

COMMERCIAL NURSERY and LANDSCAPES

Active Ingredient and Rate	Formulated Product and Rate	Weeds Controlled	Remarks and Precautions
PREEMERGENCE HERBICIDES:			
benefin + oryzalin @ 4.0-6.0 lb /A	XL 2 G @200-300 lb/A or 4.5-7 lb/1000 sq. ft.	Annual grasses and some broadleaves	May be used in commercial nursery production and landscape beds. Several annual and perennial landscape plants are tolerant. Consult product label.
bensulide @ 7.5-12.5 lb/A	Betasan 4E @ 15-25 pts/A or 5.6-7.3 oz/1000 sq. ft.	Annual grasses and some broadleaves	Several tolerant annual and perennial ornamentals. Check label for tolerant species and susceptible weeds. Irrigate to move product into weed seed germination zone. Do not use peat moss prior to application. May be used in landscape beds.
DCPA @ 10-15 lb/A	DCPA 5 G @ 218 lb/A or 5 lb/1000 sq. ft.	Annual grasses and some broadleaves	Several tolerant ornamentals. Commercial ornamental production and landscape bed use allowed. Consult label. Do not apply to pansies or phlox in landscape beds.
dimethenamid + pendimethalin @ 1.75 – 3.5 lb/A	FreeHand 1.75G @ 100 – 200lb/A or 2.3 – 4.6 lb/1000 sq .ft	Annual grasses, spurge, chickweed, oxalis, groundsel, bittercress, eclipta, yellow nutsedge and annual sedges	Labeled for commercial nursery and landscapes. Broad spectrum herbicide with several weeds listed on the product label. Controls yellow nutsedge and annual sedges. Several shrubs and trees listed on label. Very few bedding plants are listed. Consult product label before applying.
isoxaben @ 0.5-1.0 lb/A	Gallery 75DF @0.66-1.33 lb/A or 0.24 –0.48 oz/1000 sq. ft.	Several broadleaves such as spurge, common purslane, pigweed, chickweed, oxalis	Several perennial groundcovers and woody ornamentals are tolerant in landscape plantings. Safe on several container trees and shrubs. Consult label for tolerant ornamental species and susceptible weeds. Application rates based on weed and ornamental species. One of the better broadleaf weed herbicides but does not control annual grasses and should be tank-mixed with another herbicide for broad spectrum weed control. Do not apply to annual beds.
prodiamine @ 0.65-0.75 lb/A	Barricade 65WG and Regalkade 65 WG @ 1.0-1.15 lb/A or 0.36–0.42oz/1000 sq. ft.	Grasses and small seeded broadleaves like pigweed, spurge, and purslane.	Labeled for commercial nursery production as well as landscape beds. Can be used in perennial and wildflower plantings. Use higher rate of application for longer control. Do not exceed 2.3 lb/A annually. Useful in landscape beds and safe on several annual and perennial bedding plants. Similar weed control spectrum as Surflan and Pendulum.
oxyfluorfen + pendimethalin @ 2 lb/A	OH II 2 G @ 100 lb/A or 2.3 lb/1000 sq. ft.	Annual grasses, Spurge, chickweed, oxalis, groundsel, bittercress, eclipta	For container and field grown ornamentals. Check label for tolerant ornamental species and susceptible weeds. Can be used for container or field grown ornamentals. Excellent control of several hard to manage weeds. Some suppression of <i>Phyllanthus</i> species. Do not use on bedding plants.

