



# TECHNICAL NOTES FOR AXIT\* GR

## EFFECTIVE USE OF AXIT GR

Fargro has conducted extensive trials with AXIT GR on a wide range of ornamental nursery stock and herbaceous perennial species and cultivars. Trials were carried out on nurseries throughout the country and at different times of the year to try and take into account the influence of differing growing conditions on product performance and plant response. The aim of this technical note is to give information on how best to use AXIT GR as well as some more in depth information on weeds that can plague nurseries and is in addition to the product leaflet which reflects the product label.

Local conditions, time of year and associated weather may influence the effectiveness and safety of this product. **Therefore any data in this leaflet which is in addition to the label is for growers reference and any use of the data is entirely at growers own risk.**

The leaflet is divided into several sections and these are summarised below.

### **Why use AXIT GR?:**

AXIT GR contains isoxaben (5.52g/kg) and trifluralin (20.6 g/kg) for pre-emergence and residual control of broad-leaved and grass weeds.

### **When and How to use AXIT GR:**

Timing is important to ensure that the herbicide layer released from the granules is distributed over the moist media surface before any weeds start to germinate.

Use AXIT GR in the late winter/ spring/ early summer for optimum results targeting the first main germination period of weeds such as chickweed, hairy bittercress, pearlwort, annual meadow grass etc.

See product leaflet for application details.

### **How can you make best use of AXIT GR:**

It is important to know what the problem weeds are and how the seeds are spread through the nursery in order to determine the best control strategy.

The weeds that AXIT GR control are listed inside with further efficacy information on weeds other than those listed on the label.

### **Species and cultivars:**

An extensive range of species and cultivars of hardy ornamental nursery stock and herbaceous perennials have been trialled with AXIT GR since 1998. The tests have been done with co-operation of many growers throughout the UK.

Fargro Ltd  
Toddington Lane  
Littlehampton  
West Sussex  
BN17 7PP

Tel: 01903 721591

Fax: 01903 730737

**ALWAYS READ THE LABEL: USE PESTICIDES SAFELY**

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## USE AXIT GR AS PART OF A WEED CONTROL PROGRAMME

AXIT GR contains isoxaben (5.52g/kg) and trifluralin (20.6 g/kg) for pre-emergence and residual control of broad-leaved and grass weeds.

AXIT GR should be used as part of a planned weed control programme that not only involves the use of other herbicides but also takes into account general hygiene around and on the site.

Every herbicide has its strengths and weaknesses and it is important to take this into account when designing a weed control programme. Make sure that no one active ingredient is relied on too much in any one year, for instance isoxaben is present in both Flexidor 125 and AXIT GR.

If these are used early in the year it may be advisable to consider late summer/autumn/winter treatments with products containing other active ingredients which also have slightly different spectrums of weed control such as oxadiazon, napropamide etc.

See Axit GR product leaflet for further details on application.

Make sure all areas surrounding and within the growing area are kept clean and at the very least make sure that weeds do not have a chance to flower and seed.

For instance one Chickweed plant is capable of producing up to 3,000 seeds. Hairy bittercress and *Oxalis* spread their seeds through explosion and infestation becomes intense and localised. Certain weed seeds are dispersed by wind and can spread over large areas such as Groundsel, Sow thistle, Willowherb and Willow (*Salix*).

Choice of herbicide should take into account weed history on the nursery and the normal germination peaks of the weeds.

Willowherb, for example, has its peak germination period in late summer and is very well controlled with oxadiazon, whereas Chickweed germinates all year round, Annual Meadow-grass mainly germinates in the spring with a smaller flush in the autumn. The use of AXIT GR is ideal in the early spring to give good control of spring germinating weeds and will give excellent control of Annual meadow-grass.

AXIT GR is a pre-emergence herbicide and therefore needs to be applied before weeds germinate. If applied late and weeds have germinated then control will be reduced or ineffective.

In container production AXIT GR will control weeds for up to 12-16 weeks.

