

# Weed Management in Rights-of-Way and Non-Cropped Areas<sup>1</sup>

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Weed management in fence rows and non-cropland is often as essential as it is within cropped areas. This is due to the weed's ability to distribute and establish itself rapidly. Weeds are typically prolific seed producers; therefore, they should be controlled prior to seed production.

## Cultural Control

Prevention is the key to avoiding weed problems. For example, if weeds are present in fence rows of cropped areas or non-cropland adjacent to cropped areas, they will eventually become a weed problem in the cropped area. Prevention methods include cleaning equipment, keeping non-crop areas mowed (preferably prior to seedhead stage), and maintaining optimum soil fertility levels and pH.

## Chemical Control

Foliar applications provide more rapid control of existing vegetation but for a shorter length of time than soil-applied. The herbicides listed in [Table 2](#) and [Table 3](#) will provide weed control in non-crop areas, including fence rows. Soil applications will provide residual control.

All labels should be read carefully, because the listed herbicides may provide complete bareground control or injure non-target species.

## Calibration

Always calibrate the sprayer prior to applying a herbicide. For foliar applications, the spray volume will usually range from 20 to 40 gallons per acre for light to moderate vegetation. For dense vegetation, typically 100–200 gallons per acre is required. Mix the suggested herbicide rate per acre in appropriate volumes of water and spray to wet the vegetation.

It is often desirable to know the length of an acre when band spraying areas such as fence rows and rights-of-way. See [Table 1](#) for this information.

**Table 1. Band width and corresponding distance required to treat one acre.**

Band width (ft)	Distance required to treat one acre	
	Feet	Miles
1	43,560	8.25
2	21,780	4.13
3	14,520	2.75
4	10,890	2.06
5	8,712	1.65
10	4,356	0.8

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Table 2. Herbicides for Preemergence and Postemergence Applications (*Soil and Foliar Applied*).

Trade Name and Broadcast Rate/Acre of Commercial Product	Common Name and Broadcast Rate/Acre of Active Ingredient	Remarks
Arsenal 0.5 G (200 lbs)	imazapyr	Controls a wide range of grass and broadleaf weeds. Apply before weeds emerge. DO NOT use on lawns, walks, driveways, tennis courts or other similar areas. DO NOT apply over the root zone of desirable plants. <b>Areas of application - railroad, utility, pipeline and highway rights-of-way, petroleum tank farms, fence rows, storage areas, and other similar areas.</b>
Casoron 4G (100–500 lbs)	dichlobenil (4.0–20.0 lb)	Controls annual and perennial broadleaf weeds and grasses. Distribute granules uniformly over the soil surface. Apply during the cool months of the year. If temperatures are greater than 70°F, dichlobenil should be incorporated into the soil by shallow tillage or 1/4" irrigation water. <b>Areas of application - roadways, fence rows, railroads, utility rights-of-way, industrial areas, recreational areas, and around buildings and structures.</b>
