

Practical weed control for nursery stock

Grower guide – updated 2018

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Product update 2018

John Atwood, ADAS

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Weed control in container-grown nursery stock

Section 3: The herbicides

Herbicides with label recommendations

Herbicides with label recommendations for use in container-grown nursery stock

The following products have label recommendations for container-grown nursery stock. Information in this section is taken from the marketing company's label recommendation, except for the sections 'additional information' and 'experimental information' which are based on results of AHDB trials and commercial practice.

These profiles are presented in alphabetical order of the typical product.

Flexidor 500

Active ingredient

Isoxaben (500g/litre)

Formulation

Suspension concentrate

Supplier

Landseer

Mode of action

Residual, soil or growing media acting, root absorbed

Label recommendation

Container-grown hardy ornamental nursery stock

Rates of use

0.5 litre/ha (in 100–400 litres of water/ha)

Timing

No restriction, after potting or on established crops

Use under protection

Yes

Label use restrictions

Maximum of one application per crop. Apply to freshly potted or established plants. For freshly potted plants, allow the growing media to settle for seven to 10 days before application. The growing media should be firm and free of emerged weeds at application. Rainfall or irrigation (20–30mm) is required within three days after application to activate the product and to ensure its correct positioning in the upper layer of the growing media.

Additional information

Flexidor 500 gives good control of the important nursery stock weeds: bittercresses, chickweeds and pearlwort. Control of annual meadow-grass, groundsel and willowherb is less effective and there is no control of liverwort and moss, so it is important to use it in a programme with other herbicides. Persistence is good; in trials it has generally been used in 18-week programmes. Flexidor 500 has been used on a wide range of hardy nursery stock, but a few species can be damaged (notably *Buddleia* and *Cornus*) and others can have reduced growth (see Table 2 in the 2013 version of the guide). There is authorisation for use under protection. This is useful, as few herbicides are approved in this situation.

Experimental information

In AHDB Horticulture-funded trials, a half rate of 0.25 litre/ha has often been used and has given good general weed control. The label rate is, however, 0.5 litre/ha. The full rate will give longer persistence but may result in more plant species suffering temporary phytotoxicity. Flexidor 500 has also been trialled at half rate on herbaceous and alpine crops and has potential for use on a limited range of these species (Tables 5 and 6 in the 2013 version of the guide).

Always read the label. Use pesticides safely.

Herbicides without label recommendations

Herbicides without label recommendations

The information in this section is based on results of AHDB trials and commercial practice. There are no label recommendations for the use of these products on container-grown nursery stock. However, usage on nursery stock crops is permitted off-label via an Extension of Authorisation for Minor Use (EAMU) or under the Long Term Arrangements for Extension of Use (LTAEU) but any such usage by growers is entirely at their own risk.

These profiles are presented in alphabetical order of the typical product.

Centurion Max

Active ingredient

Clethodim (120g/litre)

Formulation

Emulsifiable concentrate

Supplier

Arysta Life Science Great Britain Ltd

Mode of action

Selective contact, foliar acting

Approval status

Long Term Arrangements for Extension of Use

Rates of use

2.0 litres/ha (in at least 200 litres of water/ha)

Timing

No restriction, after potting or on established crops

Use under protection

No

Label use restrictions

Maximum of one application per crop

Additional information

Centurion Max is one of a number of grass herbicides that can be used selectively in broad-leaved crops to control a range of annual and perennial grass weeds. Centurion Max will control annual meadow-grass, which is resistant to many other selective grass herbicides. Centurion Max is used on ornamentals in continental Europe. At present, in the UK, the product label only covers use on broad-leaved arable crops, with EAMUs for vegetable crops. There is limited experimental work on the use of Centurion Max on ornamentals in the UK, but commercial experience to date has been encouraging. Application is at grower's own risk.

Experimental information

Limited AHDB Horticulture-funded trials on 10 container-grown nursery stock species (HNS 198) have shown that Centurion Max is fairly safe when applied over foliage, but a few species (*Hydrangea* and *Spiraea*) can show temporary scorch. Plants rapidly grow away from such symptoms, given normal growing conditions.

Sunfire

Active ingredient

Flufenacet (500g/litre)

Formulation

Suspension concentrate

Supplier

Certis

Mode of action

Residual, soil acting

Approval status

EAMU 1065/17

Rates of use

0.48 litre/ha (in at least 200 litres of water/ha)

Timing

No restriction, after potting or on established crops

Use under protection

Yes

Label use restrictions

Maximum of one application per year

Additional information

The weed control spectrum of Sunfire in growing media is rather limited. It controls grasses well (including annual meadow-grass) and gives partial control of pearlwort. Other common broad-leaved weeds of container-grown nursery stock are not controlled. This is an off-label use at the grower's own risk.