## WEEDS CONTROLLED BY AXIT GR

### Label Recommendations:

The following weeds are susceptible to AXIT GR applied at 100 kg/ha:

### CONTAINER GROWN:

Annual Meadow-grass

Groundsel<sup>1</sup>

Hairy bitter-cress

### FIELD GROWN:

Annual Meadow-grass

Fat-hen

Groundsel

Hairy Bitter-cress

Knotgrass<sup>1</sup>

Perennial Sow-thistle

Shepherd's-purse

Trials and commercial experience in France has shown good activity on the following weed species:

Annual Mercury

Barnyard Grass (Cockspur)

Black Nightshade

Canadian Fleabane

Charlock

Chickweed

Corn Chamomile

Corn Spurry

Field Pansy

Field Penny-cress

Field Poppy

Forget-me-nots

Fumitory

Gallant Soldier

Knotgrass

Parsley Piert

Pearlwort

Perennial rye-grass

Pigweed

Pineappleweed

Purslane

Red Dead-nettle

Rough Meadow-grass

Sallow

Scarlet Pimpernel

Spurges

Toad Rush

White Champion

Wild Radish

**NOTE:** Perennial weeds re-generating from underground root stocks or stolons are not controlled

<sup>1</sup> Moderately susceptible - variable control may be seen

## WHERE TO USE AXIT GR

During 1998/99 and following the launch of AXIT GR, Fargo Ltd. have carried out extensive crop safety evaluations on a wide range of container grown ornamental plants under commercial conditions. Information below is a list of trees, shrubs, climbers and herbaceous perennials which have been treated safely with AXIT GR in these trials.

Also listed are plant species and cultivars that showed some damage when treated with AXIT GR.

The list is not exhaustive and is for guidance only. Trials have shown that AXIT GR is not suitable for use on any heathers.

Local conditions, time of year and associated weather may influence the effectiveness and safety of this product.

Although Axit GR has been tested on a wide range of plants it does not imply that AXIT GR can be used safely where plants are grown under adverse conditions, such as waterlogging.

In particular, growers should satisfy themselves on the safety of Axit GR to any particular variety or species before widescale use.

## EFFECTIVE USE OF AXIT GR ON TREES, SHRUBS AND CLIMBERS:

No phytotoxic reaction was observed on the following plants under trial conditions -

<i>Acer palmatum</i> 'Atropurpureum'	<i>Cotoneaster horizontalis</i>	<i>Fuchsia magellanica</i> 'Versicolor'
<i>Arbutus unedo</i>	'Variegatus'	<i>Genista hispanica</i>
<i>Aucuba japonica</i> 'Golden King'	<i>Cotoneaster microphyllus</i>	<i>Genista</i> 'Lydia'
<i>Aucuba japonica</i> 'Variegata'	<i>Cotoneaster conspicuus</i>	<i>Hebe franciscand variegata</i>
<i>Azalea</i> 'Blaauw's Pink'	'Decorus'	<i>Hebe</i> 'Margaret'
<i>Azalea</i> 'Favourite'	<i>Cupressocyparis leylandii</i>	<i>Hebe</i> 'Red Edge'
<i>Azalea</i> 'Geisha Red'	<i>Cupressocyparis leylandii</i>	<i>Hydrangea</i> 'G. Chadbund'
<i>Azalea japonica</i> 'Kermesina'	'Castlewellan Gold'	<i>Hydrangea macrophylla</i> 'Altona'
<i>Berberis thunbergii</i> 'Rose Glow'	<i>Cytisus praecox</i> 'Allgold'	<i>Hydrangea macrophylla</i>
<i>Berberis verruculosa</i>	<i>Deutzia x hybrida</i> 'Mont Rose'	'King George'
<i>Berberis x ottawensis</i>	<i>Deutzia x hybrida</i> 'Strawberry	<i>Hydrangea macrophylla</i>
<i>Buddleia davidii</i> 'Empire Blue'	Fields'	'Lady Katsuko'
<i>Buddleia davidii</i> 'Nanho Blue'	<i>Escallonia</i> 'Donard Seedling'	<i>Hydrangea macrophylla</i>
<i>Buddleia davidii</i> 'Pink Delight'	<i>Escallonia</i> 'Red Hedge'	'Mariesii'
<i>Buxus sempervirens</i>	<i>Escallonia rubra</i> 'Crimson Spire'	<i>Hydrangea petiolaris</i>
<i>Camellia</i> 'Debbie'	<i>Euonymus alatus</i>	<i>Hypericum</i> 'Hidcote'
<i>Ceanothus</i> 'Blue Mound'	<i>Euonymus europeaus</i> 'Red	<i>Juniperus</i> 'Blue Alps'
<i>Ceanothus concha</i>	Cascade'	<i>Juniperus sabina</i> 'Tamariscifolia'
<i>Chamaecyparis lawsoniana</i>	<i>Euonymus fortunei</i> 'Emerald 'n'	<i>Kerria japonica</i> 'Pleniflora'
'Ellwood's Gold'	Gold'	<i>Laurus nobilis</i>
<i>Chamaecyparis lawsoniana</i>	<i>Euonymus fortunei</i> 'Emerald	<i>Lavandula angustifolia</i> 'Folgate'
'Elwoodii'	Gaiety'	<i>Lavandula angustifolia</i> 'Hidcote'
<i>Choisya ternata</i>	<i>Exochorda x macrantha</i>	<i>Lavandula vera</i>
<i>Clematis montana</i>	'The Bride'	<i>Lavandula</i> 'Munstead'
<i>Clematis</i> 'Rouge Cardinal'	<i>Forsythia</i> 'Beatrix Farrand'	<i>Leucothoe</i> 'Scarletta'
<i>Cornus alba</i> 'Aurea'	<i>Forsythia x intermedia</i>	<i>Ligustrum ovalifolium</i>
<i>Cornus alba</i> 'Elegantissima'	'Lynwood'	<i>Ligustrum ovalifolium</i>
<i>Cornus alba</i> 'Sibirica'	<i>Forsythia x intermedia</i> 'Minigold'	'Argenteum'
<i>Cotinus coggygria</i> 'Royal Purple'	<i>Fuchsia</i> 'Genii'	<i>Ligustrum ovalifolium</i> 'Aureum'
<i>Cotoneaster</i> 'Cornubia'	<i>Fuchsia</i> 'Tom Thumb'	<i>Lonicera</i> 'Belgica'
<i>Cotoneaster horizontalis</i>		

