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Final Report

Increased Options for Weed Management in the North Carolina Highway Wild Flower Program

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16. Abstract

The North Carolina Department of Transportation (NCDOT) has implemented a highway wildflower program that now encompasses 3500 roadside acres throughout the state. Methyl Bromide has become essential in establishing these beds. However, the Environmental Protection Agency (EPA) has classified Methyl Bromide as an ozone depleting substance and has banned production in 2005. Research was conducted 1) to determine if wildflowers could be established and maintained using preemergence (PRE) and / or postemergence (POST) herbicides, 2) to evaluate the efficacy of these herbicides on native vegetation, and 3) to evaluate the efficacy of nonchemical weed control options such as cover crop plantings.

Twenty-one PRE and 20 POST herbicides were evaluated on 29 wildflower species in 3 greenhouse and 2 field trials. In general, wildflowers were more tolerant to the PRE herbicides. However, no herbicide came close to Methyl Bromide in relation to safety and tolerance to all wildflower species. Field personnel must be able to select species based on weed presence and the herbicides needed to control those specific weeds without injuring the wildflowers.

Based on NCDOT surveys, the 3 most problematic weeds throughout the state are vetch species, curly dock and Carolina geranium. These weeds were controlled PRE and also POST with Cotoran 4L, Sinbar 80WP and Velpar 75DF. However, only limited wildflower species displayed tolerance to these herbicides. None of the 29 species evaluated have tolerance to Velpar 75DF applied POST, so this treatment is not an option. Ox-eyed daisy (mature plantings of 1 year or more) and spurred snapdragon were the only wildflower species with POST tolerance to Sinbar 80WP.

Greenhouse trials were initiated to see if covercrop plantings would control weeds. Rye, wheat and oats were tested on 12 weed species. None of the weeds were completely controlled but dry weights were reduced in hairy vetch in 2 of 2 trials. Dry weights were reduced in common lambsquarter, curly dock, redroot pigweed, wild mustard, spiny sowthistly and Carolina geranium in 1 of 2 trials. Covercrops should not be considered a substitute for herbicides for weed control in wildflower beds.

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SUMMARY

Twenty-one preemergence (PRE) and 20 postemergence (POST) herbicides were evaluated on 29 wildflower species in 3 greenhouse and 2 field trials from 1999 through 2002. In general, wildflowers were more tolerant to the PRE herbicides. However, no herbicide came close to Methyl Bromide in relation to safety and tolerance to all wildflower species. For successful wildflower management without a soil fumigant at establishment, field personnel must select species based on weed presence and the herbicides needed to control those specific weeds without injuring the wildflowers. Herbicides are available that will provide control of weeds that escape from Methyl Bromide applications such as Carolina geranium, curly dock, white clover and vetch species. However, in some instances wildflower choices will be minimal.

Cover crops such as oats, rye and wheat consistently suppressed hairy vetch growth and erratically suppressed several broadleaf weed species but did not effectively control any of them. These cover crops should not be considered as substitutes for herbicides in wildflower weed management.

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Increased Options for Weed Management in the North Carolina Wildflower Program

INTRODUCTION

Wildflowers are planted and maintained on approximately 3500 roadside acres in North Carolina (D. Smith, personal communication). Under the direction and leadership of William (Bill) Johnson, the North Carolina Department of Transportation (NCDOT) Roadside Environmental Unit has developed a successful and highly visible roadside wildflower establishment program (Johnson 1999). From its inception in the middle 1980's to the fall plantings of 2001, the many colors that blanket the state each year have provided millions of travelers with beautiful scenery and welcome breaks from the hustle and bustle of today's society.

There are many annual and perennial wildflower species grown in North Carolina that display outstanding colors. In general, these plants are not as competitive as the aggressively growing native plants that inhabit the state. Winter annual weeds such as vetch species, shepherd's-purse, Carolina geranium and Virginia pepperweed can quickly invade fall plantings. Summer annual weeds such as common lambsquarters and various species of crabgrass, pigweed and morningglory help keep pressure on newly germinated seedlings. Mature wildflower beds that are several years old must combat perennial weeds such as dogfennel, horseweed, white clover and curly dock. Weed management is a never-ending battle for NCDOT personnel.

The most effective weed management tool for establishing wildflower plantings has been Methyl Bromide fumigation. Though not all weeds are controlled (legumes such as vetch and clover species for example), Methyl Bromide has been an excellent choice for bed establishment. However, the Environmental Protection Agency (EPA) has determined that Methyl Bromide is an ozone depleting substance and must be banned in the near future. *Table 1* shows the production schedule.

Table 1. Methyl Bromide Production Schedule

1999	25% reduction
2001	50% reduction
2003	70% reduction
2005	Complete ban

Other soil fumigants on the market today do not offer the weed control consistency that is characteristic of Methyl Bromide (Unruh 2001; Unruh et al. 2002). Telone II provides excellent nematode and insect control but poor weed control. To increase weed efficacy, Telone II is often used with Chloropicrin or Vapam. Chloropicrin alone also provides poor general weed control and is used with Methyl Bromide or Telone II. Vapam or Metam, and Basamid are similar products that require favorable environmental factors such as soil moisture and temperature to chemically convert to biocidal active ingredients. Iodomethane (Methyl Iodide) is not currently registered but potentially can match or surpass Methyl Bromide for control of weeds, nematodes and fungi. Methyl Iodide is not considered hazardous to the ozone layer, because it degrades very quickly in the presence of light.

As effective as Methyl Bromide is, weeds quickly invade fumigated areas with the help of wind, water, birds and mammals. Surveys conducted in the summer of 2001 provided insight as to the weed problems faced by NCDOT division personnel each year (*Tables 2 and 3*). Many weeds are adapted throughout the state from the coastal plains to the mountains as evidenced by the surveys. The prevalence of these species makes wildflower establishment an extremely challenging task.

Table 2. NCDOT Eastern Division Weed Problems

Vetch species	White clover
Curly dock	Shepherd's-purse
Carolina geranium	Virginia pepperweed
Horseweed	Hop clover
Dogfennel	Morningglory species
Common ragweed	Smartweed species
Common lambsquarters	Prickly sida
Pigweed species	Camphorweed

Table 3. NCDOT Western Division Weed Problems

Vetch species	Wild lettuce
Curly dock	Little barley
Carolina geranium	Johnsongrass
Horseweed	Pokeweed
Dogfennel	Mullein
Common ragweed	Sericea lespedeza
Common lambsquarters	
Pigweed species	

Because of weeds surviving soil fumigation and the loss of Methyl Bromide in 2005, research was conducted at North Carolina State University (NCSU) 1) to determine if wildflowers could be established and maintained using preplant incorporated (PPI), preemergence (PRE) and / or postemergence (POST) herbicides, 2) to evaluate the efficacy of these herbicides on native vegetation, and 3) to evaluate the efficacy of non-chemical weed control options such as cover crop plantings.

MATERIALS AND METHODS

Wildflower Tolerance and Also Weed Control Trials With PPI / PRE Herbicides – Greenhouse. A spray chamber was calibrated to deliver 20 gpa at 1.5 mph with a single XR8001EVS even flat fan nozzle set 12 inches above the soil surface. Sandy loam soil (NCSU source) was potted in 1 x 2 feet trays. PPI treatments were applied (*Table 4*), and then the soil was incorporated in separate plastic bags within 5 minutes after application and returned to the appropriate trays. After the trays were set in the greenhouse, wildflowers (*Table 5*) or weed species (*Table 6*) were seeded directly onto the soil surface in shallow furrows 1.5 inches apart. For the PRE treatments (*Table 4*), wildflower or weed species were seeded onto the soil surface as described above, then

sprayed and set in the greenhouse. All trays were lightly hand watered for herbicide activation. An irrigation timer was set for 6 to 8 minute intervals 2 to 3 times per day depending on the time of year. Trials conducted in late spring through summer received 3 watering intervals due to daytime heat intensity. After germination, a 4 g/L ratio of a water-soluble fertilizer (Peter's 20-20-20) was applied weekly for 2 to 3 weeks. Wildflower tolerance or weed control ratings were recorded weekly for a 3 to 4 week period.

Wildflower Tolerance and Also Weed Control Trials With POST Herbicides – Greenhouse. Sandy loam soil was potted in 1 x 2 feet trays and set in the greenhouse. Wildflower or weed species were seeded directly onto the soil surface in shallow furrows 1.5 inches apart. Irrigation and fertilization schedules were the same as for the PPI / PRE trials. Once the wildflowers or weeds reached the 2 to 4 leaf stage, POST treatments (*Table 4*) were applied in a spray chamber calibrated as stated earlier, except the nozzle was set 12 inches above the tops of the plants and not the soil surface. The trays were returned to the greenhouse and wildflower tolerance or weed control ratings were recorded weekly for a 3 to 4 week period.

