

## BANVEL SGF FOR WEED CONTROL IN FALLOW-BEDCOTTON

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### Abstract

With the use of current preplant weed control programs in cotton, populations of certain tough to control weeds has increased. The addition of Banvel SGF (dicamba) at 0.25 lb ae/A to treatments of Roundup (glyphosate), Gramoxone Extra (paraquat) or Bladex (cyanazine) has resulted in greatly increased control of many of these tough broadleaf weeds without risk of cotton injury.

### Introduction

The increase in no-till and limited till acres over the past several years has helped to educate farmers in the use of herbicides rather than tillage for preplant weed control. This practice helps to alleviate problems of soil compaction, erosion, and delayed planting due to increased water uptake in freshly plowed soil. The use of low cost herbicides in this market has helped to increase the acceptance of "burndown" or fallow bed herbicide applications. However, with the use of these herbicide programs, populations of cutleaf eveningprimrose (*oenothera laciniata*), horseweed (*conyza canadensis*), Pennsylvania smartweed (*polygnum pennsylvanicum*) and other weeds increased since they were not completely controlled by these herbicides. This hastened the introduction of other herbicides such as Harmony Extra (thifensulfuronmethyl) for use in fallow bed applications to help control these weeds. These newer herbicides generally provide better control but do not solve all of the weed problems. During the past few years, 2,4-D has been used in cotton as a burndown herbicide, however this usage will not be supported with federal registration and is expected to be unavailable in the future. In 1993, treatments of Banvel SGF plus Roundup were included in exploratory field trials to determine how they would fit into a preplant weed control system. Further testing was conducted in 1994, 1995 and 1996 by both Sandoz and University researchers.

### Methods and Materials

Treatments of Banvel SGF plus Roundup, Gramoxone Extra or Bladex were included in over thirty trials conducted in Arkansas, Louisiana, Mississippi, Missouri and Tennessee from 1994 to 1996. The rates of some of the standard herbicide treatments varied among trials, however, only paired comparisons were made within trials. Application timing of the herbicide treatments was generally

determined by weed stage rather than planting date, except for tolerance trials where the applications were made at certain intervals prior to planting. Data from these trials are listed in Tables 1-6.

### Results and Discussion

Cutleaf eveningprimrose control was much better with combinations of Banvel SGF and Roundup or Bladex than Harmony Extra + Roundup, Gramoxone Extra or Roundup alone (Table 1). Horseweed and swinecress (*coronopus didymus*) control was essentially equal between all treatments of Roundup or Roundup combinations with Banvel SGF, which were significantly better than Gramoxone Extra. Curly dock (*rumex crispus*) control was better with Roundup alone or combinations of Roundup and Banvel SGF than Gramoxone Extra. Combinations of Roundup and Banvel SGF resulted in better curly dock control than Roundup alone at .56 lb ae/A. Little barley (*hordeum pusillum*) and annual bluegrass (*poa annua*) control was equal between treatments of Roundup alone, and Roundup + Harmony Extra and Banvel SGF (Table 2).

Combinations of Banvel SGF + Bladex resulted in the greatest or equal to the greatest control of cutleaf, henbit (*lamium amplexicaule*), shepherd's purse (*capsella bursa-pastoris*), chickweed (*stellaria media*), little barley and annual bluegrass (Tables 3 and 4). Curly dock control was lower (Table 3) with combinations of Banvel SGF + Bladex or Banvel SGF + Roundup + Bladex than Banvel SGF + Roundup. The addition of Roundup to Banvel SGF + Bladex did not increase control even on little barley and annual bluegrass.

Table 5 lists comparisons of Banvel SGF and 2,4-D in combination with Roundup and Roundup alone. When comparing Banvel SGF and 2,4-D in combination with Roundup there were very few differences in control of cutleaf eveningprimrose, smartweed and curly dock, however, on species such as clovers (*trifolium repens*), Banvel SGF provided significantly better control.