Hyvar X 80 WP, (3.0–15.0 lbs)  Hyvar XL2L (0.75–6 gal)	bromacil (2.4–12.0 lb)(1.5–12.0 lb)	Controls a wide range of annual and perennial broadleaf weeds and perennial grasses for an extended period of time. Use higher rates for perennial weeds. Rainfall after application is required for activation. <b>Areas of application - railroad, highway, and pipeline rights-of-way, petroleum tank farms, lumberyards, storage areas, and industrial plant sites.</b>
Karmex DF, Karmex IWC, Direx 80DF, Diuron 80 Herbicide, Diuron 80DF IVM, Diuron 80DF (5.0–15.0 lbs)  <b>or</b>  Direx 4L, Diuron 4L, Diuron 4L IVM(4.0–12.0 qt/A)	diuron (4.0–12.0 lb)	Controls annual and perennial broadleaves and grasses. Best results are obtained if application is made to the soil shortly before weed growth begins. Addition of a surfactant for postemergence applications is recommended (0.25–0.5% v/v). Apply only when water is not in the ditch. Consult product label prior to application since individual labels may differ slightly. <b>Areas of application - utility, highway, pipeline and railroad rights-of-way, petroleum tank farms, lumberyards, storage areas, industrial plant sites, around farm buildings, irrigation and drainage ditches.</b>
Krovar I DF (4.0–16.0 lb)	bromacil (40%) + diuron (40%) (3.2–12.8 lb)	Provides residual control of annual and some perennial weeds. Best results occur when application is made prior to weed emergence or in the early stages of weed growth. Can be tank-mixed with 2,4-D amine or glyphosate plus a surfactant for broader spectrum control. <b>Do not</b> use more than 16 lbs/A/year in East Coast/Flatwoods Areas or 10.5 lbs/A/year in Ridge Areas. <b>Areas of application - railroads, roadsides, storage areas, utility and plant sites.</b>
Landmark XP 4.5–9 oz	sulfometuron + chlorsulfuron	Similar to Oust Extra. See product label for species controlled.
Oust Extra 0.5–5.33 oz	metsulfuron + sulfometuron	Provides preemergence and postemergence activity on select grass, broadleaf, and vine weeds. Do not apply to paved surfaces or open water. The addition of a surfactant is recommended. <b>Areas of application - roadways, fence rows, railroads, utility rights-of-way, industrial areas, recreational areas, and around buildings and structures.</b>
Pendulum 2G (75–150 lbs) or Pendulum 3.3 or Aquacap (2.4–4.8 qt/A)	pendimethalin	Provides preemergence control of several grass and some broadleaf species. Provides no postemergence control, therefore the product must be applied prior to seed germination. For total vegetation control, apply with Arsenal, glyphosate, diuron, or others. <b>Areas of application - numerous, including walking/biking trails, industrial turf, driveways, wildflower sites, and around trees.</b>