Table 4. PPI, PRE and POST Herbicide Treatments and Rates

PPI	Eptam 7EC	3.06 lb ai/A	POST	Asulox 3.34L	3.34 lb ai/A
PPI	Predict 80DF	0.98 lb ai/A	POST	Authority 75DF	3.975 oz ai/A
PPI	Prefar 4EC	5 lb ai/A	POST	Basagran + Agridex	1 lb ai/A + 1 qt/A
PPI	Treflan HFP 4EC	0.5 lb ai/A	POST	Bueno 6 6L	2.04 lb ai/A
PRE	Alanap-L 2L	2 lb ai/A	POST	Cotoran 4L + X-77	2 lb ai/A + 0.25%
PRE	Authority 75DF	3.975 oz ai/A	POST	Goal XL 2L	0.25 lb ai/A
PRE	Cotoran 4L	1 lb ai/A	POST	Image LC + X-77	0.5 lb ai/A + 0.25%
PRE	Curbit 3EC	1.125 lb ai/A	POST	Kerb WSP 50WP	2 lb ai/A
PRE	Devrinol 50DF	2 lb ai/A	POST	Liberty 1.67L	0.364 lb ai/A
PRE	Factor 65WG	0.65 lb ai/A	POST	Peak 57WG + X-77	0.285 oz ai/A + 0.25%
PRE	Gallery 75DF	0.5 lb ai/A	POST	Pinnacle 25DF + X-77	0.0625 oz ai/A + 0.25%
PRE	Goal XL 2L	0.25 lb ai/A	POST	Plateau 2AS + X-77	1 oz ai/A + 0.25%
PRE	Image LC 1.5LC	0.375 lb ai/A	POST	Predict 80DF	0.98 lb ai/A
PRE	Kerb WSP 50WP	1 lb ai/A	POST	Roundup Ultra 4L	0.75 lb ai/A
PRE	Pendulum 60WG	1.5 lb ai/A	POST	Roundup Ultra 4L	1.5 lb ai/A
PRE	Pennant Liquid 8EC	2 lb ai/A	POST	Sinbar 80WP	1.2 lb ai/A
PRE	Plateau 2AS	1 oz ai/A	POST	Staple 85SP + X-77	1.53 oz ai/A + 0.25 %
PRE	Sinbar 80WP	0.4 lb ai/A	POST	Transline 3L + X-77	0.5 lb ai/A + 0.25 %
PRE	Staple 85SP	0.51 oz ai/A	POST	Velpar 75DF	1 lb ai/A
PRE	Surflan 4AS	2 lb ai/A	POST	Vista 1.5EC	0.25 lb ai/A
PRE	Velpar 75DF	0.5 lb ai/A	POST	2,4-DB 2L	0.25 lb ai/A

Table 5. Wildflower Species Evaluated: Greenhouse Trials

Black-eyed Susan
Blanketflower
Bur-marigold
Butterflyweed
California poppy
Catchfly
Chicory
Clasping coneflower
Common milkweed
Common sunflower
Corn poppy
Cosmos
Dames rocket
Gloriosa daisy
Indian blanket
Lance-leaf coreopsis
Maximilian sunflower
Mixed poppy
Narrowleaf sunflower
Ox-eyed daisy
Plains coreopsis
Purple coneflower
Rose angel
Scarlet flax
Spurred snapdragon
Sulphur cosmos
Swamp milkweed
Sweet William
Wallflower

Table 6. Weed Species Evaluated: Greenhouse Trials

Carolina geranium
Common lambsquarter
Common ragweed
Curly dock
Hairy vetch
Prickly sida
Redroot pigweed
Shepherd’s-purse
Spiny sowthistle
Virginia pepperweed
White clover
Wild mustard

Wildflower Tolerance and Also Weed Control Trials With PPI / PRE Herbicides – Field Locations. In addition to greenhouse trials, field test plots were established to determine wildflower and weed responses to herbicides in their natural environments. At a Wake County I-40 roadside location, a PPI / PRE test was initiated on a sulphur cosmos site in August 2000. Soil was prepared using NCDOT field equipment. PPI treatments were applied, and the test area was lightly tilled and seeded. PRE treatments were then applied. After germination, ratings were conducted on a weekly schedule.

Also in 2000, PRE herbicide trials were established in Wayne County at Clairidge Nursery on bur-marigold, narrowleaf sunflower and common sunflower. The test sites were established and maintained by NCDOT personnel. Treatments were applied in February. Weeds present in these locations were common lambsquarters and wild mustard. Dry weather affected results at this test location. No rainfall occurred for approximately 17 days after test initiation, possibly affecting herbicide activation.

In 2000 and 2001, a PPI / PRE test was established on all wildflower species except cosmos and sulphur cosmos at the Central Crops Research Station near Clayton, NC. Treatments were initiated in October 2000 and also December 2001. In each year, the test area was disked, fertilized with a broadcast application of 400 lbs of 6-6-36 and field cultivated. PPI treatments were incorporated with a field cultivator. The wildflower species were hand seeded in 6 to 7 inch bands across the plots and lightly raked for soil / seed contact. PRE treatments were then applied. Weeds present included cutleaf eveningprimrose and corn spurry. In each year, dry weather and heat (2001 only) affected results at this test location. Thirty-four days without rainfall occurred after test establishment in 2000. In 2001, the test area was extremely dry in October and November, so test initiation did not occur until December. Less than 1.5 inches of rainfall occurred each month from February through June 2002. In April 2002, several days of 90+ degrees and no rainfall killed some of the wildflower species before flowering had occurred.

Wildflower Tolerance and Also Weed Control Trials With POST Herbicides – Field Locations. In April 2000, POST trials were initiated at Claridge Nursery in Wayne County to determine bur-marigold, narrowleaf sunflower and common sunflower herbicide tolerances. POST common lambsquarters and wild mustard ratings were also recorded.

Wake County POST trials were initiated in March 2000 on bur-marigold and ox-eyed daisy beds with weed control data being obtained for hairy vetch, hairy bittercress, white clover, corn speedwell and curly dock. Also in March, a POST weed control trial was initiated in Edgecombe County on horseweed, cutleaf eveningprimrose and common chickweed. Wake County POST trials were initiated in September 2000 on cosmos and sulphur cosmos to determine herbicide tolerances.

In 2000 and 2001, a POST test was established on all wildflower species except cosmos and sulphur cosmos at the Central Crops Research Station near Clayton, NC. Soil preparation, seeding techniques, seeding dates, weeds and weather patterns were the same as in the PPI / PRE test. Treatments were initiated in April 2001 and 2002. Wildflower herbicide tolerances and weed control ratings were recorded.

Data Summary. Charts have been developed for each wildflower species tested that list all tolerant herbicides along with weeds that might be controlled that are of interest to the NCDOT. Effective herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellent control (80 to 99%) of the listed weeds under optimum conditions and proper timings. These charts immediately follow the Findings and Conclusions section of this report.

Grass Cover Crop Plantings and Their Effects on Broadleaf Weed Growth – Greenhouse. Two greenhouse trials were initiated to see if various grass cover crops could control broadleaf weeds. The hypothesis is that grass cover crops can control or suppress broadleaf weeds during the fall and winter months when the wildflowers are not actively growing. The cover crops could then be controlled (removed) in the spring, thus releasing the wildflowers. Abruzzy rye, Pioneer 2684 wheat and NC hulless oats were seeded in 1 x 2 feet greenhouse trays along with 12 broadleaf weeds (*Table 6*). Weed heights and green weights were recorded at harvest. The plants were bagged, oven dried at 130 degrees F and weighed. A discussion of these results will follow in the Findings and Conclusions section of this report.

FINDINGS AND CONCLUSIONS

PPI / PRE Herbicide Options. In general, more herbicide options exist when targeting weed control during wildflower establishment as opposed to POST applications. However, PRE applications of Gallery 75DF and Surflan A.S. at 0.5 and 2 lb ai/A, respectively, negatively affected all of the wildflower species tested. At tested rates, these PRE herbicides should not be considered as weed management options due to wildflower sensitivity.

Cotoran 4L, Sinbar 80WP and Velpar 75DF applied at 1.0, 0.4 and 0.5 lb ai/A, respectively, were the only PRE herbicides that effectively controlled vetch species, curly dock and Carolina geranium, the 3 most troublesome weeds in wildflower plantings. These weeds are winter annuals or cool season perennials that germinate in the fall along with most of the wildflower species. This early competition can easily thin wildflower stands, leaving a mixture of desirable and nondesirable plants.

Common sunflower, narrowleaf sunflower and purple coneflower were the only wildflower species tolerant to all 3 herbicides. In addition, fall applications of Sinbar 80WP and Velpar 75DF were safe on black-eyed Susan and swamp milkweed. Sinbar 80WP and Cotoran 4L were applied safely to ox-eyed daisy. Velpar 75DF and Cotoran 4L were applied safely to blanketflower and bur-marigold. Sinbar 80WP could also be used in wildflower beds consisting of spurred snapdragon or clasping coneflower. Velpar 75DF could also be used in mixed poppy and corn poppy plantings.

Depending on weed and wildflower species combinations, there are many PPI and PRE herbicide options that can be used effectively and safely. Weed presence will dictate what wildflower species can be planted that will withstand a particular PPI / PRE herbicide treatment. These options are best expressed in charts that follow this findings and conclusions section.

POST Herbicide Options. POST broadleaf weed control will be a major challenge in wildflower plantings. Acceptable selective broadleaf herbicides ranged from limited to nonexistent depending on the particular species. It will be critical for field personnel to know the weed populations of any given plant bed so that a tolerant species or species mix can be successfully established and maintained with the aid of POST herbicides. Asulox 3.34L, Basagran 4L + Agridex, Liberty 1.67SL, Velpar 75DF and Vista 1.5EC applied at 3.34, 1 + 1 qt/A, 0.365, 1 and 0.25 lb ai/A, respectively, negatively affected all species tested, as did Roundup Ultra 4L applied at 0.75 and 1.5 lb ai/A. At tested rates, these POST herbicides should not be considered as weed management options due to wildflower sensitivity.

