



New Weapon in Toolbox For Sunflower Desiccation

Availability of 'Sharpen' Broadens Growers' Options;
Variety of Reasons for Considering Desiccation

Sunflower growers have access to a new desiccation tool in 2010. That tool is Sharpen® (saflufenacil), part of the Kixor herbicide group from BASF. Sharpen actually received a full Section 3 label from EPA in late 2009 — too late to be used in the field.

The product has been researched as a desiccant on sunflower starting in 2007, in four locations: Minot and Fargo N.D., Brookings, S.D., and Hays, Kan. This desiccation research, funded by the National Sunflower Association, compared Sharpen with already-labeled products

such as Paraquat Inteon® and Roundup OriginalMax® (which is labeled for late-season weed control).

Although the 2009 season was a “bust” for this research (as were certain years in other locations), data point out that Sharpen will be a good option when fall weather conditions are conducive.

The data on the chart below indicate that harvest can occur as much as 10 days earlier in North Dakota with the use of a desiccant. The results were not as significant in South Dakota or Kansas, where the numbers indicate no difference to a seven-day earlier harvest.

The advantage with Sharpen is that it is faster acting than Roundup Original. Gramoxone Inteon (Paraquat) is fast acting and kills the leaves quickly, but does not translocate. Sharpen is both a contact and systemic herbicide and does a better job of drying down the stem compared to Gramoxone, according to NDSU’s Kirk Howatt.

Another advantage over Gramoxone is that Sharpen is not a “cell disrupter.” So the plant is not as likely to rehydrate if rainfall is received after an application of Sharpen. The combination of Sharpen and Roundup Original has advantages in better weed kill for late-season weed control.

When to pull the trigger on spraying a desiccant is a bit tricky. Spraying too late when seed moisture is under 30% does not provide much advantage in earlier harvest compared to the control of “no desiccant.” Labels specify desiccating at 36% seed moisture or less for Sharpen and 35% or less for the other labeled products.

Determining the exact seed moisture level is a guessing game at best. Oven drying seed samples and comparing the weights before and after oven drying is the most exact procedure. For field observation, Howatt likes to follow the drydown of the bracts. When the tip of the bract is brown, the seed moisture is between 50-40%. When the neck of the bract has turned brown, the seed is about 40%. When the shoulder of the bract is brown or dried (*see diagram on page 10*), the seed moisture will be 30-35%.

Kansas State University weed scientist Phil Stahlman says seed moistures vary within the field and the head, so it will be impossible to peg the moisture level at an exact number. Seed moisture is going to be lower in the first seed rows of the head compared to the last-filling center. The key of this long-term research is that there has been no damage to oil content, seed size, test weight or yield when plants were desiccated at 40% seed moisture.

Additional research funded by the NSA and conducted by Dr. Burton Johnson of NDSU and Dr. Russ Gesch of USDA-ARS at Morris Minn., revealed

Days Earlier Harvest Than ‘Control’ — 2007 & 2008

	Minot, ND		Fargo, ND		Brookings, SD		Hays, KS	
	2007	2008	2007	2008	2007	2008	2007	2008
40% Seed Moisture								
Gramoxone	25	11	NA	6	5	10		
Sharpen	27	7	NA	7	5	15		
Roundup	17	9	NA	8	3	11		
Roundup + Sharpen	26	12	NA	4	5	13		
30% Seed Moisture								
Gramoxone	8	7	8	3	1	4		
Sharpen	9	6	3	2	2	3		
Roundup	3	8	6	3	1	3		
Roundup + Sharpen	7	5	6	1	0	0		