Trade Name and Broadcast Rate/Acre of Commercial Product	Common Name and Broadcast Rate/Acre of Active Ingredient	Remarks
Pramitol 25E, Clean Crop Pramitol 25E (5–10 gal)	prometon (8–20 lb)	Apply prior to emergence until 3 months after weed emergence. Will provide residual control for over 1 year. See label for rates for specific weeds. <b>Areas of application - areas around buildings, storage areas, fences, pumps, machinery, fuel tanks, recreational areas, roadways, guard rails, airports, military installations, highway medians, pipelines, roadways, lumber yards, industrial sites, and rights-of-way.</b>
Pramitol 5PS, Clean Crop Pramitol 5PS (0.35–0.92 lb/100 sq. ft.)	prometon + simazine + sodium chlorate + sodium metaborate	Apply prior to emergence until 3 months after weed emergence. Will provide residual control for over 1 year. See label for rates for specific weeds. <b>Areas of application - areas around buildings, storage areas, fences, pumps, machinery, fuel tanks, recreational areas, roadways, guard rails, airports, military installations, highway medians, pipelines, roadways, lumber yards, industrial sites, and rights-of-way.</b>
Sahara DG (13.0–19.0 lb)	diuron (7.8%) + imazapyr (62.2%) (9.1–13.3 lb)	Controls annual and perennial weeds. Apply where bareground control is desired. Always use an appropriate spray adjuvant (see label). <b>Areas of application - railroads, utility, pipeline, highway rights-of-way, utility plant sites, petroleum tank farms, pumping installations, fence rows, storage areas, and non-irrigation ditches.</b>
Spike 80DF (2.0–7.5 lb)  <b>or</b>  Spike 20P (2.5–20 lb)	tebuthiuron (1.6–6 lb) <b>or</b> (0.5–4 lb)	Use to control woody plants and herbaceous broadleaves. Good activity on pivot. Use higher rates for perennial grass and shrub control. Apply in winter or early spring. If rapid kill of established weeds is desired, add a contact herbicide. Use restrictions apply in South Florida. Consult label for specific rates for specific weeds. Rainfall is necessary for activation. <b>Areas of application - along highways, fence rows, firebreaks, industrial sites, clearings for wildlife habitat, other non-cropland areas, utility rights-of-way, pasture land, pipelands, railroad rights-of-way, and range land.</b>
Sprakil SK-13 (150–400 lb)  <b>or</b>  Sprakil SK-26 (150–300 lb)	tebuthiuron + diuron(6.0–20.0 lb) <b>or</b> (12.0–24.0 lb)	Provides control of a wide range of annual and perennial broadleaf weeds and grasses. <b>Areas of application - utility, railroad and roadside rights-of-way, fence rows, and industrial storage areas.</b>
Topsite 2.5DF (200–300 lb)	imazapyr + diuron (5.0–7.5 lb)	Controls annual and perennial grasses and broadleaf weeds. Most effective when applied prior to weed emergence or when weeds are small. Rainfall is needed to activate. <b>Areas of application - railroad, utility, pipeline and highway rights-of-way, petroleum tank farms, pumping installations, fence rows, storage areas, and non-cropland farmsteads.</b>
Velpar DF, (2.75–10.75 lb)  <b>or</b>  Velpar L, (1.0–4.0 gal)  <b>or</b>  Velpar ULW (5.33–10.75 lb)	hexazinone (2.0–10.5 lb) <b>or</b> hexazinone(2.0–8.0 gal) <b>or</b> hexazinone(3.9–8.0 lb)	Provides both contact and residual control of annual, biennial, and perennial weeds and woody plants. Moisture is required to activate. Weeds should be less than 2" in height and diameter when applying postemergence. <b>Areas of application - railroads, highways, utility and pipeline rights-of-way, petroleum tank farms, storage areas, and industrial plant sites.</b>
Veteran 10G (20 lbs)	dicamba	Controls a wide range of herbaceous and "brushy" broadleaf plants. Apply in spring just before or during active growth. DO NOT apply over the root zone of desirable plants. <b>Areas of application - fence rows, roadsides, non-cropland areas.</b>

