

PREEMERGENCE HERBICIDES (Refer to Herbicide Label for Specific Turf Species Use Listing)¹

COMMON NAME (lbs ai/acre) ²	TRADE NAME EXAMPLES (rate of product/acre)	WEEDS CONTROLLED	TURFGRASS USE	COMMENTS
atrazine/simazine (2.0 lbs-sandy soil) (4.0 lbs-muck soil)	Atrazine Aatrex 4L (1-2 qts), 90DG (1.1-2.2 lbs), 80W (1.2-2.5 lbs); Purge Simazine Princep 90DF, 4L Wynstar 90DF + others	Same as for benefin plus pennywort (dollarweed), henbit, chickweed, lawn burweed (or spurweed) and some annual sedges. Perennial broadleaf weeds such as wild garlic, dock & others usually escape.	Centipedegrass St. Augustinegrass Zoysiagrass Dormant Bermuda	Apply to centipedegrass & St. Augustinegrass plus only dormant bermudagrass & zoysiagrass. Use in dormant bermudagrass in early December plus February for winter weed control. Do not use on desirable cool-season grasses. Will provide good to excellent weed control with a minimum of growth retardation to newly sprigged, sodded, or plugged turf areas at rates not in excess of 1 lb ai/A. Effectiveness will be reduced as weeds mature. Two applications are allowed per year. Do not use during spring greenup. Pennywort is easiest to control with a late fall and/or early winter application followed by a repeat application 4 to 6 weeks later. Winter weed control also is best with fall applications. Avoid application during spring green-up. Do not apply within the root zone of ornamentals nor within 4 months of overseeding. Atrazine is a Restricted Use Pesticide. Triazine herbicides.
benefin (2 to 3 lbs)	Balan 2.5G (80 to 120 lbs) 2.5 Benefin G (80 to 120 lbs) Balan 1.5EC (1.3 to 2 gal)	Summer annual grasses, annual bluegrass, some selected annual broadleaves.	Established Bahia grass Bermudagrass Centipedegrass Kentucky bluegrass Red fescue St. Augustinegrass Tall fescue Zoysiagrass	Apply only to well-established turf before annual weed seed germination. Due to short residual life, for continued weed control, a second application 60 to 75 days after the initial is required. For annual bluegrass control, use full rate in September. Wait to reseed or overseed with ryegrass 6 weeks following the low herbicidal rate and 12 to 16 weeks after for the high herbicidal rate. Minimum 3 month waiting period is required before sprigging or sodding. Read the label for irrigation requirements to activate the herbicide. DO NOT APPLY TO IMMATURE TURF , desirable overseeding, on golf greens, or make a spring application to fall-planted turfgrasses. Dinitroaniline herbicide.
benefin (0.75 -1.13 lbs) + trifluralin (0.75 -1.5 lb)	Team 2G (100 to 150 lbs) Team Pro 0.86 G (175 to 350 lbs)			Same as for benefin. For use by professional applicators only. Good for use in mixed stands containing cool and warm-season turfgrasses. Wait to reseed or overseed with ryegrass 8 weeks following the low herbicidal rate and 12 to 16 weeks after for the high herbicidal rate. Team Pro is a dry fertilizer based material containing 0.43% benefin + 0.43% trifluralin. Dinitroaniline herbicides.
benefin (1-1.5 lbs) + oryzalin (1-1.5 lbs)	XL 2G (100 to 150 lbs)			Same as for benefin. Dinitroaniline herbicide.
bensulide (7.5 to 12.5 lbs)	Betasan 3.6G (209-348 lbs) Pre-San, Lescosan 7G (107-180 lbs) Pre-San 12.5G (60-100 lbs) Bensumec, Lescosan 4E (1.9-3.1 gal) ProTurf Weedgrass Preventer 8.5G (88-147 lbs)			Same as for benefin. Use high rate in fall for annual bluegrass control. Safe on overseeded areas and golf greens. If used on putting greens, apply 4 months before overseeding. Apply a light irrigation following all applications. Don't make more than 2 applications per year. Don't exceed 25 lb ai/A in a single year. Sulfonamide herbicide.