For control of vetch species, curly dock and Carolina geranium in spurred snapdragon, the only option was either Cotoran 4L + X-77 Spreader applied at 2 lb ai/A + 0.25% v/v or Sinbar 80WP at 1.2 lb ai/A. Transline 3L + X-77 Spreader applied at 0.5 lb ai/A + 0.25% v/v was effective in controlling vetch species and curly dock in wildflower plantings that included catchfly, spurred snapdragon, sweet William, mixed poppy, corn poppy, California poppy, dames rocket, wallflower and scarlet flax. Vetch species and curly dock were also controlled with applications of Peak 57WG and Image LC at 0.285 oz ai/A and 0.5 lb ai/A, respectively. X-77 Spreader was added to each of these treatments at 0.25% v/v. Sweet William and butterfly milkweed displayed tolerance to Peak 57WG, while butterfly milkweed displayed tolerance to Image LC. All POST herbicide options are included in charts that follow this findings and conclusions section.

Grass Cover Crop Effects. Based on greenhouse trials, Abruzzy rye, Pioneer 2684 wheat and NC Hulless oats did not effectively control any of the broadleaf weeds tested. Hairy vetch dry weights were reduced 35 to 70% in 2 of 2 trials. In 1 of 2 trials, common lambsquarters, curly dock, redroot pigweed, wild mustard, spiny sowthistle and Carolina geranium dry weights were reduced 50 to 95%. Abruzzy rye, Pioneer 2684 wheat and NC Hulless oats should not be considered a substitute for herbicides for broadleaf weed control in wildflower beds.

Grass cover crops could possibly affect wildflower as well as broadleaf weed development. Wildflower species that germinate in the fall overwinter in a rosette stage and remain very small until warmer temperatures in late winter to early spring. The grass cover crops could easily overwinter several inches taller than the wildflower species, thus gaining a sunlight advantage. This competition could have a negative impact on wildflower development during the winter months.

RECOMMENDATIONS AND TECHNOLOGY IMPLEMENTATION

The NCDOT roadside environmental unit can utilize these data to develop wildflower herbicide programs for any specific bed throughout the state based on weed presence. For efficient use, accurate and timely weed identification is a necessity for NCDOT field personnel. These persons could receive training from NCSU extension faculty, who conduct weed management workshops several times per year in various counties of the state.

These herbicide recommendations will be incorporated into a computerized wildflower decision aid model developed by Dr. Gail Wilkerson at NCSU. A decision aid will allow interested parties to enter any number of variables (weeds, wildflowers, herbicides of interest, etc.) in order to construct a customized weed management program for any given area. With all the possible herbicide / wildflower combinations, a decision aid will be an extremely efficient and necessary tool for NCDOT personnel.

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Cosmos (Greenhouse Data Only)

Spring - Summer seeded: PPI/PRE Herbicide Options

Eptam 7EC	Treflan HFP 4EC	Curbit 3EC	Kerb WSP	Staple 85SP
Morningglory sp.		Shepherds-purse Virginia pepperweed Common lambsquarter Redroot pigweed	Curly dock Shepherds-purse Pepperweed Little barley Redroot pigweed Prickly sida Morningglory sp. Smartweed sp. Wild mustard	Shepherds-purse Virginia pepperweed Redroot pigweed Morningglory sp.

Pendulum 60WG	Prefar 4EC	Pennant Liquid	Predict 80DF	Factor 65WG
Curly dock Carolina geranium White clover Shepherds-purse Virginia pepperweed Little barley Common lambsquarter Redroot pigweed Prickly sida Smartweed sp. Wild mustard		Carolina geranium White clover Shepherds-purse Virginia pepperweed Redroot pigweed	White clover Shepherds-purse Virginia pepperweed Common ragweed Prickly sida Wild mustard	Curly dock White clover Shepherds-purse Little barley Common lambsquarter Redroot pigweed

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Catchfly

Fall seeded: PPI/PRE Herbicide Options

Eptam 7EC	Pennant Liquid
Morningglory sp.	Carolina geranium
	White clover
	Shepherds-purse
	Virginia pepperweed
	Redroot pigweed

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Chicory

Fall seeded: PPI/PRE Herbicide Options

Kerb WSP

Curly dock
Shepherds-purse
Pepperweed
Little barley
Redroot pigweed
Prickly sida
Morningglory sp.
Smartweed sp.
Wild mustard

Curbit 3EC

Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed

Staple 85SP

Shepherds-purse
Virginia pepperweed
Redroot pigweed
Morningglory sp.
Wild mustard

Treflan HFP 4EC

Factor 65WG

Curly dock
White clover
Shepherds-purse
Little barley
Common lambsquarter
Redroot pigweed

Prefar 4EC

Plateau 2AS
1 Field Trial Only

Curly dock
Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed
Prickly sida
Morningglory sp.
Smartweed sp.
Wild mustard
Cutleaf E.primrose

Eptam 7EC
1 Field Trial Only

Morningglory sp.

Pennant Liquid
1 Field Trial Only

Carolina geranium
White clover
Shepherds-purse
Virginia pepperweed
Redroot pigweed

Predict 80DF
1 Field Trial Only

White Clover
Shepherds-purse
Virginia pepperweed
Common ragweed
Prickly sida
Wild mustard

Alanap-L
1 Field Trial Only

Curly dock

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Spurred Snapdragon (Toadflax)

Fall seeded: PPI/PRE Herbicide Options

Treflan HFP 4EC	Eptam 7EC	Sinbar 80WP 2 Field Trials Only	Alanap-L 2 Field Trials Only
	Morningglory sp.	Vetch sp. Curly dock Carolina geranium White clover Shepherds-purse Virginia pepperweed Wild lettuce Common ragweed Common lambsquarter Redroot pigweed Prickly sida Smartweed sp. Wild mustard Cutleaf E.primrose	Curly dock

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Sweet William

Fall seeded: PPI/PRE Herbicide Options

Pennant Liquid	Eptam 7EC	Staple 85SP 2 Field Trials Only	Prefar 2 Field Trials Only	Alanap-L 2 Field Trials Only	Authority 75DF 2 Field Trials Only
Carolina geranium	Morningglory sp.	Shepherds-purse		Curly dock	Curly dock
White clover		Virginia pepperweed			Shepherds-purse
Shepherds-purse		Redroot pigweed			Virginia pepperweed
Virginia pepperweed		Morningglory sp.			Common lambsquarter
Redroot pigweed		Wild mustard			Redroot pigweed
					Prickly sida
					Morningglory sp.
					Smartweed sp.
					Wild mustard
					Cutleaf E.primrose

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Black-eyed Susan

Fall seeded: PPI/PRE Herbicide Options

Eptam 7EC

Morningglory sp.

Treflan HFP 4EC

Prefar 4EC

Curbit 3EC

Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed

Staple 85SP

Shepherds-purse
Virginia pepperweed
Redroot pigweed
Morningglory sp.

Alanap-L

2 Field Trials Only

Curly dock

Pennant Liquid

Carolina geranium
White clover
Shepherds-purse
Virginia pepperweed
Redroot pigweed

Image LC

2 Field Trials Only

Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed
Wild mustard

Factor 65WG

2 Field Trials Only

Curly dock
White clover
Shepherds-purse
Little barley
Common lambsquarter
Redroot pigweed

Velpar 75DF

2 Field Trials Only

Vetch sp.
Curly dock
Carolina geranium
White clover
Shepherds-purse
Virginia pepperweed
Wild lettuce
Common ragweed
Common lambsquarter
Redroot pigweed
Prickly sida
Smartweed sp.
Camphorweed
Wild mustard
Wild radish
Cutleaf E.primrose

Pendulum 60WG

2 Field Trials Only

Curly dock
Carolina geranium
White clover
Shepherds-purse
Virginia pepperweed
Little barley
Common lambsquarter
Redroot pigweed
Prickly sida
Smartweed sp.
Wild mustard

Plateau 2AS

Curly dock
Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed
Prickly sida
Morningglory sp.
Smartweed sp.
Wild mustard
Cutleaf E.primrose

Sinbar 80WP

2 Field Trials Only

Vetch sp.
Curly dock
Carolina geranium
White clover
Shepherds-purse
Virginia pepperweed
Wild lettuce
Common ragweed
Common lambsquarter
Redroot pigweed
Prickly sida
Smartweed sp.
Wild mustard
Cutleaf E.primrose

Kerb WSP

Curly dock
Shepherds-purse
Pepperweed
Little barley
Redroot pigweed
Prickly sida
Morningglory sp.
Smartweed sp.
Wild mustard

Authority 75DF

2 Field Trials Only

Curly dock
Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed
Prickly sida
Morningglory sp.
Smartweed sp.
Wild mustard
Cutleaf E.primrose

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Plains Coreopsis

Fall seeded: PPI/PRE Herbicide Options

Eptam 7EC	Treflan HFP 4EC	Curbit 3EC	Kerb WSP	Staple 85SP	Factor 65WG
Morningglory sp.	**Prefar 4EC**	Shepherds-purse Virginia pepperweed Common lambsquarter Redroot pigweed	Curly dock Shepherds-purse Pepperweed Little barley Redroot pigweed Prickly sida Morningglory sp. Smartweed sp. Wild mustard	Shepherds-purse Virginia pepperweed Redroot pigweed Morningglory sp. Wild mustard	Curly dock White clover Shepherds-purse Little barley Common lambsquarter Redroot pigweed

Predict 80DF	Pennant Liquid	Plateau 2AS **2 Field Trials Only**	Alanap-L **2 Field Trials Only**	Authority 75DF **2 Field Trials Only**	Pendulum 60WG **2 Field Trials Only**
White clover Shepherds-purse Virginia pepperweed Common ragweed Prickly sida Wild mustard	Carolina geranium White clover Shepherds-purse Virginia pepperweed Redroot pigweed	Curly dock Shepherds-purse Virginia pepperweed Common lambsquarter Redroot pigweed Prickly sida Morningglory sp. Smartweed sp. Wild mustard Cutleaf E.primrose	Curly dock	Curly dock Shepherds-purse Virginia pepperweed Common lambsquarter Redroot pigweed Prickly sida Morningglory sp. Smartweed sp. Wild mustard Cutleaf E.primrose	Curly dock Carolina geranium White clover Shepherds-purse Virginia pepperweed Little barley Common lambsquarter Redroot pigweed Prickly sida Smartweed sp. Wild mustard

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Sulphur Cosmos

Spring - Summer seeded: PPI/PRE Herbicide Options

Eptam 7EC

Morningglory sp.