**EFFECTIVE USE OF AXIT GR ON TREES, SHRUBS AND CLIMBERS *continued*:**

<i>Lonicera japonica</i> 'Halliana'	<i>Prunus x cistena</i> 'Crimson Dwarf'	<i>Spiraea</i> 'Magic Carpet'
<i>Lonicera nitida</i> 'Baggesen's Gold'	<i>Pyracantha</i> Golden 'Charmer'	<i>Spiraea nipponica</i> 'Snowmound'
<i>Lonicera nitida</i> 'Maigrun'	<i>Pyracantha</i> 'Red Column'	<i>Spiraea thunbergii</i>
<i>Lonicera nitida</i> 'Silver Beauty'	<i>Pyracantha</i> 'Teton'	<i>Symphoricarpos x chenaultii</i> 'Hancock'
<i>Lonicera x purpusii</i> 'Winter Beauty'	<i>Rhododendron</i> 'Cilipinense'	<i>Symphoricarpos x doorenbosii</i> 'Mother of Pearl'
<i>Magnolia</i> 'Susan'	<i>Rhododendron</i> 'Dusty Miller'	<i>Teucrium fruiticans</i>
<i>Mahonia japonica</i>	<i>Rhododendron</i> 'St Merryn'	<i>Thuja occidentalis</i> 'Danica'
<i>Olearia macrodonta</i>	<i>Rhododendron</i> 'Wee Bee'	<i>Thuja plicata</i>
<i>Parthenocissus henryana</i>	<i>Rhododendron</i> 'Willbrit'	<i>Viburnum davidii</i>
<i>Pernettya mucronata</i> 'Mascula'	<i>Ribes sanguineum</i> 'Pulborough Scarlet'	<i>Viburnum opulus</i> 'Sterile'
<i>Pernettya mucronata</i> 'Signal'	<i>Rosa</i> 'Oxfordshire'	<i>Viburnum plicatum</i> 'Mariesii'
<i>Philadelphus</i> 'Belle Etoile'	<i>Rosa</i> 'White Meidiland'	<i>Viburnum tinus</i>
<i>Philadelphus</i> 'Minnesota Snowflake'	<i>Sambucus nigra</i>	<i>Vinca major</i> 'Maculata'
<i>Philadelphus</i> 'Virginal'	<i>Skimmia japonica</i> 'Rubella'	<i>Vinca minor</i> 'Atropurpurea'
<i>Philadelphus</i> 'White Rock'	<i>Solanum crispum</i> Glasnevin'	<i>Vinca minor</i> 'Bowles Variety'
<i>Photinia fraseri</i> 'Red Robin'	<i>Solanum jasminoides</i> 'Album'	<i>Weigela</i> 'Bristol Ruby'
<i>Physocarpus</i> 'Diabolo'	<i>Spartium junceum</i>	<i>Weigela</i> 'Carnival'
<i>Physocarpus opulifolius</i> 'Darts Gold'	<i>Spiraea</i> 'Arguta'	<i>Weigela florida</i> 'Foliis Purpureis'
<i>Pittosporum tenuifolium</i> 'Irene Paterson'	<i>Spiraea japonica</i> 'Anthony Waterer'	<i>Weigela florida</i> 'Nana Variegata'
<i>Prunus laurocerasus</i> 'Otto Luykem'	<i>Spiraea japonica</i> 'Candlelight'	<i>Weigela kosteriana</i>
<i>Prunus laurocerasus</i> 'Rotundifolia'	<i>Spiraea japonica</i> 'Dart's Red'	<i>Weigela</i> 'Nain Rouge'
<i>Prunus lusitanica</i>	<i>Spiraea japonica</i> 'Gold Mound'	<i>Weigela</i> 'Red Prince'
	<i>Spiraea japonica</i> 'Goldflame'	<i>Weigela</i> 'Rubidor'
	<i>Spiraea japonica</i> 'Little Princess'	<i>Wisteria sinensis</i> 'Prolific'
	<i>Spiraea japonica</i> 'Nana' [Alpina]	<i>Yucca</i>
	<i>Spiraea japonica</i> 'Shirobana'	