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napropamide @ 4-6 lb/A	Devrinol 50VP @ 8-12 lb/A 3-4.4 oz/1000 sq. ft. Devrinol 5G @ 43 – 87 lb/A or 1 - 2 lb/1000 sq. ft.	Annual grasses and broadleaves	Several species of deciduous and evergreen trees and shrubs. Container grown <i>Juniperus</i> , <i>Rhododendron</i> , <i>Pittosporum</i> , <i>Euonymus</i> are common tolerant ornamentals. Check label for tolerant ornamental species and list of susceptible weeds. Mechanically incorporate or apply irrigation immediately to activate. Also labeled for highways, industrial, and foundation plantings.
oxadiazon @ 2-4 lb/A	Ronstar 2 G @ 100-200 lb/A or 2.25-4.5 lb/1000 sq. ft.	Annual grasses and broadleaves. Weak on chickweed.	Check label for tolerant ornamental species and susceptible weeds. Injury has been observed on ajuga, liriopie, and mondograss. Wash granules off foliage. Not labeled for residential areas.
oxyfluorfen + oryzalin @ 2.0 lb/A	Rout 2 G @ 100 lb/A or 2.3 lb/1000 sq. ft.	Annual grasses, spurge, chickweed, oxalis, groundsel, Bittercress, eclipta	For container and field grown ornamentals. Several perennial and woody ornamentals are tolerant. Do not apply to wet foliage. Water in to activate. Do not apply to plants that are breaking dormancy or making a flush of growth. Excellent broadleaf and grass control. Do not wait longer than 3 months before reapplying. Apply 2 wks prior to greenhouse enclosure. Do not use on bedding plants.
isoxaben + oxyfluorfen + trifluralin @ 1.25 – 2 lb/A	Showcase @ 100 – 200 lb/A or 2.3 – 4.6 lb/1000 sq. ft.	Annual grasses and several hard to control broadleaves including eclipta	Many container and field grown ornamentals are tolerant. Consult product label for tolerant ornamental species and susceptible weeds. Can be used for landscapes, field and container production. Excellent broad spectrum weed control. Improved control of <i>Phyllanthus</i> . Do not apply to bedding plants.
trifluralin + isoxaben @ 2.5-5.0 lb/A	Snapshot 2.5 TG @ 100-200 lb/A or 2.3 - 4.6 lb/1000 sq. ft.	Annual grasses and broadleaves	Several perennial groundcovers and woody ornamentals are tolerant. Consult product label for tolerant ornamental species and susceptible weeds. Several herbaceous species listed. Can be used for landscapes, field and container production. Excellent broad spectrum weed control. However, poor to fair on <i>Phyllanthus</i> . Do not apply to bedding plants.
oryzalin @ 2.0-4.0 lb /A	Surflan 4 AS @ 2-4 qt/A or 1.5-3.0 oz/1000 sq. ft.	Annual grasses and some small seeded broadleaves	Can be used for landscapes, field and container production. Check label for tolerant ornamental species and list of susceptible weeds. Similar weed spectrum as Pendulum and Barricade or Regalkade.
norflurazon @ 2.4 lb /A	Predict 80DF @ 3 lb/A or 1.1 oz/1000 sq. ft.	Annual grasses and broadleaves	Check label for tolerant ornamental species and susceptible weeds. Apply as broadcast or as a band treatment in fall and spring.

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flumioxazin @ 0.38 lb/A	Broadstar 0.25 G @ 150 lb/A 3.44 oz/1000 sq. ft.	Doveweed, liverwort, bittercress, spurges, and other broadleaf weeds	Apply at preemergence. Provides 8-12 weeks of control. Several trees, shrubs and groundcovers are listed as tolerant. Container and field grown plants only. Some potential for injury so consult product label for tolerant plant species. Has good activity on <i>Phyllanthus</i> (chamberbitter). Do not apply in landscapes.
flumioxazin @ 0.25 – 0.38 lb/A	Sureguard 51 WG @ 8 – 12 oz/A or 0.18–0.28 oz/1000 sq. ft.	Doveweed, liverwort, bittercress, spurges, and other broadleaf weeds	Provides preemergence and some postemergence control. Container and field production of several woody ornamentals. For commercial ornamental production: Good fit for field production as a directed spray. Useful in container nurseries to maintain weed free production areas. Same active ingredient that is found in the granular herbicide Broadstar. (Broadstar is a better fit for container use). Excellent pre and post control of doveweed. Can now be used as directed sprays in commercial or residential landscapes around woody ornamentals. Apply at least 30 days after planting new woody transplants. Consult supplemental label.
oxyfluorfen @ 0.25-1.0 lb/A	Goal T/O 1.6E @ 1.25-5 pts/A or 0.46-1.84 z/1000 ft ²	A few annual grasses and several broadleaves including bittercress.	Apply at preemergence in conifers and several field grown trees. Herbicide has some postemergence activity. Good activity on several broadleaf weeds including winter annuals.
pronamide @ 1.0-2.0 lb/A	Kerb 50 WSP @ 2.0-4.0 lb/A	Grasses and some broadleaves	Apply at preemergence and has some postemergence activity on annual bluegrass. Check label for tolerant ornamental species and susceptible weeds. RESTRICTED USE
pendimethalin @ 1.7 – 3.0 lb/A	Pendulum 3.3 EC @ 3.6–4.8 pt/A or 1.3–1.8 oz/ 1000 sq. ft. Pendulum AquaCap 3.8 @ 3.1 – 6.2 pt/A or 1.15 oz – 2.3 oz/1000 sq. ft. Pendulum 2G @ 75–150 lb/A or 1.7 – 3.4 lb/1000 sq. ft.	Annual grasses and broadleaves	Most annual and perennial ornamentals are tolerant. Can be used in landscape beds due to good ornamental tolerance. Consult label for list of tolerant plants.
simazine @ 2.0-4.0 lb/A	Princep 4L @ 2-4 qt/A or 0.73-2.20 oz/1000 sq. ft.	Annual grasses and winter broadleaves	Several field grown conifer including Christmas trees and deciduous trees weeds. Apply in at least 25 gal water/A in fall or spring. Do not apply to plantings less than 1 year old. Do not apply to landscape beds.