Table 3. Herbicides for Postemergence Applications (*Foliar Applied*).

Trade Name and Broadcast Rate/Acre of Commercial Product	Common Name and Broadcast Rate/Acre of Active Ingredient	Remarks
Arsenal 2L, Stalker, others (0.5–5%)	imazapyr (1–3.0 lb)	Controls grasses and broadleaf weeds. For perennial weed control, postemergence application is preferred. <b>Do not apply over the root zone of desirable plants.</b> Oaks and citrus are extremely sensitive to imazapyr. To minimize spray drift, select proper nozzles and use pressures less than 50 psi. It is often desirable to spot spray with handguns or backpack sprayers or use stump and cut stem treatments. Consult label for specific rates for these applications. Can be tank-mixed with Roundup, Finale, MSMA, Diuron, Karmex, Pendulum, Banvel, Vanquish, or Oust. Postemergence applications require a spray adjuvant (see label). <b>Areas of application - railroad, utility, pipeline and highway rights-of-way, utility plant sites, petroleum tank farms, pumping installations, fence rows, storage areas, and non-irrigation ditch banks, pasture and rangeland, wildlife openings.</b>
2,4-D (several)	2,4-D ester or amine (1.0–4.0 lb)	Controls several susceptible broadleaf weeds. A non-ionic surfactant should be added for maximum effectiveness. Read Florida's Organo-Auxin Herbicide Rule for use restrictions. <b>Areas of application - roadsides, railroad, utility, and pipeline rights-of-way, vacant lots, utility installations, pump houses, fences and farmsteads.</b>
Roundup Pro, others (2.0–10 qt) of 3 lb ae formulation	glyphosate (1.5–7.5 lb)	Provides non-selective control of broadleaf and grassy weeds. Apply to the foliage of actively growing plants. A non-ionic surfactant should be added to spray mixture at 0.5% v/v. <b>Areas of application - utility rights-of-way, drainage ditchbanks, and water and wetland sites found on utility rights-of-way, and around domestic lakes, streams, and ponds. Do not apply to water.</b>
Crossbow (0.5–4.0 gal)	2,4-D ester + triclopyr (1.5–12.0 lb)	Controls most species of unwanted woody species including annual and perennial broadleaf weeds. Apply to the foliage of actively growing plants. This is a low volatile ester formulation. Read Florida's Organo-Auxin Herbicide Rule for use restrictions. <b>Areas of application - rangeland, permanent grass pastures, CRP, fence rows, non-irrigation ditchbanks, roadsides, other non-crop areas, and industrial sites.</b>
Overdrive (4–8 oz)	diflufenzopyr +dicamba	Provides selective postemergence control of annual broadleaf weeds, control or suppression of many perennial weeds, and suppression of annual grasses. Use 3–50 gallons of spray solution per acre. An adjuvant, preferably a non-ionic surfactant 1 qt/100 gal, should be added. Overdrive is prone to drift and should not be used in high wind or extreme heat. See the Florida Organo-Auxin Herbicide Rule for more information. <b>Areas of application - fallow areas, fence lines, utility, railroad and pipeline rights-of-way, and other non-crop areas.</b>
Escort 60DF, others (0.1–4 oz)	metsulfuron methyl (0.01–0.1 lb)	Controls annual and perennial weeds, certain woody species, and Pensacola bahiagrass. Do not apply to areas where herbicide is likely to move into water (e.g., inside of ditches). For best results, apply postemergence to young, actively growing weeds (<2" tall or 2" across). A surfactant at 0.25% v/v should be included for postemergence applications. Can be tank-mixed with glyphosate, Oust, and Arsenal. <b>Areas of application - utility, roadside, and railroad rights-of-way, fence rows, and industrial storage areas.</b>
Garlon 4L, Garlon 3 A, Tahoe 3A, Tahoe 4E, and Pathfinder (1–8 qt)	triclopyr	Controls a wide range of broadleaf weeds, vines, brush and trees. Most grasses are tolerant to triclopyr. Triclopyr formulations are used as a foliage treatment, basal bark (Garlon 4, Tahoe 4E), cut surface, (Garlon 3, Tahoe 3A) and cut stump treatment. Pathfinder is a ready-to-use product labeled for basal bark and cut stump treatments. DO NOT allow sprays to drift to desirable plants. Application rate varies widely with different uses, so consult label for specific rate prior to use. <b>Areas of application - utility, roadside and railroad rights-of-way, fence rows, industrial storage areas and around farm buildings.</b>