**Shrubs to treat with caution:**

<i>Azalea</i> 'Gibraltar'	<i>Hibiscus syriacus</i> 'Blue Bird'	<i>Rhododendron yak.</i> 'Pink Cherub'
<i>Buddleia davidii</i> 'Royal Red'	<i>Lavatera olbia</i> Rosea	<i>Rosa</i> 'Kent'
<i>Caryopteris x clandonensis</i> 'Heavenly Blue'	<i>Pieris</i> 'Forest Flame'	<i>Rosa</i> 'Suffolk'
<i>Cistus</i> 'Silver Pink'	<i>Potentilla</i> 'Mrs. Wilmott'	<i>Sambucus nigra</i> 'Albovariegata'
<i>Fuchsia</i> 'Mrs Popple'	<i>Rhododendron</i> 'Caroline Allbrook'	<i>Skimmia japonica</i> 'Rubella'
<i>Genista aetnensis</i>	<i>Rhododendron</i> 'Snipe'	<i>Viburnum x bodnantense</i> 'Deben'

**DO NOT TREAT these shrubs:**

<i>Calluna vulgaris</i> (various)	<i>Hebe</i> 'Blue Gem'	<i>Juniperus squamata</i> 'Blue Star'
<i>Erica carnea</i> (various)	<i>Hebe</i> 'Edington'	<i>Potentilla</i>
<i>Erica darleyensis</i> (various)	<i>Helichrysum italicum</i> subsp <i>serotinum</i>	<i>Sollya heterophylla</i>

Do not apply to heathers or potentilla.

## EFFECTIVE USE OF AXIT GR ON HERBACEOUS PERENNIALS *continued*:

No phytotoxic reaction was observed on the following plants under trial conditions -