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metolachlor @ 1.2 – 2.45 lbs/A	Pennant Magnum 7.62 EC @1.3 - 2.6 pt/A or 0.48-0.96 oz/1000 sq. ft	Annual grasses plus yellow nutsedge, some annual sedges, and small seeded broadleaves.	Registered for commercial ornamental production and landscape areas. Many tolerant ornamentals including several annual and perennial landscape plants. Check label for tolerant ornamental species and susceptible weeds. Rates vary for different soil types and control time desired. Similar weed control spectrum as Pendulum but additionally controls yellow nutsedge.
oxadiazon @ 2.0-4.0 lb/A	Ronstar 2G @ 100-200 lb/A 2.30 – 4.60 lb/1000 sq. ft.	Annual grasses and broadleaves	May be used in container and field commercial nursery production. Check label for tolerant ornamentals and list of susceptible weeds. Do not apply to annuals. Weak on chickweed. Cannot be used in residential landscape beds.
trifluralin (2.0%) + isoxaben (0.5%) @ 2.5-5.0 lb	Snapshot 2.5TG @ 2.3 – 4.6 oz/1000 ft ² 100-200 lb/A	Annual grasses and broadleaves	Check label for tolerant ornamental species and list of susceptible weeds. Application rate determined by weed species desiring to control.
oryzalin @ 2.0-4.0 lb ai/A	Surflan 4 AS @ 2.0 – 4.0 qt/A or 1.5–3.0 oz/1000 sq. ft.	Annual grasses and broadleaves	Labeled for commercial nursery production and landscape beds. Several tolerant annual and perennial ornamentals. Slightly more injury potential with this herbicide than similar herbicides (Pendulum, Barricade etc.) because product is more water soluble. Consult product label. Rain or irrigation needed to activate. Low rate: 2-4 Months control. High rate: 6-8 mos. control.
POSTEMERGENCE HERBICIDES:			
clpyralid @ 0.09 – 0.50 lb/A	Lontrel 3 EC @ 0.25 – 1.33 pt/A or 0.125oz – 0.5 oz/1000 sq. ft.	Legumes and asters, thistles	Labeled for use in certain woody tree and shrubs as over the top or directed sprays <u>field</u> nurseries and landscape plantings. May also be used in field grown lilies. Apply no more than 1.33 pt/A per season. Mimosa, redbud, locust will be injured or killed by Lontrel. Do not apply to residential landscape plantings or container ornamentals.
oxyfluorfen @ 0.25-0.50 lb/A	Goal T/O 1.6E @ 0.46 – 0.92 oz/1000 ft ² or 1.25-2.5 pts/A	Annual grasses and broadleaves including bittercress, chickweed.	Control of small actively growing weeds in conifers and several field grown trees. Works by contact so good coverage is a must.
bentazon @ 0.75-1.0 lb/A	Basagran T/O 4L @ 1.5-2.0 pts/A or 0.5 -.75 oz/1000 sq. ft	yellow nutsedge and annual sedges	Postemergence directed spray in many established ornamental beds. Not systemic so weed coverage is very important. Will not control purple nutsedge. Control optimized by a second application within 10 days. Check label for recommended uses. Crop oil additions will increase activity.