Trade Name and Broadcast Rate/Acre of Commercial Product	Common Name and Broadcast Rate/Acre of Active Ingredient	Remarks
Gramoxone SL (2.5–4 pt)	paraquat	Controls most annual grasses and annual broadleaf weeds. Control of perennial weeds is poor. Apply to the foliage of actively growing weeds. A non-ionic surfactant at 0.125% v/v should be included in the spray mix. DO NOT enter treated areas for 24 hours after application unless protective clothing and equipment is worn. <b>Areas of application - utility, railroad and roadside rights-of-way, commercial buildings, industrial storage areas, walkways, patios, and along driveways and fences.</b>
Oust 75DG, others (1.3–8.0 oz)	sulfometuron	Controls annual and perennial grasses and broadleaf weeds. Best results will occur when applied before or during the early stages of weed growth before weeds develop an established root system. A non-ionic surfactant is recommended at 0.25% v/v. <b>Areas of application - industrial sites, fence rows, roadsides and associated rights-of-way, storage areas, lumber yards, fuel storage areas, and railroads.</b>
Plateau (2–12 oz)	imazapic	Controls annual and perennial grasses and broadleaf weeds. Best results will occur when applied before or during the early stages of weed growth before weeds develop an established root system. A non-ionic surfactant is recommended at 0.25% v/v. Lower rates can be used to suppress the growth of 'Pensacola' bahiagrass. <b>Areas of use - railroad, utility, pipeline, highway rights-of-way, railroad crossings, utility plants, petroleum tanks, pumping stations, non-agriculture fence rows, storage areas, non-irrigation ditchbanks, airports, industrial turf, recreational and non-residential turf.</b>
Reward, others (1.0–2.0 qt)	diquat dibromide (0.5–1.0 lb)	Provides non-selective control of annual grasses and broadleaf weeds. It should be applied to the foliage of actively growing plants. Add a non-ionic surfactant (75% or greater surface active agent) at 0.25–0.5% v/v. Do not allow spray to drift. <b>Areas of application - fence lines, farmyards, farm buildings, fuel storage areas, barrier strips, equipment areas, and non-flooded portions of ponds, lakes, and drainage ditches on farms.</b>
Sahara DG (13–19 lbs)	diuron + imazapyr	Provides postemergence and preemergence control on numerous grass, broadleaf weed, brush and vine species. Postemergence applications are recommended for perennial plants. Use where bare ground (no plant growth) is desired. Add a non-ionic surfactant at 0.25% v/v, or methylated seed oil at 1.5–2.0 pts/A. <u>DO NOT use on lawns, walks, driveways, tennis courts or other similar areas. DO NOT apply over the root zone of desirable plants.</u> <b>Areas of application - railroad, utility, pipeline and highway rights-of-way (including pavement edges, guard rails, sign posts and delineators), petroleum tank farms, fence rows, storage areas, non-irrigation ditch banks and other similar areas.</b>
Telar 75DF (0.25–3 oz)	chlorsulfuron (0.01–0.14 lb)	Controls annual and perennial weeds. Warm, moist conditions following treatment enhance effectiveness. Best results occur when applied before or during early stages of weed growth. For postemergence applications, always use a non-ionic surfactant (0.25% v/v). <b>Areas of application - industrial sites, fence rows, roadsides and associated rights-of-way, petroleum tank farms, pipeline and utility rights of way, and storage areas.</b>
Veteran 2010 (2–8 qt)	MCPA + dicamba	Controls various herbaceous broadleaf weeds, and woody brush and trees. Use the low rate on herbaceous plants; the high rate on woody plants. DO NOT allow sprays to drift to desirable plants. <b>Areas of application - rights-of-way, fence rows, roadsides and other similar areas.</b>
Vista (5.3–42 oz)	fluroxypyr	Controls various herbaceous broadleaf weeds and woody brush and trees. Use the low rate on herbaceous plants; the high rate on woody plants. DO NOT allow sprays to drift to desirable plants. Has little or no soil activity. Optimum temperature for application is between 55°F and 85°F. Include a spray adjuvant for maximum effectiveness. <b>Areas of application - industrial sites, non-irrigation ditches, rights-of-way, railroads, and pine plantations.</b>

Trade Name and Broadcast Rate/Acre of Commercial Product	Common Name and Broadcast Rate/Acre of Active Ingredient	Remarks
Weedmaster 4L (0.5–4 pt)	2,4-D + dicamba	Controls most broadleaf weeds and certain vine, brush and trees. Apply to foliage of actively growing plants. DO NOT apply over the root zone of desirable trees or allow sprays to drift to desirable plants. <b>Areas of application - utility, roadside, and railroad rights-of-way, fence rows, industrial storage areas, and other similar non-cropland areas.</b>

Table 4. Herbicides for application under asphalt surfaces.