Experimental information

Limited trials on 10 container-grown nursery stock species (HNS 198) have shown that Sunfire is fairly safe when applied over foliage, but a few species (*Buddleia*, *Hydrangea* and *Weigela*) can show temporary scorch. Plants rapidly grow away from such symptoms, given normal growing conditions.

Venzar 500 SC

Active ingredient

Lenacil (500g/litre)

Formulation

Suspension concentrate

Supplier

Du Pont

Mode of action

Residual, soil acting

Approval status

Long Term Arrangements for Extension of Use

Rates of use

0.4 litre/ha (in 200–500 litres of water/ha)

Timing

Autumn–winter

Use under protection

No

Label use restrictions

Maximum total of 1.0 litre/ha per year

Additional information

The superseded product Clayton Lenacil 80W carried a label recommendation for established roses and established woody ornamentals. Long Term Arrangements for Extension of Use at the grower's own risk are available for Venzar 500 SC, but the rate of use is less than 10 per cent of the previous products.

Experimental information

Lenacil has given good control of weeds in trials over the years and has been particularly effective against liverwort. However, given the low rate currently authorised, residual weed control is only likely to last for two to three weeks, although follow-up applications can be made. Plant damage through root uptake can occur when heavy rain follows application, particularly when used in the summer, during periods of rapid growth. However, at the low rates authorised, this is less likely compared with previous products.

Earlier trials at higher rates showed *Cistus* and *Santolina* to have been killed by summer applications and veinal leaf yellowing induced on species such as *Ceanothus*, *Deutzia*, *Forsythia*, *Lavatera*, *Philadelphus*, *Potentilla*, *Pyracantha* and *Viburnum* (HNS 35a), and liners of *Ceanothus*, *Euonymus* and *Forsythia* (HNS 93 and HNS 93c). Autumn and winter applications appear less damaging, although in western areas of high winter rainfall, damage can still occur. Conifer species in trials have not been damaged.

A number of herbaceous species were treated without damage at the previously authorised higher rates (HNS 35e and HNS 166), but, as with hardy nursery stock, summer applications tended to result in more damage. Although crop tolerance information is limited, it could be used as an autumn/winter herbicide application on hardy nursery stock in drier areas and on certain herbaceous crops.

Always read the label. Use pesticides safely.

Weed control in field-grown nursery stock

Section 3: The herbicides

Herbicides with label recommendations

Herbicides with label recommendations for use in field-grown nursery stock

The following products have label recommendations for field-grown nursery stock. Information in this section is taken from the marketing company's label recommendation, except for the sections 'additional information' and 'experimental information' which are based on results of AHDB trials and commercial practice.

These profiles are presented in alphabetical order of the typical product.

Flexidor 500

Active ingredient

Isoxaben (500g/litre)

Formulation

Suspension concentrate

Supplier

Landseer

Mode of action

Residual, soil acting

Label recommendation

Field-grown hardy ornamental nursery stock

Rates of use

0.5 litre/ha (in 100–400 litres of water/ha)

Timing

No restriction, after planting or on established plantings

Label use restrictions

Maximum of one application per crop. Soil should be firm, moist and free of clods and emerged weeds at application. Irrigate as necessary to prevent the soil surface from becoming dry. Residual activity may influence husbandry prior to the next crop in the rotation.

Additional information

Flexidor 500 gives good control of a range of important nursery stock weeds, including crucifers and polygonums. Control of annual meadow-grass, cleavers, groundsel and willowherb is less effective so it is important to use it in a programme or tank mixture with other herbicides where these weeds are expected. Persistence is good providing the herbicide has been washed in well by rainfall or irrigation.

Experimental information

In AHDB Horticulture-funded trials it has been used on a wide range of hardy nursery stock, including newly planted crops with few cases of damage reported. There is some potential for use on field-grown herbaceous crops, but note that a number of species can be damaged (see Table 13 in the 2013 version of the guide).

Herbicides without label recommendations

Herbicides without label recommendations

The information in this section is based on results of AHDB trials and commercial practice. There are no label recommendations for the use of these products on container-grown nursery stock. However, usage on nursery stock crops is permitted off-label via an Extension of Authorisation for Minor Use (EAMU) or under the Long Term Arrangements for Extension of Use (LTAEU) but any such usage by growers is entirely at their own risk.