Combinations of Gramoxone Extra and Banvel SGF or 2,4-D provided significantly better control than Gramoxone Extra alone (Table 6). When comparing 2,4-D and Banvel SGF combinations with Gramoxone Extra there was very little difference in control of cutleaf eveningprimrose. However, with horseweed there seemed to be a trend toward better control with Banvel SGF combinations than with 2,4-D combinations.

While not listed, several trials were conducted to determine cotton safety with Banvel SGF. No injury was observed when Banvel SGF was applied at three weeks prior to planting or greater. Crop injury was observed when the planting interval was shortened to one or two weeks. However, the injury at one or two weeks was infrequent and dependent on rainfall. With the accumulation of one inch

of rainfall between the time of application and planting, injury was insignificant.

### Conclusions

The results from the trials conducted from 1993 to 1996 indicate Banvel SGF would be a great addition to a cotton preplant burndown weed control program. Broadleaf weed control with Banvel SGF combinations has been as good or better than all currently labeled products for this application timing.

Table 1. Percent control of cutleaf eveningprimrose, horseweed, swinecress and curly dock at 1-2 weeks prior to planting. 1994-1996

Treatment	rate lb ai or ae/A	Cutleaf	Horseweed	Swinecress	Dock
Roundup	.56	48	91	91	83
Roundup	.75	63	96	95	93
Gramoxone Extra	.63	46	55	65	29
Harmony Extra + Roundup	.033 + .56	59	96	94	90
Banvel SGF + Roundup	.25 + .56	93	99	96	96
LSD 0.05		19	13	10	16

Table 2. Percent control of little barley and annual bluegrass at 1-2 weeks prior to planting. 1994-1996

Treatment	rate lb ai or ae/A	Little barley	Annual bluegrass
Roundup	.56	97	88
Roundup	.75	98	93
Gramoxone Extra	.63	79	66
Harmony Extra + Roundup	.033 + .56	97	88
Banvel SGF + Roundup	.25 + .56	93	81
LSD 0.05		14	9

Table 3. Percent control of cutleaf eveningprimrose, henbit, shepherd's purse and curly dock at 1-2 weeks prior to planting. 1996

Treatment	Rate lb ai or ae/A	Cutleaf	Henbit	Shepherds purse	Dock
Roundup	0.75	61	73	91	94
Banvel SGF + Roundup	0.25 + 0.5	92	74	92	94
2,4-D + Roundup	0.5 + 0.5	91	74	92	65
Banvel SGF + Roundup + Bladex	0.25 + 0.5 + 0.75	90	99	92	73
Banvel SGF + Bladex	0.25 + 0.75	94	99	99	78
LSD 0.05		17	24	10	12

Table 4. Percent control of chickweed, little barley and annual bluegrass at 1-2 weeks prior to planting. 1996

Treatment	Rate lb ai or ae/A	Chickweed	Little barley	Annual bluegrass
Roundup	0.75	91	95	96
Banvel SGF + Roundup	0.25 + 0.5	95	83	92
2,4-D + Roundup	0.5 + 0.5	76	85	96
Banvel SGF + Roundup + Bladex	0.25 + 0.5 + 0.75	98	93	99
Banvel SGF + Bladex	0.25 + 0.75	99	99	98
LSD 0.05		20	20	10

Table 5. Percent control of cutleaf eveningprimrose, smartweed, white clover and curly dock at 1-2 weeks prior to planting. 1994-1996

Treatment	rate/A	cutleaf	smartweed	clover	dock
Roundup	1 X	51	30	65	87
2,4-D + Roundup	.5 + 1 X	93	97	51	94
Banvel SGF + Roundup	.25 + 1 X	95	97	98	98
LSD 0.05		17	6	26	20

\* Roundup rates were different between trials, however, only paired comparisons were made among treatments.

Table 6. Percent control of cutleaf eveningprimrose and horseweed at 1-2 weeks prior to planting. 1994-1996

Treatment	rate/A	cutleaf	horseweed
Gramoxone Extra	1 X	72	52
2,4-D + Gramoxone Extra	.5 + 1 X	96	80
Banvel SGF + Gramoxone Extra	.25 + 1 X	93	97
LSD 0.05		21	18

\* Gramoxone Extra rates were different among trials, however, only paired comparisons were made among treatments.