Treflan HFP 4EC

Curbit 3EC

Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed

Kerb WSP

Curly dock
Shepherds-purse
Pepperweed
Little barley
Redroot pigweed
Prickly sida
Morningglory sp.
Smartweed sp.
Wild mustard

Staple 85SP

Shepherds-purse
Virginia pepperweed
Redroot pigweed
Morningglory sp.
Wild mustard

Factor 65WG

Curly dock
White clover
Shepherds-purse
Little barley
Common lambsquarter
Redroot pigweed

Pendulum 60WG

Curly dock
Carolina geranium
White clover
Shepherds-purse
Virginia pepperweed
Little barley
Common lambsquarter
Redroot pigweed
Prickly sida
Smartweed sp.
Wild mustard

Prefar 4EC

Pennant Liquid

Carolina geranium
White clover
Shepherds-purse
Virginia pepperweed
Redroot pigweed

Plateau 2AS

3 Greenhouse Trials
1 Field Trial Only

Curly dock
Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed
Prickly sida
Morningglory sp.
Smartweed sp.
Wild mustard
Cutleaf E.primrose

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Mixed Poppy

Fall seeded: PPI/PRE Herbicide Options

Plateau 2AS	Eptam 7EC 2 Field Trials Only	Image LC 2 Field Trials Only	Alanap-L 2 Field Trials Only	Pennant Liquid 2 Field Trials Only	Velpar 75DF 2 Field Trials Only
Curly dock	Morningglory sp.	Shepherds-purse	Curly dock	Carolina geranium	Vetch sp.
Shepherds-purse		Virginia pepperweed		White clover	Curly dock
Virginia pepperweed		Common lambsquarter		Shepherds-purse	Carolina geranium
Common lambsquarter		Redroot pigweed		Virginia pepperweed	White clover
Redroot pigweed		Wild mustard		Redroot pigweed	Shepherds-purse
Prickly sida					Virginia pepperweed
Morningglory sp.					Wild lettuce
Smartweed sp.					Common ragweed
Wild mustard					Common lambsquarter
Cutleaf E.primrose					Redroot pigweed
					Prickly sida
					Smartweed sp.
					Camphorweed
					Wild mustard
					Wild radish
					Cutleaf E.primrose

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Dames Rocket

Fall seeded: PPI/PRE Herbicide Options

Prefar 4EC	Eptam 7EC	Treflan HFP 4EC	Pendulum 60WG 2 Field Trials Only	Curbit 3EC 2 Field Trials Only	Alanap-L 2 Field Trials Only
	Morningglory sp.		Curly dock Carolina geranium White clover Shepherds-purse Virginia pepperweed Little barley Common lambsquarter Redroot pigweed Prickly sida Smartweed sp. Wild mustard	Shepherds-purse Virginia pepperweed Common lambsquarter Redroot pigweed	Curly dock

Authority 75DF 2 Field Trials Only	Pennant Liquid 2 Field Trials Only	Factor 65WG 2 Field Trials Only
Curly dock Shepherds-purse Virginia pepperweed Common lambsquarter Redroot pigweed Prickly sida Morningglory sp. Smartweed sp. Wild mustard Cutleaf E.primrose	Carolina geranium White clover Shepherds-purse Virginia pepperweed Redroot pigweed	Curly dock White clover Shepherds-purse Little barley Common lambsquarter Redroot pigweed

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Gloriosa Daisy

Fall seeded: PPI/PRE Herbicide Options

Eptam 7EC

Morningglory sp.

Treflan HFP 4EC

Curbit 3EC

Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed

Kerb WSP

Curly dock
Shepherds-purse
Pepperweed
Little barley
Redroot pigweed
Prickly sida
Morningglory sp.
Smartweed sp.
Wild mustard

Prefar 4EC

Pennant Liquid

Carolina geranium
White clover
Shepherds-purse
Virginia pepperweed
Redroot pigweed

Authority 75DF
2 Field Trials Only

Curly dock
Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed
Prickly sida
Morningglory sp.
Smartweed sp.
Wild mustard
Cutleaf E.primrose

Pendulum 60WG
2 Field Trials Only

Curly dock
Carolina geranium
White clover
Shepherds-purse
Virginia pepperweed
Little barley
Common lambsquarter
Redroot pigweed
Prickly sida
Smartweed sp.
Wild mustard

Factor 65WG
2 Field Trials Only

Curly dock
White clover
Shepherds-purse
Little barley
Common lambsquarter
Redroot pigweed

Plateau 2AS
3 Greenhouse Trials
1 Field Trial Only

Curly dock
Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed
Prickly sida
Morningglory sp.
Smartweed sp.
Wild mustard
Cutleaf E.primrose

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Narrowleaf Sunflower (Greenhouse Data and 1 Field Trial Only)

Fall seeded: PPI/PRE Herbicide Options

Eptam 7EC	Authority 75DF	Curbit 3EC	Kerb WSP	Staple 85SP	Plateau 2AS
Morningglory sp.	Curly dock	Shepherds-purse	Curly dock	Shepherds-purse	Curly dock
	Shepherds-purse	Virginia pepperweed	Shepherds-purse	Virginia pepperweed	Shepherds-purse
	Virginia pepperweed	Common lambsquarter	Pepperweed	Redroot pigweed	Virginia pepperweed
	Common lambsquarter	Redroot pigweed	Little barley	Morningglory sp.	Common lambsquarter
	Redroot pigweed		Redroot pigweed	Wild mustard	Redroot pigweed
	Prickly sida		Prickly sida		Prickly sida
	Morningglory sp.		Morningglory sp.		Morningglory sp.
	Smartweed sp.		Smartweed sp.		Smartweed sp.
	Wild mustard		Wild mustard		Wild mustard
	Cutleaf E.primrose				Cutleaf E.primrose

Treflan HFP 4EC	Prefar 4EC	Pennant Liquid	Pendulum 60WG	Cotoran 4L	Sinbar 80WP
		Carolina geranium	Curly dock	Vetch sp.	Vetch sp.
		White clover	Carolina geranium	Curly dock	Curly dock
		Shepherds-purse	White clover	Carolina geranium	Carolina geranium
		Virginia pepperweed	Shepherds-purse	White clover	White clover
		Redroot pigweed	Virginia pepperweed	Shepherds-purse	Shepherds-purse
			Little barley	Virginia pepperweed	Virginia pepperweed
			Common lambsquarter	Common ragweed	Wild lettuce
			Redroot pigweed	Comon lambsquarter	Common ragweed
			Prickly sida	Redroot pigweed	Common lambsquarter
			Smartweed sp.	Prickly sida	Redroot pigweed
			Wild mustard	Morningglory sp.	Prickly sida
				Smartweed sp.	Smartweed sp.
				Wild mustard	Wild mustard
				Cutleaf E.primrose	Cutleaf E.primrose

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Narrowleaf Sunflower (Continued)

Fall seeded: PPI/PRE Herbicide Options

Velpar 75DF 1 Field Trial Only	Predict 80DF 1 Field Trial Only	Image LC 1 Field Trial Only	Alanap-L 1 Field Trial Only	Factor 65WG 1 Field Trial Only	Goal XL 1 Field Trial Only
Vetch sp.	White clover	Shepherds-purse	Curly dock	Curly dock	Curly dock
Curly dock	Shepherds-purse	Virginia pepperweed		White clover	White clover
Carolina geranium	Virginia pepperweed	Common lambsquarter		Shepherds-purse	Shepherds-purse
White clover	Common ragweed	Redroot pigweed		Little barley	Virginia pepperweed
Shepherds-purse	Prickly sida	Wild mustard		Common lambsquarter	Common lambsquarter
Virginia pepperweed	Wild mustard			Redroot pigweed	Redroot pigweed
Wild lettuce					Smartweed sp.
Common ragweed					Camphorweed
Common lambsquarter					Wild mustard
Redroot pigweed					
Prickly sida					
Smartweed sp.					
Camphorweed					
Wild mustard					
Wild radish					
Cutleaf E.primrose					