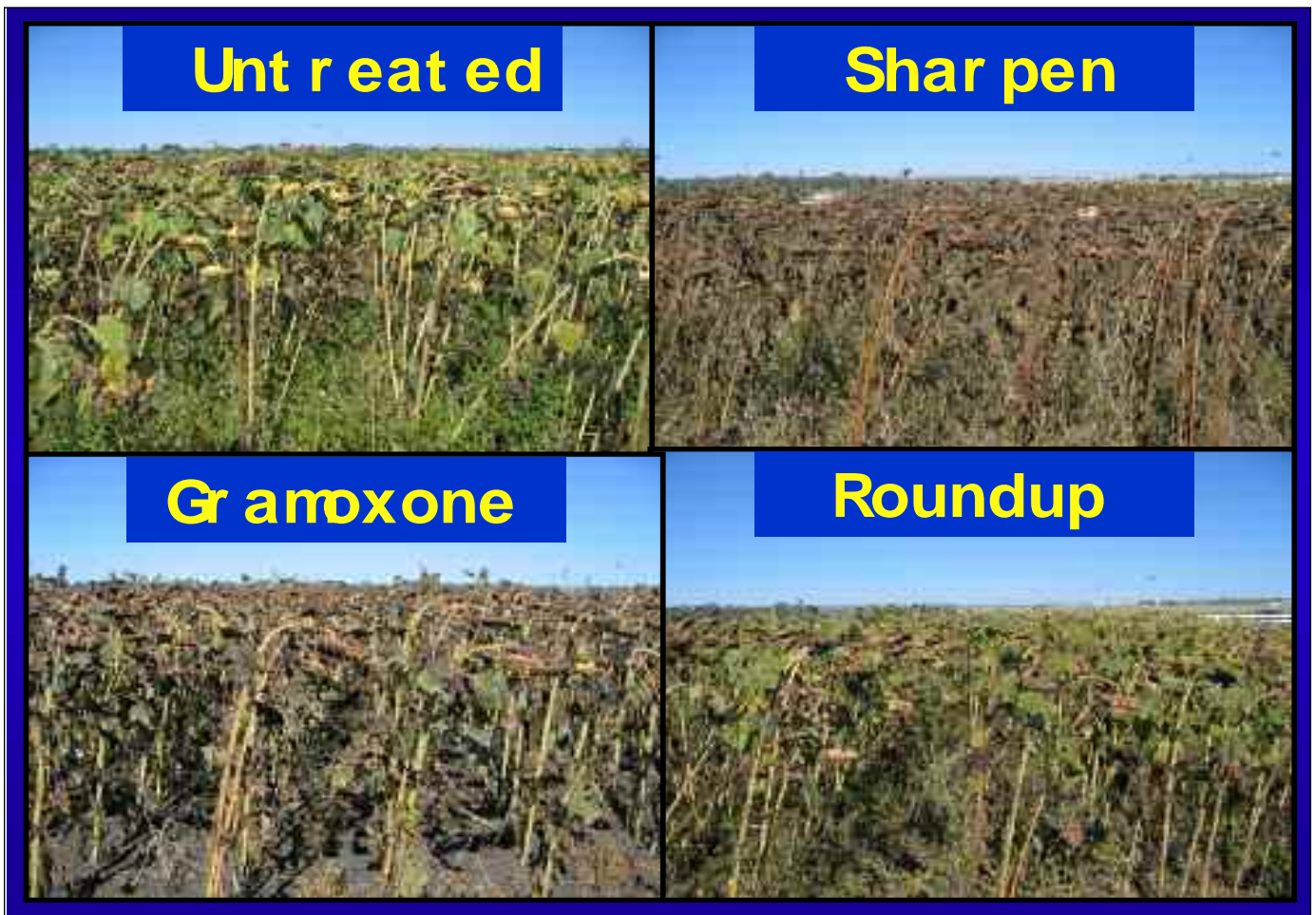
Research conducted by Kirk Howatt and Brian Jenks (NDSU), Mike Moechnig (SDSU) and Phil Stahlman (KSU).



These three photos depict typical sunflower fields at three different seed moisture levels:

- Above Left — This field's seed moisture is at about 70%, which is definitely too early to apply a desiccant.
- Above Right — This field's seeds are at approximately 50% moisture . . . still too early for a desiccant treatment.
- Left — Here the seed moisture has fallen under 35%, the heads are yellowing, and the bracts are beginning to turn brown. This is an appropriate stage for the application of a crop desiccant (or of a glyphosate weed control product).

Below: These photos compare the degree of plant drydown that has occurred in untreated plot and plots treated with Sharpen, Gramoxone and Roundup, respectively.



Photos: Kirk Howatt / NDSU

Utilizing Bracts as Cues to Seed Moisture

Tip – 40-50% moisture
Neck – 40%
Shoulder – 30-35%

Credit: Kirk Howatt / NDSU

that there are differences between hybrids when comparing seed moisture and physiologic maturity. The researchers looked at Mycogen's 8N272 and Croplan's 378 for physiological maturity, including yield, oil content and fatty acid composition. For yield, 8N272 and 378 reached maturity between 35-45% seed moisture. Oil content and fatty acid composition reached maturity between five to 10 moisture points higher.

This was from research conducted in 2008 and 2009 at Morris and Prosper N.D. These results, combined with the multi-state research team data, clearly indicate that erring on the high side of 35% seed moisture is not going to impact yield or quality.

There is no suggestion here of going

off label. It is simply a summarization that determining physiological maturity and seed moisture within the field, within an individual head and between hybrids is going to vary by as much as 10 percentage points.

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advantage of warmer temperatures in September. Herbicides work best with warm temperatures, allowing the plant to translocate the herbicide. "In northern North Dakota and Minnesota, it doesn't usually make a lot of sense to desiccate in October since our killing frost is usually at that time," Howatt says. But if the crop is mature in early September, there can be significant advantages in accelerating the harvest with a desiccant. "It still all depends on the weather after the application," Howatt observes.

There are several reasons why desiccation should be considered. Stalk integrity is one. John Swanson of Croplan Genetics, a longtime sunflower agronomist, advises farmers and crop scouts to split a few stalks after petal drop to determine what kind of insect activity is taking place in that stalk. "If there is a lot of tunneling, it might make sense to desiccate and get that crop off as soon as possible to avoid stalk breakage later on," says Swanson. The obvious blackbird issue in the north is an additional reason for pushing for early harvest.

Desiccation is a good tool for High Plains growers who want to get winter wheat planted on the sunflower stubble, says KSU's Stahlman. "Otherwise, the heat units in the High Plains region are sufficient for natural drydown."

Desiccation is another management tool that will not be an option each year. A good example was 2009, when the crop finally matured in late September due to the cool growing season. A killing freeze followed shortly thereafter throughout the entire production region as far south as Kansas. Researchers were not able to spray the desiccant because Mother Nature took care of it. — **Larry Kleingartner** ■