These profiles are presented in alphabetical order of the typical product.

Centurion Max

Active ingredient

Clethodim (120g/litre)

Formulation

Emulsifiable concentrate

Supplier

Arysta Life Science Great Britain Ltd

Mode of action

Selective contact, foliar acting

Approval status

Long Term Arrangements for Extension of Use

Rates of use

2.0 litres/ha (in at least 200 litres of water/ha)

Timing

No restriction, after planting or on established crops

Use under protection

No

Label use restrictions

Maximum of one application per crop

Additional information

Centurion Max is one of a number of grass herbicides that can be used selectively in broad-leaved crops to control a range of annual and perennial grass weeds. Centurion Max will control annual meadow-grass, which is resistant to many other selective grass herbicides. Centurion Max is used on ornamentals in continental Europe. At present, in the UK, the product label only covers use on broad-leaved arable crops, with EAMUs for vegetable crops. There is limited experimental work on the use of Centurion Max on ornamentals in the UK, but commercial experience to date has been encouraging. Application is at grower's own risk.

Experimental information

Limited trials have shown that Centurion Max is fairly safe when applied over foliage, but a few species (*Hydrangea* and *Spiraea*) can show temporary scorch. Plants rapidly grow away from such symptoms, given normal growing conditions.

Corzal SC

Active ingredient

Phenmedipham (160g/litre)

Formulation

Suspension concentrate

Supplier

UPL Europe Ltd

Mode of action

Selective, contact action

Approval status

EAMU 0376/18

Rates of use

3.0 litres/ha (in a minimum of 200 litres of water/ha)

Timing

No restriction

Label use restrictions

Two applications per crop

Additional information

Corzal SC is a contact herbicide with action on small seedling weeds. Its predecessor, Betanal Flow, was generally used in repeated low dose applications starting when the weeds had reached cotyledon stage. A good range of broad-leaved weeds are controlled but black nightshade, grasses and mayweed are not well controlled. Polygonums such as knotgrass and redshank can be controlled under favourable conditions. The addition of Dow Shield 400 improves control of these weeds but may not be tolerated by some crops.

Experimental information

Corzal SC has not been widely tested on nursery stock, but Betanal Flow was used by growers of herbaceous crops and in rose stocks. Single applications were tested in tree seed beds (AHDB project HNS 155) and were found to be safe to selected species when applied at the four true leaf crop stage (see Table 14 in the 2013 version of the guide). Tree growers have used Betanal Flow to control small seedling weeds where residual herbicides have failed. However, there is little information on crop safety and some temporary leaf yellowing may occur if it is applied over the crop foliage.

Sencorex Flow

Active ingredient

Metribuzin (600g/litre)

Formulation

Suspension concentrate

Supplier

Interfarm

Mode of action

Residual, soil acting, some contact action

Approval status

EAMU 1732/17

Rates of use

0.3–1.15 litres/ha (in 200–500 litres of water/ha)

Timing

On dormant stock only, after planting or on established plantings

Label use restrictions

Maximum of one application per year

Additional information

Sencorex Flow controls grass and broad-leaved weeds, including charlock, cleavers, fat-hen, field pansy, groundsel, knotgrass, mayweed, nettle, oilseed rape, orache, pale persicaria, shepherd's purse, redshank and willowherb. It is used as a pre-emergence herbicide but there is also some post-emergence activity. Care should be taken to avoid application over crop foliage as this may be scorched. Some conifers are tolerant, however. This is an off-label use at the grower's own risk.

Experimental information

It has been tested in trials on ornamentals in the UK and Germany as a straight product and also as a co-formulation of flufenacet with metribuzin (Artist). Sencorex Flow can leach and cause damage by root uptake to some plant species, especially on light soils and after heavy rainfall. For this reason, it is generally used at low rates (0.3 litre/ha is generally regarded as safe to most species as transplants) in tank mixes with other herbicides such as Stomp Aqua and/or Sunfire.

In trials, the following species were tolerant of 0.75 litre/ha: *Abies nordmaniana*, *Cydonia oblonga*, *Ligustrum 'Atrovirens'*, *Malus communis*, *Picea abies*, *Prunus domestica*, *Quercus robur*, *Rosa*, *Ribes* and *Viburnum opulus*. The following species were tolerant of 0.58 litre/ha: *Acer platanoides*, *Alnus glutinosa*, *Fagus sylvatica*, *Juniperis communis*, *Larix leptolepis*, *Ligustrum vulgare*, *Pinus sylvestris*, *Philadelphus 'Virginal'*, *Spiraea 'Triumphans'*, *Taxus baccata*, *Thuja occidentalis* and *Tilia cordata*. Do not treat *Cornus sanguinum* or *Prunus laurocerasus*. In general, higher rates can be used on established large trees, compared with small transplants.