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Corn Poppy

Fall seeded: PPI/PRE Herbicide Options

Eptam 7EC	Plateau 2AS	Image LC	Staple 85SP 2 Field Trials Only	Velpar 75DF 2 Field Trials Only	Alanap-L 2 Field Trials Only
Morningglory sp.	Curly dock Shepherds-purse Virginia pepperweed Common lambsquarter Redroot pigweed Prickly sida Morningglory sp. Smartweed sp. Wild mustard Cutleaf E.primrose	Shepherds-purse Virginia pepperweed Common lambsquarter Redroot pigweed Wild mustard	Shepherds-purse Virginia pepperweed Redroot pigweed Morningglory sp. Wild mustard	Vetch sp. Curly dock Carolina geranium White clover Shepherds-purse Virginia pepperweed Wild lettuce Common ragweed Common lambsquarter Redroot pigweed Prickly sida Smartweed sp. Camphorweed Wild mustard Wild radish Cutleaf E.primrose	Curly dock

Pennant Liquid 2 Field Trials Only
Carolina geranium White clover Shepherds-purse Virginia pepperweed Redroot pigweed

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Blanketflower

Fall seeded: PPI/PRE Herbicide Options

Eptam 7EC	Factor 65WG	Curbit 3EC	Treflan HFP 4EC	Staple 85SP	Prefar 4EC
Morningglory sp.	Curly dock White clover Shepherds-purse Little barley Common lambsquarter Redroot pigweed	Shepherds-purse Virginia pepperweed Common lambsquarter Redroot pigweed		Shepherds-purse Virginia pepperweed Redroot pigweed Morningglory sp. Wild mustard	

Plateau 2AS	Velpar 75DF	Pendulum 60WG	Pennant Liquid **2 Field Trials Only**	Cotoran 4L **2 Field Trials Only**	Kerb WSP **3 Greenhouse Trials**
Curly dock Shepherds-purse Virginia pepperweed Common lambsquarter Redroot pigweed Prickly sida Morningglory sp. Smartweed sp. Wild mustard Cutleaf E.primrose	Vetch sp. Curly dock Carolina geranium White clover Shepherds-purse Virginia pepperweed Wild lettuce Common ragweed Common lambsquarter Redroot pigweed Prickly sida Smartweed sp. Camphorweed Wild mustard Wild radish Cutleaf E.primrose	Curly dock Carolina geranium White clover Shepherds-purse Virginia pepperweed Little barley Common lambsquarter Redroot pigweed Prickly sida Smartweed sp. Wild mustard	Carolina geranium White clover Shepherds-purse Virginia pepperweed Redroot pigweed	Vetch sp. Curly dock Carolina geranium White clover Shepherds-purse Virginia pepperweed Common ragweed Comon lambsquarter Redroot pigweed Prickly sida Morningglory sp. Smartweed sp. Wild mustard Cutleaf E.primrose	Curly dock Shepherds-purse Pepperweed Little barley Redroot pigweed Prickly sida Morningglory sp. Smartweed sp. Wild mustard

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Purple Coneflower

Fall seeded: PPI/PRE Herbicide Options

Eptam 7EC

Morningglory sp.

Prefar 4EC

Treflan HFP 4EC

Curbit 3EC

Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed

Kerb WSP

Curly dock
Shepherds-purse
Pepperweed
Little barley
Redroot pigweed
Prickly sida
Morningglory sp.
Smartweed sp.
Wild mustard

Velpar 75DF

Vetch sp.
Curly dock
Carolina geranium
White clover
Shepherds-purse
Virginia pepperweed
Wild lettuce
Common ragweed
Common lambsquarter
Redroot pigweed
Prickly sida
Smartweed sp.
Camphorweed
Wild mustard
Wild radish
Cutleaf E.primrose

Sinbar 80WP

Vetch sp.
Curly dock
Carolina geranium
White clover
Shepherds-purse
Virginia pepperweed
Wild lettuce
Common ragweed
Common lambsquarter
Redroot pigweed
Prickly sida
Smartweed sp.
Wild mustard
Cutleaf E.primrose

Cotoran 4L

2 Field Trials Only

Vetch sp.
Curly dock
Carolina geranium
White clover
Shepherds-purse
Virginia pepperweed
Common ragweed
Comon lambsquarter
Redroot pigweed
Prickly sida
Morningglory sp.
Smartweed sp.
Wild mustard
Cutleaf E.primrose

Plateau 2AS

2 Field Trials Only

Curly dock
Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed
Prickly sida
Morningglory sp.
Smartweed sp.
Wild mustard
Cutleaf E.primrose

Staple 85SP

3 Greenhouse Trials
1 Field Trial Only

Shepherds-purse
Virginia pepperweed
Redroot pigweed
Morningglory sp.
Wild mustard

Image LC

3 Greenhouse Trials
1 Field Trial Only

Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed
Wild mustard

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Indian Blanket (Greenhouse Data and 1 Field Trial Only)

Fall seeded: PPI/PRE Herbicide Options

Plateau 2AS

Curly dock
Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed
Prickly sida
Morningglory sp.
Smartweed sp.
Wild mustard
Cutleaf E.primrose

Prefar 4EC

Curbit 3EC

Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed

Kerb WSP

Curly dock
Shepherds-purse
Pepperweed
Little barley
Redroot pigweed
Prickly sida
Morningglory sp.
Smartweed sp.
Wild mustard

Staple 85SP

3 Greenhouse Trials

Shepherds-purse
Virginia pepperweed
Redroot pigweed
Morningglory sp.
Wild mustard

Eptam 7EC

3 Greenhouse Trials

Morningglory sp.

Treflan HFP 4EC

3 Greenhouse Trials

Image LC

3 Greenhouse Trials

Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed
Wild mustard

Factor 65WG

3 Greenhouse Trials

Curly dock
White clover
Shepherds-purse
Little barley
Common lambsquarter
Redroot pigweed

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Bur-Marigold

Fall seeded: PPI/PRE Herbicide Options

Eptam 7EC	Prefar 4EC	Treflan HFP 4EC	Kerb WSP 2 Field Trials Only	Staple 85SP 2 Field Trials Only	Plateau 2AS 2 Field Trials Only
Morningglory sp.			Curly dock Shepherds-purse Pepperweed Little barley Redroot pigweed Prickly sida Morningglory sp. Smartweed sp. Wild mustard	Shepherds-purse Virginia pepperweed Redroot pigweed Morningglory sp. Wild mustard	Curly dock Shepherds-purse Virginia pepperweed Common lambsquarter Redroot pigweed Prickly sida Morningglory sp. Smartweed sp. Wild mustard Cutleaf E.primrose

Curbit 3EC 2 Field Trials Only	Image LC 2 Field Trials Only	Factor 65WG 2 Field Trials Only	Pennant Liquid 2 Field Trials Only	Pendulum 60WG 2 Field Trials Only	Authority 75DF 2 Field Trials Only
Shepherds-purse Virginia pepperweed Common lambsquarter Redroot pigweed	Shepherds-purse Virginia pepperweed Common lambsquarter Redroot pigweed Wild mustard	Curly dock White clover Shepherds-purse Little barley Common lambsquarter Redroot pigweed	Carolina geranium White clover Shepherds-purse Virginia pepperweed Redroot pigweed	Curly dock Carolina geranium White clover Shepherds-purse Virginia pepperweed Little barley Common lambsquarter Redroot pigweed Prickly sida Smartweed sp. Wild mustard	Curly dock Shepherds-purse Virginia pepperweed Common lambsquarter Redroot pigweed Prickly sida Morningglory sp. Smartweed sp. Wild mustard Cutleaf E.primrose

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Bur-Marigold (Continued)

Fall seeded: PPI/PRE Herbicide Options

Predict 80DF 2 Field Trials Only	Alanap-L 2 Field Trials Only	Cotoran 4L 2 Field Trials Only	Velpar 75DF 2 Field Trials Only	Goal XL 2 Field Trials Only
White clover	Curly dock	Vetch sp.	Vetch sp.	Curly dock
Shepherds-purse		Curly dock	Curly dock	White clover
Virginia pepperweed		Carolina geranium	Carolina geranium	Shepherds-purse
Common ragweed		White clover	White clover	Virginia pepperweed
Prickly sida		Shepherds-purse	Shepherds-purse	Common lambsquarter
Wild mustard		Virginia pepperweed	Virginia pepperweed	Redroot pigweed
		Common ragweed	Wild lettuce	Smartweed sp.
		Comon lambsquarter	Common ragweed	Camphorweed
		Redroot pigweed	Common lambsquarter	Wild mustard
		Prickly sida	Redroot pigweed	
		Morningglory sp.	Prickly sida	
		Smartweed sp.	Smartweed sp.	
		Wild mustard	Camphorweed	
		Cutleaf E.primrose	Wild mustard	
			Wild radish	
			Cutleaf E.primrose	

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Clasping Coneflower (Greenhouse Data and 1 Field Trial Only)

Fall seeded: PPI/PRE Herbicide Options

Eptam 7EC	Prefar 4EC	Curbit 3EC	Pennant Liquid	Staple 85SP	Treflan HFP 4EC
Morningglory sp.		Shepherds-purse Virginia pepperweed Common lambsquarter Redroot pigweed	Carolina geranium White clover Shepherds-purse Virginia pepperweed Redroot pigweed	Shepherds-purse Virginia pepperweed Redroot pigweed Morningglory sp. Wild mustard	

Plateau 2AS	Image LC	Sinbar 80WP	Kerb WSP	Pendulum 60WG **3 Greenhouse Trials**
Curly dock Shepherds-purse Virginia pepperweed Common lambsquarter Redroot pigweed Prickly sida Morningglory sp. Smartweed sp. Wild mustard Cutleaf E.primrose	Shepherds-purse Virginia pepperweed Common lambsquarter Redroot pigweed Wild mustard	Vetch sp. Curly dock Carolina geranium White clover Shepherds-purse Virginia pepperweed Wild lettuce Common ragweed Common lambsquarter Redroot pigweed Prickly sida Smartweed sp. Wild mustard Cutleaf E.primrose	Curly dock Shepherds-purse Pepperweed Little barley Redroot pigweed Prickly sida Morningglory sp. Smartweed sp. Wild mustard	Curly dock Carolina geranium White clover Shepherds-purse Virginia pepperweed Little barley Common lambsquarter Redroot pigweed Prickly sida Smartweed sp. Wild mustard

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Ox-eyed Daisy

Fall seeded: PPI/PRE Herbicide Options

Eptam 7EC

Morningglory sp.

