

# Effect of desiccants applied preharvest on canola yield and seed quality

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## **Research objectives:**

1. Determine the effect of saflufenacil, flumioxazin, glufosinate, and glyphosate applied preharvest on canola yield, seed moisture, and seed quality compared to diquat.
2. Evaluate diquat at rates equivalent to the Canadian label.
3. Compare yield, seed moisture, and seed quality of swathed canola to desiccant-treated canola.

## **Research procedures:**

The study was conducted at two locations: 1) North Central Research Extension Center, Minot, ND and 2) Montana State University, Bozeman, MT.

Saflufenacil, flumioxazin, glufosinate, glyphosate, and diquat were applied preharvest on August 1 as outlined in Table 1. A tractor-mounted sprayer with the boom raised approximately 18" above the canola canopy was used to apply the desiccants. A Clearfield Brassica juncea variety was used for the trial. Saflufenacil (Sharpen) was applied at 2 oz alone and at 1 oz in a tank mix with glyphosate at 0.75 lb ae. Glyphosate was applied alone at 0.75 lb ae with AMS (17 lb/100 gal) and with 4 fl oz of glufosinate. Saflufenacil treatments included MSO and AMS (1% v/v and 17 lb/100 gal). Flumioxazin (Valor) was applied at 2 oz with MSO (1% v/v). Diquat (Reglone) was applied at 1.0 and 1.5 pt/A with NIS (0.25% v/v). Diquat was applied at 20 gpa while other treatments were applied at 10 gpa. One treatment was swathed with a plot swather to compare current grower practices to the chemical desiccants. We included one straight cut treatment with no desiccant applied. All treatments were harvested 14 days after application.

Table 1. Target canola stages for preharvest desiccant applications.

<b>Canola seed color</b>	<b>Application</b>
<b>Top 1/3</b>	Green to light green
<b>Middle 1/3</b>	Seeds starting to turn light brown or reddish brown
<b>Bottom 1/3</b>	Many seeds brown, reddish brown to purple

Individual plots were 10 by 30 ft arranged in a randomized complete block design with four replications. Each treatment was evaluated visually for percent desiccation of leaves, pods, and stems at 3, 7, 10, and 14 days after application. Other data collected included canola yield, test weight, seed moisture content at harvest, green count, and seed loss due to shattering prior to harvest. Four sticky cards were placed on the ground under the canopy just prior to the desiccant application. Sticky cards were collected just prior to harvest and seeds were counted to estimate yield loss per acre. All data were subjected to analysis of variance with SAS and mean separation using Fisher's Protected LSD test at  $\alpha = 0.05$ .

### **Results:**

Warm, dry conditions in July and August accelerated crop maturity and dry down. Thus, it was difficult to identify potential treatment differences. Reglone provided faster initial pod and stem desiccation compared to other treatments. Reglone at 1 pt provided similar desiccation and crop quality as 1.5 pt. However, by 14 DAT Sharpen + Glyphosate provided similar or better pod and stem desiccation. Liberty provided enough desiccation to warrant another look in 2013. Reglone reduced seed moisture content slightly more than other treatments. There were no significant yield or test weight differences between treatments. This Brassica juncea variety dried down quickly and seemed more prone to shattering and pod drop compared to other varieties we've testing in previous years. In previous studies using InVigor varieties, we have generally seen less than 50 lb/A loss due to seed shatter or pod drop. None of the treatments caused excessive green count levels. This is consistent with previous studies.

Table 2. Effect of desiccants applied preharvest on canola yield and seed quality. (Minot, ND - 1242)

		Canola												
		Pod desiccation				Stem desiccation				Moisture	Yield	TW	Seed Loss	Green cnt
Treatment <sup>ab</sup>	Rate	5-Aug	8-Aug	10-Aug	15-Aug	5-Aug	8-Aug	10-Aug	15-Aug	16-Aug				
		-----%-----								----%----	lb/A	lb/bu	lb/A	----%----
Straight cut		81	96	99	100	10	20	33	39	10.1	1720	53.0	104	1.0
Sharpen	2 oz	85	97	100	100	8	19	35	38	10.0	1794	53.1	137	0.5
Glyphosate	22 oz	81	96	99	100	6	16	34	46	9.8	1893	53.1	138	2.0
Sharpen + Gly	2 oz + 22 oz	82	97	100	100	8	20	35	57	9.5	1598	53.3	109	1.25
Liberty + Gly	4 oz + 22 oz	80	97	100	100	7	16	33	43	9.4	1627	53.3	144	1.0
Liberty + AMS	29 oz + 5%	81	99	100	100	6	19	38	46	9.4	1619	53.2	182	0.5
Reglone	1 pt	97	100	100	100	14	23	41	45	9.0	1620	53.1	158	1.0
Reglone	1.5 pt	97	100	100	100	18	33	45	49	9.1	1828	53.2	172	0.75
Valor	2 oz	80	93	99	100	6	15	32	35	10.5	1838	52.8	122	0.75
Swath		99	100	100	100	60	100	100	100	9.2	1770	52.7	51	0.5
LSD (0.05)		7	3	1	NS	5	6	5	8	0.48	NS	NS	NS	NS
CV		6	2	0	0	24	15	8	11	3.5	10	0.6	44	84

<sup>a</sup> All treatments applied PRE-HARVEST; Gly=Roundup Powermax;

<sup>b</sup> Sharpen, Glyphosate, and Valor applied with MSO (1 qt) + AMS (5%); Reglone applied with NIS (0.25%)

Table 3. Effect of desiccants applied preharvest on canola yield and seed quality. (Bozeman, MT - 1242)