Always read the label. Use pesticides safely.

Sunfire

Active ingredient

Flufenacet (500g/litre)

Formulation

Suspension concentrate

Supplier

Certis

Mode of action

Residual, soil acting

Approval status

EAMU 1065/17

Rates of use

0.48 litre/ha (in at least 200 litres of water/ha)

Timing

No restriction, after planting or on established plantings

Label use restrictions

Maximum of one application per year

Additional information

Sunfire controls grasses (including resistant blackgrass) and some broad-leaved annual weeds (including chickweed, cleavers, field pansy, mayweeds, pennycress and shepherd's purse) pre-emergence, with some post-emergence action. There are gaps in the weed control spectrum so it is normally mixed with other residual herbicides such as Sencorex Flow. This is an off-label use at the grower's own risk.

Experimental information

It has not been widely used in trials as a straight product, but the co-formulation of flufenacet with metribuzin (Artist) was widely trialled and found to be safe on dormant crops or when used post-planting on field-grown woody crops such as roses and field-grown trees, including *Cydonia*, *Malus* and *Prunus*. There may be potential for use on field-grown herbaceous crops, but this would require further trialling.

Venzar 500 SC

Active ingredient

Lenacil (500g/litre)

Formulation

Suspension concentrate

Supplier

Du Pont

Mode of action

Residual, soil acting

Approval status

Long Term Arrangements for Extension of Use

Rates of use

0.4 litre/ha (in 200–500 litres of water/ha)

Timing

No restriction, after planting or on established plantings

Label use restrictions

Maximum total of 1.0 litres/ha per year

Additional information

For many years, Venzar WP had a label approval for use on field-grown nursery stock, including herbaceous and flower crops. This label was withdrawn when the product was replaced with a flowable formulation. Long Term Arrangements for Extension of Use at the grower's own risk are available for Venzar 500 SC but the rate of use is less than 10 per cent of the previous products.

Experimental information

This herbicide is now mainly used on field-grown herbaceous crops and occasionally on field-grown trees for particular weed problems such as knotgrass and orache. The weed spectrum misses a few important weeds such as cleavers, groundsel and speedwells, and it can be very unreliable under dry conditions. Given the low rate currently authorised, residual weed control is only likely to last for two to three weeks, although follow-up applications can be made. Plant damage through root uptake can occur when heavy rain follows application, but, at the low rates authorised, this is less likely compared with previous products. Information about crop tolerance is available, but soil conditions and rainfall are major influencing factors (Tables 11–14 in the 2013 version of the guide). Most information is based on the previous wettable powder formulation used at higher rates.

Wing-P

Active ingredient

Dimethenamid-P (212.5g/litre) and pendimethalin (250g/litre)

Formulation

Emulsifiable concentrate

Supplier

BASF plc

Mode of action

Residual, soil acting

Approval status

EAMU 0253/13

Rates of use

3.5 litres/ha (in a minimum of 200 litres of water/ha)

Timing

Pre-crop emergence

Label use restrictions

The EAMU states that this product must not be applied via hand-held equipment.
Maximum total dose of 3.5 litres/ha per year

Additional information

Wing-P is a pre-emergence residual herbicide with some contact action on emerged weeds (best up to the two true leaf stage). Soil moisture must be present for Wing-P to be activated, best results will be obtained if rainfall (or irrigation) occurs within seven days of application. The product's main use is likely to be as a residual pre-emergence herbicide in tree seed beds. Crop safety may be an issue in seed beds as many species are shallow drilled. It is likely that reduced rates will be required to minimise any phytotoxic crop damage to acceptable levels.

Experimental information

In AHDB project CP 086 Wing-P gave good control of annual meadow-grass, American willowherb and groundsel. Wing-P showed better or equivalent control compared to Flexidor 125 as a post-emergence treatment on weeds that were either at the four to five or seven to 10 true leaf stages. It is worth noting that a slightly higher rate was used than is authorised by the current EAMU.

Produced for you by:

AHDB Horticulture

Stoneleigh Park

Kenilworth

Warwickshire

CV8 2TL

T 024 7669 2051

E comms@ahdb.org.uk

W horticulture.ahdb.org.uk

🐦 [@AHDB_Hort](https://twitter.com/AHDB_Hort)

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