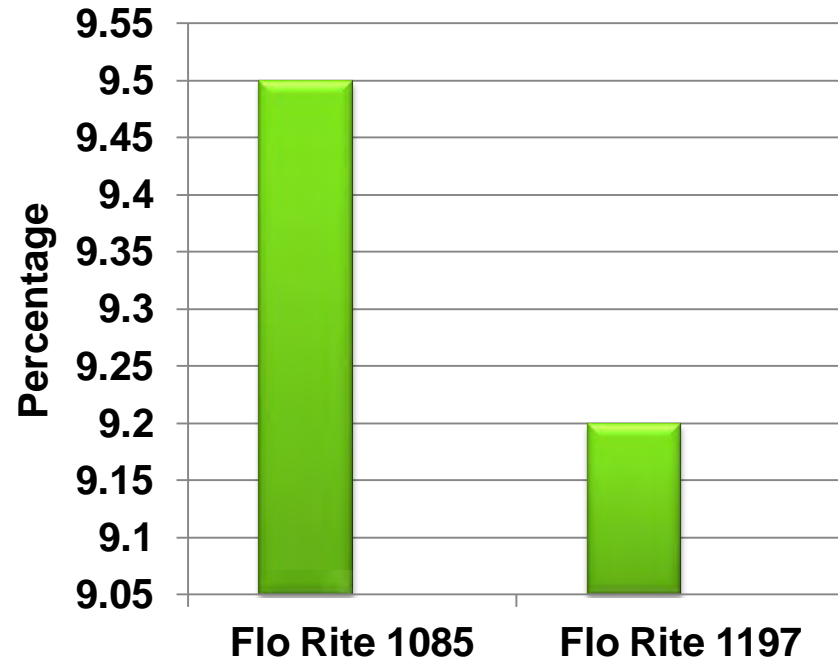
² Flo Rite 1085 (10.0 fl. oz./cwt), Flo Rite 1197 (6.0 fl. oz./cwt). All seed additionally treated with seed applied fungicides, Color Coat Green (2.0 fl. oz./cwt), and Seed Gloss (5.0 fl. oz./cwt).

Comparative effects of Flo Rite[®] 1085 and Flo Rite[®] 1197 on plantability of sunflowers treated with a common neonicotinoid 4.^{1,2}

Seed Drop



Placement



■ Skips

¹ Flo Rite 1085 (10.0 fl. oz./cwt.), Flo Rite 1197 (6.0 fl. oz./cwt.). All seed additionally treated with seed applied fungicides, Color Coat Green (2.0 fl. oz./cwt.), and Seed Gloss (5.0 fl. oz./cwt.).

² Averages based on means of 3 replicates. 30,000 seeds/acre target, 5 mph ground speed, 4 PSI, sunflower plate.

Seed Coating Technology as a Complement to Seed Treatment Use

Seed Coating Technology exists and is evolving to further complement the use of neonicotinoids on numerous crops to enhance product retention while contributing agronomically to improve seed flow and seed plantability, optimizing seed placement and plant populations.

The technology is available and will evolve to contribute to the stewardship of neonicotinoids, a valuable technology which improves grower productivity.

Thank you for your attention.



The Chemical Company

Effect of Flo Rite® 1127 Concentrate and Flo Rite® 1706 on dust-off suppression of soybean treated with a *common neonicotinoid 2a*.^{1,2}

Not all seed reacts in the same manner which creates dust. Soybean for example does not benefit from the addition of a polymer to control dust as there is little dust off from the application of a SAI/SAF. But use as a planting aid is important.



No Polymer

0.0

**Flo Rite 1127
Conc**

0.0

Flo Rite 1706

0.0

0.0

0.5

1.0

Dust (g/100,000 seeds)

¹ Values are means of dust collected on glass micro-fiber filters from 100 gram seed samples agitated for 2 minutes at 30 rpm in a rotating flask while simultaneously aspirated at 20 L/minute using a **Heubach dust meter**.

² Flo Rite 1127 Concentrate (1.5 fl.oz./cwt). BU EXP 1706 (1.0 fl.oz./cwt). All seed treated with an “elite” seed applied fungicide combination of products (3.2 fl.oz./cwt.), (0.08 fl.oz./cwt.), and Vault HP (BPHP/inoculant @ 2.0 fl.oz./cwt.).