Prefar 4EC

Curbit 3EC

Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed

Kerb WSP

Curly dock
Shepherds-purse
Pepperweed
Little barley
Redroot pigweed
Prickly sida
Morningglory sp.
Smartweed sp.
Wild mustard

Staple 85SP

Shepherds-purse
Virginia pepperweed
Redroot pigweed
Morningglory sp.
Wild mustard

Pennant Liquid

Carolina geranium
White clover
Shepherds-purse
Virginia pepperweed
Redroot pigweed

Treflan HFP 4EC

3 Greenhouse Trials
1 Field Trial Only

Cotoran 4L

2 Field Trials Only

Vetch sp.
Curly dock
Carolina geranium
White clover
Shepherds-purse
Virginia pepperweed
Common ragweed
Comon lambsquarter
Redroot pigweed
Prickly sida
Morningglory sp.
Smartweed sp.
Wild mustard
Cutleaf E.primrose

Alanap-L

2 Field Trials Only

Curly dock

Factor 65WG

2 Field Trials Only

Curly dock
White clover
Shepherds-purse
Little barley
Common lambsquarter
Redroot pigweed

Plateau 2AS

2 Field Trials Only

Curly dock
Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed
Prickly sida
Morningglory sp.
Smartweed sp.
Wild mustard
Cutleaf E.primrose

Image LC

2 Field Trials Only

Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed
Wild mustard

Sinbar 80WP

3 Greenhouse Trials
1 Field Trial Only

Vetch sp.
Curly dock
Carolina geranium
White clover
Shepherds-purse
Virginia pepperweed
Wild lettuce
Common ragweed
Common lambsquarter
Redroot pigweed
Prickly sida
Smartweed sp.
Wild mustard
Cutleaf E.primrose

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Lance-leaf Coreopsis

Fall seeded: PPI/PRE Herbicide Options

Eptam 7EC

Morningglory sp.

Prefar 4EC

Pennant Liquid

Carolina geranium
White clover
Shepherds-purse
Virginia pepperweed
Redroot pigweed

Kerb WSP

Curly dock
Shepherds-purse
Pepperweed
Little barley
Redroot pigweed
Prickly sida
Morningglory sp.
Smartweed sp.
Wild mustard

Staple 85SP

Shepherds-purse
Virginia pepperweed
Redroot pigweed
Morningglory sp.
Wild mustard

Pendulum 60WG

3 Greenhouse Trials
1 Field Trial Only

Curly dock
Carolina geranium
White clover
Shepherds-purse
Virginia pepperweed
Little barley
Common lambsquarter
Redroot pigweed
Prickly sida
Smartweed sp.
Wild mustard

Treflan HFP 4EC

3 Greenhouse Trials
1 Field Trial Only

Factor 65WG

3 Greenhouse Trials
1 Field Trial Only

Curly dock
White clover
Shepherds-purse
Little barley
Common lambsquarter
Redroot pigweed

Curbit 3EC

3 Greenhouse Trials

Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed

Plateau 2AS

2 Field Trials Only

Curly dock
Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed
Prickly sida
Morningglory sp.
Smartweed sp.
Wild mustard
Cutleaf E.primrose

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

California Poppy

Fall seeded: PPI/PRE Herbicide Options

Plateau 2AS

Curly dock
Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed
Prickly sida
Morningglory sp.
Smartweed sp.
Widl mustard
Cutleaf E.primrose

Factor 65WG

Curly dock
White clover
Shepherds-purse
Little barley
Common lambsquarter
Redroot pigweed

Curbit 3EC
2 Field Trials Only

Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed

Alanap-L
2 Field Trials Only

Curly dock

Image LC
2 Field Trials Only

Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed
Wild mustard

Pennant Liquid
2 Field Trials Only

Carolina geranium
White clover
Shepherds-purse
Virginia pepperweed
Redroot pigweed

Pendulum 60WG
2 Field Trials Only

Curly dock
Carolina geranium
White clover
Shepherds-purse
Virginia pepperweed
Little barley
Common lambsquarter
Redroot pigweed
Prickly sida
Smartweed sp.
Wild mustard

Treflan HFP 4EC
2 Field Trials Only

Eptam 7EC
3 Greenhouse Trials
1 Field Trial Only

Morningglory sp.

Staple 85SP
3 Greenhouse Trials
1 Field Trial Only

Shepherds-purse
Virginia pepperweed
Redroot pigweed
Morningglory sp.
Wild mustard

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Maximilian Sunflower (Greenhouse Data Only)

Fall seeded: PPI/PRE Herbicide Options

Eptam 7EC	Prefar 4EC	Curbit 3EC	Kerb WSP	Staple 85SP	Plateau 2AS
Morningglory sp.		Shepherds-purse Virginia pepperweed Common lambsquarter Redroot pigweed	Curly dock Shepherds-purse Pepperweed Little barley Redroot pigweed Prickly sida Morningglory sp. Smartweed sp. Wild mustard	Shepherds-purse Virginia pepperweed Redroot pigweed Morningglory sp. Wild mustard	Curly dock Shepherds-purse Virginia pepperweed Common lambsquarter Redroot pigweed Prickly sida Morningglory sp. Smartweed sp. Wild mustard Cutleaf E.primrose

Treflan HFP 4EC	Alanap-L	Factor 65WG	Pennant Liquid	Pendulum 60WG
	Curly dock	Curly dock White clover Shepherds-purse Little barley Common lambsquarter Redroot pigweed	Carolina geranium White clover Shepherds-purse Virginia pepperweed Redroot pigweed	Curly dock Carolina geranium White clover Shepherds-purse Virginia pepperweed Little barley Common lambsquarter Redroot pigweed Prickly sida Smartweed sp. Wild mustard

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Wallflower (Greenhouse Data Only)

Fall seeded: PPI/PRE Herbicide Options

Eptam 7EC	Prefar 4EC	Curbit 3EC	Treflan HFP 4EC	Factor 65WG
Morningglory sp.		Shepherds-purse Virginia pepperweed Common lambsquarter Redroot pigweed		Curly dock White clover Shepherds-purse Little barley Common lambsquarter Redroot pigweed

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Scarlet Flax (Greenhouse Data and 1 Field Trial Only)

Fall seeded: PPI/PRE Herbicide Options

Treflan HFP 4EC	Prefar 4EC	Curbit 3EC	Predict 80DF 3 Greenhouse Trials
		Shepherds-purse	White clover
		Virginia pepperweed	Shepherds-purse
		Common lambsquarter	Virginia pepperweed
		Redroot pigweed	Common ragweed
			Prickly sida
			Wild mustard

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Rose Angel

Fall seeded: PPI/PRE Herbicide Options

Eptam 7EC 3 Greenhouse Trials 1 Field Trial Only	Pennant Liquid
Morningglory sp.	Carolina geranium
	White clover
	Shepherds-purse
	Virginia pepperweed
	Redroot pigweed

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Swamp Milkweed

Fall seeded: PPI/PRE Herbicide Options

Eptam 7EC

Morningglory sp.

Prefar 4EC

Treflan HFP 4EC

Goal XL

Curly dock
White clover
Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed
Smartweed sp.
Camphorweed
Wild mustard

Devrinol 50DF

Carolina geranium
Shepherds-purse
Virginia pepperweed
Little barley
Redroot pigweed
Wild radish

Image LC
2 Field Trials Only

Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed
Wild mustard

Sinbar 80WP
2 Field Trials Only

Vetch sp.
Curly dock
Carolina geranium
White clover
Shepherds-purse
Virginia pepperweed
Wild lettuce
Common ragweed
Common lambsquarter
Redroot pigweed
Prickly sida
Smartweed sp.
Wild mustard
Cutleaf E.primrose

Velpar 75DF
2 Field Trials Only

Vetch sp.
Curly dock
Carolina geranium
White clover
Shepherds-purse
Virginia pepperweed
Wild lettuce
Common ragweed
Common lambsquarter
Redroot pigweed
Prickly sida
Smartweed sp.
Camphorweed
Wild mustard
Wild radish
Cutleaf E.primrose

Staple 85SP
3 Greenhouse Trials
1 Field Trial Only

Shepherds-purse
Virginia pepperweed
Redroot pigweed
Morningglory sp.
Wild mustard

Alanap-L
2 Field Trials Only

Curly dock

Predict 80DF
2 Field Trials Only

White clover
Shepherds-purse
Virginia pepperweed
Common ragweed
Prickly sida
Wild mustard

Authority 75DF
2 Field Trials Only

Curly dock
Shepherds-purse
Virginia pepperweed
Common lambsquarter
Redroot pigweed
Prickly sida
Morningglory sp.
Smartweed sp.
Wild mustard
Cutleaf E.primrose

Pennant Liquid
2 Field Trials Only

Carolina geranium
White clover
Shepherds-purse
Virginia pepperweed
Redroot pigweed