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oxadiazon (1½ lb) + bensulide (6 lbs)	Goosegrass/Crabgrass Control 6.56 G (115 lbs)	Same as for benefin, plus goosegrass, oxalis, speedwell		Same as for oxadiazon. On overseeded golf greens, apply one-half maximum labeled rate to dry turf followed by the other half 10 days later. See label for precaution concerning use on putting greens. Contains 5.25% bensulide + 1.31% oxadiazon. Apply only to dry turf and when temperatures are <80F & irrigate-in immediately with 0.25 to 0.5-inch water. Do not overlap on greens.
dimethenamid-P (1 to 1.5 lbs ai/acre)	Tower 6L (21 to 32 oz)	Small seeded broadleaf weeds like doveweed, spurge, purslane + yellow nutsedge & some annual grasses.		Safe on established cool- and warm-season turfgrass species. Use sites include golf courses (not greens) and highway rights-of-ways but not residential or recreational turfgrass, lawns, or sod farms. Repeat applications will be needed in 6 (21 oz/a rate) to 8 (32 oz/a rate) weeks. A total yearly allowance is 64 oz/acre. A combination of dimethenamid & pendimethalin is available as Freehand.1.75G.
dithiopyr (0.5 lbs)	Dimension 1E (0.5 gal) Dimension Ultra 40WSP (0.95 lbs)	Same as for benefin, plus oxalis (woodsorrel)		Same as for benefin. Do not use within 3 months of seeding or sprigging. A total of 1.5 lb ai/A is allowed yearly not to exceed 0.5 lb ai/A per application. Provides early (1 to 3 leaf stage) postemergence crabgrass (some species) control. For preemergence <i>Poa annua</i> control, a 8 week interval is needed before ryegrass overseeding. Refer to label for additional timing and rate options. Anderson's Golf Products Fertilizers with dithiopyr is available for golf greens. Pyridine herbicide.
fenarimol (see comment)	Rubigan 1AS (see comment)	Annual bluegrass; also a fungicide	Bermudagrass	A systemic fungicide that reduces <i>Poa annua</i> populations. Use 3 applications spaced 10-14 days apart with the third 2 weeks prior to ryegrass overseeding and 30 days prior to <i>Poa trivialis</i> or bentgrass overseeding. Use 4 oz/1000 sq.ft. each for 3 applications; or 6 oz/1000 sq.ft. each if 2 applications are used instead of 3. In heavy weed pressure sites, a follow-up of 2 oz/1000 sq.ft. will be needed in early January for season-long control. See supplemental label for more information. DeMethylation Inhibitor (DMI) fungicide. NOTE: This product will voluntarily become unavailable in 2014.
flumioxazin (0.375 lbs)	SureGuard 51WDG (12 oz/acre)	Winter annual broadleaf weeds, preemergence crabgrass	Dormant bermudagrass	A contact product for dormant bermudagrass for rapid postemergence nonselective winter annual broadleaf control with subsequent preemergence crabgrass control. Best winter annual broadleaf control is with early winter applications. Best preemergence crabgrass control are with late winter applications. Allow 8 weeks after application before seeding or sodding. BroadStar 0.25G is a granular formulation. Dicarboximide herbicide.
indaziflam (0.027 to 0.047 lb or 30 to 80 g ai/ha) 0.027 to 0.044 lb	Specticle 20WP (2.1 to 3.75 oz) Specticle 0.622L (5.4 to 10 oz)	Goosegrass, crabgrass, annual bluegrass plus various broadleaves	Established Bermudagrass, Zoysiagrass, Centipedegrass, St. Augustinegrass	Do not use on cool-season turfgrasses or on bahiagrass or Seashore Paspalum. Turf must be well established before use. Possesses long soil residual, thus, has extended, sprigging, seeding and overseeding restriction occur. A 15-ft buffer is suggested between treated areas and adjacent cool-season grasses. Use higher rate for PRE broadleaf weed control. Additional granular and fertilizer formulations are available. Cellulose biosynthesis inhibitor. Alkalyazine herbicide.

