

Evaluation of Saflufenacil as a Cotton Harvest Aid in the Southern Rolling Plains

D.R. Drake¹, R.R. Minzenmayer², and P. Halfmann².

¹Texas AgriLife Extension-San Angelo, TX and ²Texas AgriLife Extension-Ballinger, TX

Presenter's email: drdrake@ag.tamu.edu



Introduction and Abstract

A timely and proper harvest is an essential step in growing a profitable and high quality cotton crop. Numerous harvest aid products and recommendations are available and a cotton producer must choose one that fits the specific crop, weather conditions, and harvest infrastructure. One recommendation includes the use of a PPO inhibiting herbicide, to desiccate and defoliate the plant; usually applied with an ethephon boll opening material. In 2010, a new PPO herbicide was released by BASF; as trade name Sharpen with the active ingredient Saflufenacil. Sharpen was evaluated at two rates with other PPO products during the 2010 harvest season in the Southern Rolling Plains of Texas at four dryland and two irrigated locations. Sharpen produced results similar to other PPO products and was also comparable to a standard treatment of Def and Prep. There were small differences between rates with the lower 1.5 ounce rate similar to 2.0 ounces and with less cost. Over all locations Sharpen demonstrated lower than average defoliation, the highest desiccation, average green leaf, and showed lower regrowth than all treatments with the exception of ET. Aim had the lowest defoliation average. Performance of Sharpen appeared better in treatments with higher temperatures and in one unreplicated location where the higher rate of Sharpen was applied without Prep.

Materials and Methods

Harvest aid treatments were applied to cotton crops with 60 – 90 percent open bolls. The total spray volume was 11 or 15 gallons per acre using turbo tee jet or flat fans nozzles, respectively. The experimental design consisted of demonstration strips of 4 rows by approximately 150 ft long for each treatment with 2 untreated rows in between (Figure 1.). One irrigated location in San Angelo had replicated 4 row by 45 ft plots. Locations were treated as replications.

Treatments were evaluated at 7 and 14 days after treatment (DAT) for percent defoliation, percent desiccated attached leaves, percent attached green leaves; the three measurements summing to 100 percent. Regrowth was evaluated as either percent of regrowing terminal and auxiliary buds or rated on a scale of one to ten, one being no regrowth and ten having produced good sized leaves at all growing points.

All treatments were considered an initial treatment with a final desiccation treatment planned just prior to harvest.

Locations varied by crop condition, plant size, yield, and weather conditions. The first treatments were conducted on September 10th and the last on October 15th. Four Texas dryland locations included Ballinger, Runnels Co.; Stamford, Jones Co.; Roscoe, Nolan Co. and Big Spring, Howard Co. Two irrigated locations were both near San Angelo, Tom Green County, TX.

Table 1. Dryland cotton harvest aid trial in 2010 near Ballinger, TX

Treatment	% Defoliation 7 DAT	% Desiccation 7 DAT	% Green Leaf 7 DAT
Sharpen @ 1.5 oz + Prep @ 21 oz + COC	45	5	50
Def @ 16 oz + Prep @ 21 oz + COC	45	0	55
Sharpen @ 2.0 oz + Prep @ 21 oz + COC	40	10	50
Aim @ 1.0 oz + Prep @ 21 oz + COC	25	5	70
Sharpen @ 2.0 oz + COC	40	5	55
ET @ 1.5 oz + COC	25	10	65
Aim @ 1.0 oz + COC	10	10	80

Conditions: Ave. high temp. 95, Ave. low temp. 73 GDD: 183 Precipitation: 0.12



Figure 1. A Cotton harvest aid demonstration trial with two different treatments on either side of two untreated rows October 2010 Big Spring, TX.

Table 2. Dryland cotton harvest aid trial in 2010 near Stamford, TX

Treatment	% Def. 14 DAT	% Des. 14 DAT	% G. Leaf 14 DAT	Re-growth Rating
Def @ 16 oz + Prep @ 21 oz + COC	45	0	55	8
ET @ 1.5 oz + Prep @ 21 oz + COC	40	20	40	4
Aim @ 1.0 oz + Prep @ 21 oz + COC	35	10	55	4
Blizzard @ 0.5 oz + Prep @ 21 oz + COC	35	5	60	5
Sharpen @ 2.0 oz + Prep @ 21 oz + COC	25	15	60	4
Sharpen @ 1.5 oz + Prep @ 21 oz + COC	20	10	70	6