Trade Name and Broadcast Rate/Acre of Commercial Product	Common Name and Broadcast Rate/Acre of Active Ingredient	Remarks
Casoron 4G or Norosac 4G (250–300 lbs) Norosac 10G or Casoron 10G (100–120 lbs) Casoron 50W (20–24 lbs)	dichlobenil	Apply after the final grade is achieved to control weeds under asphalt in roadway, parking lots and residential areas. Treated areas should be covered with asphalt as soon as possible. For resurfacing work, existing weeds should be sprayed with a contact herbicide prior to the dichlobenil application.
Treflan 5G (240–300 lbs)	trifluralin	Treflan 5G may be applied after the final grade is established or after base rock has been added. Asphalt paving should follow Treflan application as soon as possible. <b>DO NOT apply Treflan to areas where asphalt is laid directly on top of soil.</b> May be used in residential and recreation areas.
Pendulum 2G (75–150 lbs) or Pendulum 3.3 or Aquacap(3.6–7.2 pt/A)	pendimethalin	Similar to Treflan 5G.
Pramitol 25E (7.5–10 gals)  Sonora 4SC (2–5 gals)	prometon	Apply to soil just before laying asphalt in parking lots, highway shoulders and median strips, roadways and other industrial sites. Apply in a minimum of 100 gallons of water per acre. <b>DO NOT use on land near adjacent trees or other desirable plants.</b>
Hyvar X (10–30 lbs)  Hyvar X-L (4–12 gals)	bromacil	Use bromacil under asphalt only in industrial sites or where the pavement has a suitable barrier along the perimeter that prevents encroachment of roots of desirable plants. Apply to subgrade and after final grading. Apply in a minimum of 100 gallons of water per acre. If soil is not moist, incorporate bromacil 4–6 inches deep with a disk or rototiller. Rainfall or irrigation of 2 inches will also provide uniform incorporation. <b>DO NOT use in residential areas such as driveways, parking lots, walkways, tennis courts, golf cart paths, or any area where landscape planting could be anticipated.</b>
Saraha DG (13–19 lbs)	diuron + imazapyr	Apply to the soil surface after the final grade is established prior to laying asphalt in non-cropland areas. If moisture is not present, Sahara should be disked or rototilled into the soil to a depth of 4–6 inches. <b>DO NOT move soil after application or apply where Sahara may contact the roots of desirable plants. Sahara is NOT recommended for use under pavement in residential properties such as driveways, parking lots, or in recreational areas such as golf cart paths or tennis courts.</b>

Trade Name and Broadcast Rate/Acre of Commercial Product	Common Name and Broadcast Rate/Acre of Active Ingredient	Remarks
Journey (32 fl oz)	imazapic + glyphosate	See recommendations for Plateau.
Plateau (12 fl oz)	imazapic	Apply to the soil surface after the final grade is established prior to laying asphalt. If moisture is not present, Plateau should be disked or rototilled, or incorporated with 1 inch rainfall or irrigation.
Arsenal - 2.0 lbs/gal (6 pt)	imazapyr	Apply to the soil surface after the final grade is established prior to laying asphalt in non-cropland areas. If moisture is not present, Arsenal should be disked or rototilled into the soil to a depth of 4–6 inches. <b>DO NOT move soil after application or apply where Arsenal may contact the roots of desirable plants.</b> Arsenal is <b>NOT</b> recommended for use under pavement in residential properties such as driveways, parking lots, or in recreational areas such as golf cart paths or tennis courts.
Stalker (3 qt)	imazapyr	Can be mixed with asphalt. Stalker mixes best with MC 30, MC 70, RC 70, and SC 70 asphalts. For other asphalts, an emulsifier may need to be added to improve mixing. Allow sufficient time to Stalker to mix with the paving material and do not heat to greater than 150°F. Apply pavement as soon as it is mixed.
<b>ASPHALT SURFACES (emerged weeds)</b>		
2,4-D (several) 1–2 qts.	2,4-D	Controls broadleaf weeds. <b>DO NOT allow sprays to drift to desirable plants.</b> May be tank-mixed with MSMA.
Roundup Pro (1–3 qt)	glyphosate	Controls a wide range of grass and broadleaf weeds. DO NOT allow sprays to drift to desirable plants.
Stalker (0.5–5%)	imazapyr	Spray directly on emerged plants. Use a non-ionic surfactant. Provides soil residual control. Higher use rates will ensure longer soil residual.