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isoxaben (0.5 to 1 lb)	Gallery 75W (0.66 to 1.33 lbs)	Broadleaves such as chickweed, clover, henbit, bittercress, spurge, plantain, and others	Bahiagrass Buffalograss Bentgrass Bermudagrass Centipedegrass Chewings Fescue Perennial Ryegrass St. Augustinegrass Tall Fescue Zoysiagrass	Control is best for annual broadleaf weeds. Tank mix with another preemergence grass herbicide for satisfactory grass weed control. In order to activate the material, 0.5 water is needed following application. Not labeled for golf greens or tees. Do not reseed nor overseed within 60 days after application. Do not apply to newly seeded turf until it has been mowed 3 times. Benzamide herbicide.
metolachlor (1.8 to 3.9 lbs)	Pennant Magnum 7.62 L (1.9 to 4.1 pts)	Yellow nutsedge, annual sedge, sprangletop, some annual grass (e.g., crabgrass) suppression	Established bermudagrass golf course fairways; zoysiagrass, centipedegrass and St. Augustinegrass sod farms and commercial lawns	The higher rate will be necessary for turf grown on high organic (i.e., muck) soils. For commercial St. Augustinegrass sod production, do not use more than once every 6 weeks and do not apply more than 8 pts./A/yr. Tank mixing with atrazine will increase the weed control spectrum. Do not use Pennant on golf greens, tees, or aprons or within 4 months of overseeding or 6 months after overseeding. Irrigate within 7 days after application. Acetanilide herbicide.
napropamide (2.0 lbs)	Devrinol 50WP (4.0 lbs) Devrinol 2G (100 lbs) Devrinol 5G (40 lbs)	Same as for benefin	Established Bahiagrass Bermudagrass Centipedegrass Kentucky bluegrass Red Fescue St. Augustinegrass Tall Fescue Zoysiagrass	Do not apply to immature turf less than 3 months old. A second application 8 to 10 weeks after the first is suggested. Check specific label for putting greens use. Use the reduced rates for turf maintained at lower mowing heights. Irrigate after application. Do not reseed or overseed within six months after application. Susceptibility of cool-season turfgrasses may limit its use in overseed turf. Amide herbicide.
oryzalin (1.5 to 3 lbs)	Surflan 4AS (1.5 to 3 qts)	Same as for benefin, plus goosegrass	St. Augustinegrass Tall Fescue Zoysiagrass	Same as for benefin. Use a 1.5 + 1.5 lb ai/A split application approximately 60 to 75 days apart for best results. Most stable preemergence herbicide, allowing 21 days before rainfall or irrigation is needed for activation. Wait to reseed or overseed with ryegrass 90 to 120 days following application. Spring application on overseeded, cool-season grasses may prematurely thin them. Dinitroaniline herbicide.
oxadiazon (2 to 4 lbs)	Ronstar 2G (100 to 200 lbs) Ronstar 50W (4 to 6 lbs) Ronstar Flo 3.17L (2.5 to 3.8 qts)	Same as for benefin, especially for goosegrass	Bermudagrass Buffalograss Kentucky Bluegrass Seashore Paspalum St. Augustinegrass Tall Fescue Zoysiagrass	Do not apply to wet turf, golf greens, or to home lawns. Ronstar 50WP and Flo can be used only on dormant bermudagrass, St. Augustinegrass, or zoysiagrass turf or excessive phytotoxicity will result. Thoroughly irrigate following application to increase effectiveness. A combination of oxadiazon (1%) plus benefin (0.5%) on a 38% ureaformaldehyde nitrogen fertilizer is available as Regal Star. Apply at 200 lbs/a (2 + 1 lbs ai oxadiazon + benefin/a). Another combination of oxadiazon + prodiamine is available as Regalstar II 1.2G. It is on a 38% UF nitrogen fertilizer and is applied at 200 lbs/A (2 + 0.4 lbs ai oxadiazon + prodiamine/A). Oxadiazole (or Triazolinone) herbicide.

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pendimethalin (1.5 to 3.0)	Pendulum 60 DF Pendulum Aquacap (see label)	Same as for benefin plus oxalis and speedwell.	Same as for benefin.	Do not use on newly sprigged turfgrasses. Not recommended for areas thinned from winter stress. Do not reseed within 4 months of application. Use low rate on tall fescue and Kentucky bluegrass, high rate may be used on warm-season grasses.
prodiamine (0.75 lbs)	Barricade 65WG (1.15 lbs) Barricade 4L (1.5 pints) ProClipse 65 WDG (1.15 lbs) RegalKade (check label)	Same as for benefin plus chickweed, spurge, goosegrass	Established Bahia grass Bermudagrass Centipedegrass Kentucky bluegrass Red Fescue St. Augustinegrass Tall Fescue Zoysiagrass	Same as for benefin. Split applications at 0.38 to 0.75 lbs ai/A 60 to 75 days apart should be used for extended control and will be required for goosegrass suppression. May be applied to established ryegrass. Do not apply more than twice yearly or to golf greens. RegalKade formulations are on a 32-3-12 dry fertilizer carrier and include a 0.5G and 0.37G formulation. Dinitroaniline herbicide.
pronamide (0.5 to 1 lb)	Kerb T/O 50 W (1 to 2 lbs)	Annual bluegrass	All warm-season grasses	Safe on all warm-season grasses. Use PRE and POST only on bermudagrass. For PRE, make application at 45 to 60 days prior to overseeding. Activated charcoal can be used at 2 to 5 lbs/1000 sq.ft. to “deactivate” pronamide when applied closer than 45 days prior to overseeding. Inconsistency between years may occur with the charcoal approach. Works slowly (3 to 5 weeks); use high rate as annual bluegrass reaches maturity. Do not apply on or upslope to desirable cool-season turf as pronamide will move with runoff. Restricted Use Product. Amide herbicide.

¹Presence of a herbicide in this listing does not constitute a recommendation. Trade names are used with the understanding that no endorsement is intended or no criticism is implied of similar products which are not mentioned. All chemicals should be used in accordance with the manufacturer's instructions.

²All herbicide rates are active ingredient rates per acre. For product rates for formulations not listed, check the label included with every herbicide container.

The following conversions may be useful. Gal/acre x 2.938 = oz/1000 ft²; Qt/acre x 0.7346 = oz/1000 ft²; Pint/acre x 0.3673 = oz/1000 ft²; lbs/acre x 0.02296 = lb/1000 ft².