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Common Milkweed (Greenhouse Data and 1 Field Trial Only)

Fall seeded: PPI/PRE Herbicide Options

Eptam 7EC	Staple 85SP	Devrinol 50DF	Treflan HFP 4EC	Goal XL	Prefar 4EC 3 Greenhouse Trials
Morningglory sp.	Shepherds-purse	Carolina geranium		Curly dock	
	Virginia pepperweed	Shepherds-purse		White clover	
	Redroot pigweed	Virginia pepperweed		Shepherds-purse	
	Morningglory sp.	Little barley		Virginia pepperweed	
	Wild mustard	Redroot pigweed		Common lambsquarter	
		Wild radish		Redroot pigweed	
				Smartweed sp.	
				Camphorweed	
				Wild mustard	

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Butterfly Milkweed (Greenhouse Data and 1 Field Trial Only)

Fall seeded: PPI/PRE Herbicide Options

Eptam 7EC	Devrinol 50DF	Goal XL	Curbit 3EC	Staple 85SP
Morningglory sp.	Carolina geranium	Curly dock	Shepherds-purse	Shepherds-purse
	Shepherds-purse	White clover	Virginia pepperweed	Virginia pepperweed
	Virginia pepperweed	Shepherds-purse	Common lambsquarter	Redroot pigweed
	Little barley	Virginia pepperweed	Redroot pigweed	Morningglory sp.
	Redroot pigweed	Common lambsquarter		Wild mustard
	Wild radish	Redroot pigweed		
		Smartweed sp.		
		Camphorweed		
		Wild mustard		

Treflan HFP 4EC	Prefar 4EC
3 Greenhouse Trials	**3 Greenhouse Trials**

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Common Sunflower (1 Field Trial Only)

Fall seeded: PPI/PRE Herbicide Options

Eptam 7EC	Alanap-L	Goal XL	Curbit 3EC	Staple 85SP	Authority 75DF
Morningglory sp.	Curly dock	Curly dock White clover Shepherds-purse Virginia pepperweed Common lambsquarter Redroot pigweed Smartweed sp. Camphorweed Wild mustard	Shepherds-purse Virginia pepperweed Common lambsquarter Redroot pigweed	Shepherds-purse Virginia pepperweed Redroot pigweed Morningglory sp. Wild mustard	Curly dock Shepherds-purse Virginia pepperweed Common lambsquarter Redroot pigweed Prickly sida Morningglory sp. Smartweed sp. Wild mustard Cutleaf E.primrose

Treflan HFP 4EC	Prefar 4EC	Cotoran 4L	Factor 65WG	Kerb WSP	Pendulum 60WG
		Vetch sp. Curly dock Carolina geranium White clover Shepherds-purse Virginia pepperweed Common ragweed Comon lambsquarter Redroot pigweed Prickly sida Morningglory sp. Smartweed sp. Wild mustard Cutleaf E.primrose	Curly dock White clover Shepherds-purse Little barley Common lambsquarter Redroot pigweed	Curly dock Shepherds-purse Pepperweed Little barley Redroot pigweed Prickly sida Morningglory sp. Smartweed sp. Wild mustard	Curly dock Carolina geranium White clover Shepherds-purse Virginia pepperweed Little barley Common lambsquarter Redroot pigweed Prickly sida Smartweed sp. Wild mustard

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Common Sunflower (1 Field Trial Only: Continued)

Fall seeded: PPI/PRE Herbicide Options

Pennant Liquid	Plateau 2AS	Sinbar 80WP	Velpar 75DF
Carolina geranium	Curly dock	Vetch sp.	Vetch sp.
White clover	Shepherds-purse	Curly dock	Curly dock
Shepherds-purse	Virginia pepperweed	Carolina geranium	Carolina geranium
Virginia pepperweed	Common lambsquarter	White clover	White clover
Redroot pigweed	Redroot pigweed	Shepherds-purse	Shepherds-purse
	Prickly sida	Virginia pepperweed	Virginia pepperweed
	Morningglory sp.	Wild lettuce	Wild lettuce
	Smartweed sp.	Common ragweed	Common ragweed
	Wild mustard	Common lambsquarter	Common lambsquarter
	Cutleaf E.primrose	Redroot pigweed	Redroot pigweed
		Prickly sida	Prickly sida
		Smartweed sp.	Smartweed sp.
		Wild mustard	Camphorweed
		Cutleaf E.primrose	Wild mustard
			Wild radish
			Cutleaf E.primrose

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Cosmos (Greenhouse Data and 1 Field Trial Only)

Spring - Summer seeded: POST Herbicide Options

Kerb WSP	Pinnacle + Surf. 1 Field Trial Only
Little barley	Common lambsquarter Smooth pigweed Smartweed sp. Redroot pigweed

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Catchfly

Fall seeded: POST Spring Herbicide Options

Predict 80DF 2 Field Trials Only	Goal XL 2 Field Trials Only	Transline + Surf. 3 Greenhouse Trials 1 Field Trial Only	Bueno 6 3 Greenhouse Trials 1 Field Trial Only	2,4-DB 3 Greenhouse Trials 1 Field Trial Only
Common ragweed	Wild lettuce	Vetch sp.	Dogfennel	Smooth pigweed
Wild mustard	Common lambsquarter	Curly dock	Smooth pigweed	
	Morningglory sp.	White clover	Morningglory sp.	
	Smartweed sp.	Horseweed		
	Camphorweed	Dogfennel		
	Redroot pigweed			
	Wild mustard			

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Chicory

Fall seeded: POST Spring Herbicide Options

Kerb WSP	Predict 80DF 2 Field Trials Only	Pinnacle + Surf. 3 Greenhouse Trials 1 Field Trial Only	Bueno 6 3 Greenhouse Trials 1 Field Trial Only	Staple + Surf. 3 Greenhouse Trials 1 Field Trial Only	2,4-DB 3 Greenhouse Trials 1 Field Trial Only
Little barley	Common ragweed Wild mustard	Common lambsquarter Smooth pigweed Smartweed sp. Redroot pigweed	Dogfennel Smooth pigweed Morningglory sp.	Curly dock Redroot pigweed Prickly sida Morningglory sp. Smooth pigweed Wild mustard	Smooth pigweed

Plateau + Surf.
Curly dock
White clover
Common lambsquarter
Smooth pigweed
Prickly sida
Morningglory sp.
Smartweed sp.
Redroot pigweed
Cutleaf E.primrose
Wild mustard

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Spurred Snapdragon (Toadflax)

Fall seeded: POST Spring Herbicide Options

Transline + Surf.

Vetch sp.
Curly dock
White clover
Horseweed
Dogfennel

Predict 80DF

Common ragweed
Wild mustard

2,4-DB

Smooth pigweed

Kerb WSP
2 Field Trials Only

Little barley

Goal XL
2 Field Trials Only

Wild lettuce
Common lambsquarter
Morningglory sp.
Smartweed sp.
Camphorweed
Redroot pigweed
Wild mustard

Bueno 6
3 Greenhouse Trials
1 Field Trial Only

Dogfennel
Smooth pigweed
Morningglory sp.

Cotoran 4L
2 Field Trials Only

Vetch sp.
Curly dock
Carolina geranium
White clover
Shepherds-purse
Virginia pepperweed
Common ragweed
Comon lambsquarter
Redroot pigweed
Prickly sida
Morningglory sp.
Smartweed sp.
Wild mustard
Cutleaf E.primrose

Sinbar 80WP
2 Field Trials Only

Vetch sp.
Curly dock
Carolina geranium
White clover
Shepherds-purse
Virginia pepperweed
Wild lettuce
Common ragweed
Common lambsquarter
Redroot pigweed
Prickly sida
Smartweed sp.
Wild mustard
Cutleaf E.primrose

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Sweet William

Fall seeded: POST Spring Herbicide Options

Transline + Surf.	2,4-DB	Peak 57WG + Surf. 2 Field Trials Only	Predict 80DF 2 Field Trials Only	Bueno 6 3 Greenhouse Trials (cotyledon - 4 leaf)
Vetch sp.	Smooth pigweed	Vetch sp.	Common ragweed	Dogfennel
Curly dock		Curly dock	Wild mustard	Smooth pigweed
White clover		White clover		Morningglory sp.
Horseweed		Wild lettuce		
Dogfennel		Cutleaf E.primrose		
		Wild mustard		
		Common ragweed		
		Common lambsquarter		
		Smooth pigweed		
		Morningglory sp.		
		Smartweed sp.		
		Redroot pigweed		

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Black-eyed Susan

Fall seeded: POST Spring Herbicide Options

Kerb WSP	Plateau + Surf. 2 Field Trials Only	Authority 75DF 2 Field Trials Only	Bueno 6 3 Greenhouse Trials (cotyledon - 4 leaf)
Little barley	Curly dock White clover Common lambsquarter Smooth pigweed Prickly sida Morningglory sp. Smartweed sp. Redroot pigweed Cutleaf E.primrose Wild mustard	Curly dock Common lambsquarter Smooth pigweed Redroot pigweed Smartweed sp.	Dogfennel Smooth pigweed Morningglory sp.