Conditions: Ave. high temp. 80, Ave. low temp. 60 GDD: 142 Precipitation: 2.5

Table 3. Dryland cotton harvest aid trial in 2010 at Big Spring, TX

Treatment	% Def. 14 DAT	% Des. 14 DAT	% G. Leaf 14 DAT	Re-growth Rating
Blizzard @ 0.5 oz + Prep @ 24 oz + COC	35	10	55	7
Def @ 16 oz + Prep @ 24 oz + COC	35	5	60	8
Aim @ 1.0 oz + Prep @ 24 oz + COC	25	15	60	7
ET @ 1.5 oz + Prep @ 21 oz + COC	25	5	55	8
Sharpen @ 1.5 oz + Prep @ 24 oz + COC	25	5	70	8
Sharpen @ 2.0 oz + Prep @ 24 oz + COC	25	5	70	8

Conditions: Ave. high temp. 88, Ave. low temp. 75 GDD: 138 Precipitation: 0.14

Acknowledgements

The authors would like to thank the landowners, County Extension Agents, USDA-ARS, BASF, Nichino America, FMC, and Bayer Crop Sciences for their assistance and product contributions.

Table 4. Irrigated cotton harvest aid trial in 2010 at San Angelo, TX

Treatment	% Def. 14 DAT	% Des. 14 DAT	% G. Leaf 14 DAT	% Re-growth Rating
ET @ 1.5 oz + Prep @ 24 oz + COC	78	2	20	0
Def @ 16 oz + Prep @ 24 oz + NIS	75	0	25	60
Sharpen @ 2.0 oz + Prep @ 24 oz + COC	70	15	15	20
Sharpen @ 1.5 oz + Prep @ 24 oz + COC	70	10	20	40
Blizzard @ 0.5 oz + Prep @ 24 oz + COC	67	3	30	80
Aim @ 1.0 oz + Prep @ 24 oz + NIS	38	2	60	70

Conditions: Ave. high temp. 84, Ave. low temp. 60 GDD:157 Precipitation: 0.96

Table 5. Average ratings, 14 DAT, for four dryland and two irrigated harvest aid trials conducted in 2010 in the Southern Rolling Plains of Texas

Treatment	% Def.	% Des.	% G. Leaf	% Re-growth
Def @ 16 oz + Prep @ 21 oz + COC	46.0	6.6	47.4	69.6
ET @ 1.5 oz + Prep @ 21 oz + COC	42.6	14.4	43.0	45.0
Blizzard @ 0.5 oz + Prep @ 21 oz + COC	41.8	14.5	43.8	65.0
Sharpen @ 1.5 oz + Prep @ 21 oz + COC	38.0	16.0	46.0	54.0
Sharpen @ 2.0 oz + Prep @ 21 oz + COC	37.0	18.0	45.0	47.5
Aim @ 1.0 oz + Prep @ 21 oz + COC	25.6	12.9	61.5	59.4

Results and Discussion

When compared to a standard Def and Prep treatment in 2010 at 6 locations, PPO inhibitors exhibited less defoliation, higher desiccation, average green leaf, and significantly less regrowth. One irrigated and one dryland were not shown.

Sharpen provided similar results to other PPO inhibitors when combined with Prep and over all locations demonstrated lower than average defoliation, the highest desiccation, average green leaf, and showed lower regrowth than all treatments with the exception of ET. Aim had the lowest defoliation average.

Performance of Sharpen appeared better in treatments with higher temperatures as evidenced by Tables 1 and 2.

Over all locations there were only slight differences between 1.5 and 2.0 ounces of Sharpen, the largest difference being decreased regrowth. Given the current price and availability of Sharpen, in the vicinity of these trials; the 1.5 ounces per acre rate would be most cost effective.

The affect on yield and fiber quality was not evaluated.

Two ounces of Sharpen without Prep was compared in only one trial and performed well (Table 1.). This should be further evaluated in addition to other tank mixes and adjuvants such as NIS, AMS, paraquat, and glyphosate, as labeled in other uses and may show different results.

Conclusions

Sharpen performed similarly to other PPO inhibitors. Cost, ease of use, and availability should be a primary consideration for this product.

A rate of 1.5 ounces per acre appears to be sufficient.

The use of saflufenacil, Sharpen; as a cotton harvest aid is not currently labeled