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flumioxazin @ 0.25 – 0.38 lb/A	Sureguard 51 WG @ 8 – 12 oz/A or 0.18–0.28 oz/1000 sq. ft.	Doveweed, bittercress, spurge, and other broadleaf weeds	Apply at preemergence and postemergence. Container and field production of several woody ornamentals. For commercial ornamental production: Good fit for field production as a directed spray. Useful in container nurseries to maintain weed free production areas. Same active ingredient that is found in Broadstar. Excellent pre and post control of doveweed. Can be used as directed sprays in commercial or residential landscapes around woody ornamentals. Apply at least 30 days for new woody transplants.
POSTEMERGENCE GRASS KILLING HERBICIDES:			
fenoxaprop @ 0.1-0.3 lb/A	Acclaim IEC @ 4-45 oz/A 0.34-1.0 oz/1000 sq. ft.	Annual grasses and suppression of perennial grasses.	Apply at postemergence. Apply herbicide to actively growing grasses. More active on annual than perennial grasses. Can be used over the top of many herbaceous and woody ornamentals. Ornamental grasses may be injured or killed. Check label for recommended uses.
sethoxydim @ 0.3-0.5 lb/A	Segment IEC @ 36-60 oz/A or 0.82–1.65 oz/1000 sq. ft.	Annual and perennial grasses	Herbicide only controls grasses. Several non-grass ornamentals are tolerant for over the top applications but consult product label for sensitive plants. Limited suppression of torpedograss with multiple applications.
clethodim @ 0.125-0.25 lb	Envoy 0.94EC @ 17-34 oz/A or 0.39 – 0.78/1000 sq. ft.	Annual and perennial grasses	Apply postemergence for actively growing grasses. Add 0.25% v/v nonionic surfactant (1 pt/50 gal). Crop oil concentrate not recommended.
fluazifop @ 0.25-0.40 lb/A	Fusilade II EC @ 17-26 oz/A Spot sprays 0.75 oz/gallon	Annual and perennial grasses	Herbicide only controls grasses. Several non-grass ornamentals are tolerant for over the top applications but consult product label for sensitive plants. There are juniper and azalea cultivar restrictions. Somewhat better on torpedograss with multiple applications when compared to sethoxydim. Add a NIS at 0.25% v/v.
SEDGE KILLING HERBICIDES FOR LANDSCAPE :			
sulfosulfuron @ 0.05 - .09 lb/A	Certainty 75 WG @ 1.25 – 2.0 oz/A or 0.03 – 0.04 oz/1000 sq. ft.	Yellow and purple nutsedge and green kyllinga plus johnsongrass	Landscape beds only. Apply as a directed spray around woody ornamentals. Very effective on most sedges including green kyllinga. Add a non-ionic surfactant.
imazaquin @ 0.38 - 0.5 lb/A	Image 70 DG @ 8.6 – 11.4 oz or 0.2 – 0.26 oz/1000 sq. ft.	Sedges and some Broadleaves, suppression of dollarweed.	Landscape use only. Check label for tolerant ornamental species and susceptible weeds. Suppresses green kyllinga, yellow and purple nutsedge. Weaker on yellow nutsedge. Good on purple nutsedge. Limited number of ornamentals that will tolerate over the top applications on label. Liriope and mondograss will tolerate certain rates in over the top applications.

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SEDGE KILLING HERBICIDES FOR LANDSCAPE : continued			
halosulfuron @ 0.03-0.06 lb/A	Sedgehammer 75 WDG @ 0.6 - 1.33 oz/A or 0.138 – 0.03 oz/1000 sq. ft. 0.25 teaspoon/gal spot spray	Nutsedges (purple & yellow) Suppression of kyllinga species.	Landscape beds only. Apply as a directed spray around woody ornamentals. Very effective on yellow and purple nutsedge. Add a non-ionic surfactant.
NON-SELECTIVE HERBICIDES			
glyphosate @ 1.0-5.0 lb/A	Roundup Pro 41% and generics @ 1-5 qt/A or 1.5-3.7 oz/1000 ft ² Use 2% solution for spot treatments.	Grasses and broadleaves	Check label for recommended uses. Nonselective so avoid all drift. Labeled for greenhouse use. Consider wiping in landscape beds
potassium salt	Sharpshooter 18% @ 5.5-11 oz/qt/water	Grasses and broadleaves	Apply at postemergence. Check label for recommended uses. Nonselective. Apply to young, succulent, actively growing weeds. Labeled for greenhouse use. Good activity on small annual weeds. Very poor control on perennial weeds.
paraquat @ 0.6-0.9 lb/A	Gramoxone Max @ 0.66 oz/1000 ft ² 1.8 pt/A	Annual grasses and broadleaves	Apply at postemergence in field produced woody ornamentals. Check label for recommended uses. Nonselective. Poor on perennial weeds. RESTRICTED USE.
diquat @ 0.25 – 0.50 lb/A	Reward @ 1 – 2 pt/A or 0.36 – 0.72 oz	Most annual grasses and broadleaves.	Contact herbicide labeled for use in commercial greenhouses and nurseries. Post directed in field ornamentals. Good coverage is a must. Add a non-ionic surfactant at 0.25% v/v. Poor on perennial weeds.