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Plains Coreopsis

Fall seeded: POST Spring Herbicide Options

Kerb WSP	2,4-DB	Predict 80DF 2 Field Trials Only	Authority 75DF 2 Field Trials Only	Bueno 6 3 Greenhouse Trials 1 Field Trial Only	Plateau + Surf. 2 Field Trials Only
Little barley	Smooth pigweed	Common ragweed Wild mustard	Curly dock Common lambsquarter Smooth pigweed Redroot pigweed Smartweed sp.	Dogfennel Smooth pigweed Morningglory sp.	Curly dock White clover Common lambsquarter Smooth pigweed Prickly sida Morningglory sp. Smartweed sp. Redroot pigweed Cutleaf E.primrose Wild mustard

Goal XL 2 Field Trials Only
Wild lettuce Common lambsquarter Morningglory sp. Smartweed sp. Camphorweed Redroot pigweed Wild mustard

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Sulphur Cosmos (Greenhouse Data and 1 Field Trial Only)

Spring - Summer seeded: POST Herbicide Options

Kerb WSP

Little barley

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Mixed Poppy (Greenhouse Data and 1 Field Trial Only)

Fall seeded: POST Spring Herbicide Options

Bueno 6	Transline + Surf. 1 Field Trial Only	Plateau + Surf. 1 Field Trial Only
Dogfennel	Vetch sp.	Curly dock
Smooth pigweed	Curly dock	White clover
Morningglory sp.	White clover	Common lambsquarter
	Horseweed	Smooth pigweed
	Dogfennel	Prickly sida
		Morningglory sp.
		Smartweed sp.
		Redroot pigweed
		Cutleaf E.primrose
		Wild mustard

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Dames Rocket (1 Field Trial Only)

Fall seeded: POST Spring Herbicide Options

Transline + Surf.	2,4-DB	Kerb WSP	Authority 75DF	Predict 80DF
Vetch sp.	Smooth pigweed	Little barley	Curly dock	Common ragweed
Curly dock			Common lambsquarter	Wild mustard
White clover			Smooth pigweed	
Horseweed			Redroot pigweed	
Dogfennel			Smartweed sp.	

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Gloriosa Daisy

Fall seeded: POST Spring Herbicide Options

Pinnacle + Surf. 2 Field Trials Only	Goal XL 2 Field Trials Only	Kerb WSP
Common lambsquarter	Wild lettuce	Little barley
Smooth pigweed	Common lambsquarter	
Smartweed sp.	Morningglory sp.	
Redroot pigweed	Smartweed sp.	
	Camphorweed	
	Redroot pigweed	
	Wild mustard	

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Narrowleaf Sunflower (Greenhouse Data and 1 Field Trial Only)

Fall seeded: POST Spring Herbicide Options

Kerb WSP	Pinnacle + Surf. 1 Field Trial Only	Predict 80DF 1 Field Trial Only	Authority 75DF 1 Field Trial Only	Goal XL 1 Field Trial Only
Little barley	Common lambsquarter	Common ragweed	Curly dock	Wild lettuce
	Smooth pigweed	Wild mustard	Common lambsquarter	Common lambsquarter
	Smartweed sp.		Smooth pigweed	Morningglory sp.
	Redroot pigweed		Redroot pigweed	Smartweed sp.
			Smartweed sp.	Camphorweed
				Redroot pigweed
				Wild mustard

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Corn Poppy (Greenhouse Data and 1 Field Trial Only)

Fall seeded: POST Spring Herbicide Options

Transline + Surf.	Bueno 6 3 Greenhouse Trials Cotyledon - 4 leaves	Predict 80DF 1 Field Trial Only	Authority 75DF 1 Field Trial Only
Vetch sp.	Dogfennel	Common ragweed	Curly dock
Curly dock	Smooth pigweed	Wild mustard	Common lambsquarter
White clover	Morningglory sp.		Smooth pigweed
Horseweed			Redroot pigweed
Dogfennel			Smartweed sp.

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Blanketflower (Greenhouse Data Only)

Fall seeded: POST Spring Herbicide Options

Kerb WSP

Little barley

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Purple Coneflower (Greenhouse Data Only)

Fall seeded: POST Spring Herbicide Options

Kerb WSP

Little barley

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Indian Blanket (Greenhouse Data Only)

Fall seeded: POST Spring Herbicide Options

Kerb WSP

Little barley

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Bur-Marigold

Fall seeded: POST Spring Herbicide Options

Predict 2 Field Trails Only	Authority 75DF 2 Field Trials Only	Goal XL 2 Field Trials Only	Bueno 6 3 Greenhouse Trials Cotyledon - 4 leaves
Common ragweed	Curly dock	Wild lettuce	Dogfennel
	Common lambsquarter	Wild mustard	Smooth pigweed
	Smooth pigweed	Common lambsquarter	Morningglory sp.
	Smartweed sp.	Morningglory sp.	
	Redroot pigweed	Smartweed sp.	
		Camphorweed	
		Redroot pigweed	

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Clasping Coneflower (Greenhouse Data Only)

Fall seeded: POST Spring Herbicide Options

Kerb WSP	Bueno 6
Little barley	Dogfennel Smooth pigweed Morningglory sp.

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Ox-eyed Daisy

Fall seeded: POST Spring Herbicide Options

Kerb WSP 1 Field Trial Only	Bueno 6 1 Field Trial Only	2,4-DB 1 Field Trial Only
Little barley	Dogfennel Smooth pigweed Morningglory sp.	Smooth pigweed

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Lance-leaf Coreopsis

Fall seeded: POST Spring Herbicide Options

Kerb WSP	Bueno 6 3 Greenhouse Trials Cotyledon - 4 leaves	Plateau + Surf. 2 Field Trials Only	Predict 80DF 2 Field Trials Only
Little barley	Dogfennel Smooth pigweed Morningglory sp.	Curly dock White clover Common lambsquarter Smooth pigweed Prickly sida Morningglory sp. Smartweed sp. Redroot pigweed Cutleaf E.primrose Wild mustard	Common ragweed Wild mustard

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

California Poppy

Fall seeded: POST Spring Herbicide Options

Transline + Surf.	Bueno 6 2 Field Trials Only	Authority 75DF 2 Field Trials Only	Predict 80DF 2 Field Trials Only
Vetch sp.	Dogfennel	Curly dock	Common ragweed
Curly dock	Smooth pigweed	Common lambsquarter	Wild mustard
White clover	Morningglory sp.	Smooth pigweed	
Horseweed		Smartweed sp.	
Dogfennel		Redroot pigweed	

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Maximilian Sunflower (Greenhouse Data Only)

Fall seeded: POST Spring Herbicide Options

Kerb WSP	Bueno 6
Little barley	Dogfennel Smooth pigweed Morningglory sp.

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Wallflower (Greenhouse Data Only)

Fall seeded: POST Spring Herbicide Options

Transline + Surf.

Vetch sp.
Curly dock
White clover
Horseweed
Dogfennel

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Scarlet Flax (Greenhouse Data Only)

Fall seeded: POST Spring Herbicide Options

Transline + Surf.	Authority 75DF
Vetch sp.	Curly dock
Curly dock	Common lambsquarter
White clover	Smooth pigweed
Horseweed	Smartweed sp.
Dogfennel	Redroot pigweed

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Rose Angel

Fall seeded: POST Spring Herbicide Options

2,4-DB
1 Field Trial Only

Smooth pigweed

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Swamp Milkweed (Greenhouse Data and 1 Field Trial Only)

Fall seeded: POST Spring Herbicide Options

2,4-DB	Kerb WSP	Bueno 6	Authority 75DF	Staple + Surf.	Goal XL **3 Greenhouse Trials** **Cotyledon - 4 leaves**
Smooth pigweed	Little barley	Dogfennel Smooth pigweed Morningglory sp.	Curly dock Common lambsquarter Smooth pigweed Smartweed sp. Redroot pigweed	Curly dock Redroot pigweed Prickly sida Morningglory sp. Smooth pigweed Wild mustard	Wild lettuce Wild mustard Common lambsquarter Morningglory sp. Smartweed sp. Camphorweed Redroot pigweed

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Common Milkweed (Greenhouse Data Only)

Fall seeded: POST Spring Herbicide Options

Staple + Surf.	Kerb WSP	Bueno 6	Authority 75DF
Curly dock	Little barley	Dogfennel	Curly dock
Redroot pigweed		Smooth pigweed	Common lambsquarter
Prickly sida		Morningglory sp.	Smooth pigweed
Morningglory sp.			Smartweed sp.
Smooth pigweed			Redroot pigweed
Wild mustard			

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.

Butterfly Milkweed (Greenhouse Data and 1 Field Trial Only)

Fall seeded: POST Spring Herbicide Options

2,4-DB

Smooth pigweed

Kerb WSP

Little barley

Bueno 6

Dogfennel
Smooth pigweed
Morningglory sp.

Image LC + Surf.

Vetch sp.
Curly dock
White clover
Common ragweed
Common lambsquarter
Smooth pigweed
Prickly sida
Redroot pigweed

Staple + Surf.

Curly dock
Redroot pigweed
Prickly sida
Morningglory sp.
Smooth pigweed
Wild mustard

Pinnacle + Surf.

Common lambsquarter
Smooth pigweed
Redroot pigweed
Smartweed sp.

Peak 57WG + Surf.

Vetch sp.
Curly dock
White clover
Wild lettuce
Cutleaf E.primrose
Wild mustard
Common ragweed
Common lambsquarter
Smooth pigweed
Morningglory sp.
Smartweed sp.
Redroot pigweed

These herbicides displayed acceptable wildflower tolerance in 3 greenhouse and 2 field trials unless otherwise noted and should provide good to excellen control (80-99%) of the listed weeds under optimum conditions and proper timings.