<i>Achillea</i> 'Moonshine'	<i>Dianthus</i> 'Whatfield Gem'	<i>Hosta</i> 'Ginko Craig'
<i>Aconitum</i> 'Arendsii'	<i>Dicentra formosa</i>	<i>Hosta lancifolia</i>
<i>Anthemis tinctoria</i> 'E C Buxton'	<i>Digitalis</i> 'Excelsior Hybrids Mixed'	<i>Hosta</i> 'Patriot'
<i>Aquilegia</i> 'Powder Blue'		<i>Hosta</i> 'Sum & Substance'
<i>Aquilegia vulgaris</i> 'Blue Barlow'	<i>Epimedium</i> 'Sulphureum'	<i>Iris germanica</i> 'Kent Pride'
<i>Aquilegia x cultorum</i> 'Biedermeier Mixed'	<i>Euphorbia amygdaloides</i> 'Purpurea'	<i>Iris germanica</i> 'Party Dress'
<i>Aster lateriflorus</i> 'Prince'	<i>Euphorbia amygdaloides robbiae</i>	<i>Iris</i> 'Little Jewel'
<i>Astilbe</i> 'Perkeo'	<i>Euphorbia</i> 'Chameleon'	<i>Iris sibirica</i> 'Perry's Blue'
<i>Astilbe simplicifolia</i> 'Inshriach Pink'	<i>Euphorbia</i> 'Martini'	<i>Kniphofia</i> 'Alcazar'
<i>Astrantia major</i> 'Rose Symphony'	<i>Euphorbia myrsinites</i>	<i>Lobelia</i> 'Queen Victoria'
	<i>Euphorbia polychroma</i>	<i>Lobelia siphilitica</i> 'Blue'
	<i>Euphorbia rubra</i>	<i>Nepeta mussinii</i>
<i>Bergenia</i> 'Baby Doll'	<i>Geranium</i> 'Johnsons Blue'	<i>Oenothera</i> 'Siskiyou'
<i>Bergenia</i> 'Bressingham Ruby'	<i>Geum</i> 'Geogenberg'	<i>Penstemon</i>
<i>Campanula</i> 'Blue Clips'	<i>Geum</i> 'Lady Stratheden'	<i>Phlox</i> 'Blue Dream'
<i>Campanula</i> 'Kent Belle'	<i>Geum</i> 'Mrs Bradshaw'	<i>Rudbeckia</i> 'Goldquelle'
<i>Campanula</i> 'White Clips'		
<i>Coreopsis</i> 'Early Sunrise'	<i>Helleborus foetidus</i>	<i>Salvia verticillata</i> 'Purple Rain'
<i>Coreopsis grandiflora</i>	<i>Helleborus</i> 'Neuste Hybrid'	<i>Scabiosa</i> 'Clive Greaves'
<i>Crococsmia</i> 'Lucifer'	<i>Hemerocallis</i> 'Flaming Sword'	<i>Scabiosa</i> 'Perfection Blue'
	<i>Hemerocallis</i> 'Stafford'	<i>Sedum</i> 'Autumn Joy'
<i>Delphinium</i> 'Magic Fountain White'	<i>Heuchera</i> 'Stormy Seas'	<i>Sidalcea</i> 'Croftway Red'
<i>Dianthus</i> 'Claret Joy'	<i>Hosta</i> 'Frances Williams'	<i>Tellima grandiflora</i> 'Purpurea'

### Herbaceous perennials to treat with caution:

<i>Aquilegia vulgaris</i> 'Crimson Star'	<i>Geranium</i> 'Bressingham Flair'	<i>Papaver</i> 'Dwarf Allegro Vivace'
<i>Bergenia</i> 'Evening Glow'	<i>Geranium sanguineum</i>	<i>Salvia verticillata</i> 'Purple Rain'
<i>Chrysanthemum</i> 'Little Silver Princess'	<i>Heuchera</i> Bressingham Hybrids	<i>Solidago</i> 'Cloth of Gold'
<i>Chrysanthemum</i> 'Snowdrift'	<i>Heuchera micrantha</i> 'Palace Purple'	<i>Tradescantia andersoniana</i> 'Osprey'
<i>Dicentra</i> Boothmans Variety	<i>Omphalodes verna</i>	<i>Trollius cultorum</i> 'Orange Princess'
<i>Dicentra spectabilis</i>		
<i>Digitalis lanata</i>		

### DO NOT TREAT these herbaceous perennials:

<i>Alchemilla mollis</i>	<i>Malva alcea</i> 'Fastigiata'	<i>Pulmonaria angustifolia</i> 'Azurea'
<i>Anemone tomentosa</i> 'Robustissima'	<i>Meconopsis sheldonii</i>	<i>Stachys byzantina</i> 'Sheila McQueen'
<i>Catananche caerulea</i>	<i>Papaver</i>	<i>Verbascum</i> 'Arctic Summer'
<i>Dicentra exima</i> 'Alba'	<i>Polemonium pulcherrimum</i>	<i>Verbascum phoeniceum</i>
<i>Heuchera</i> 'Scintillation'	<i>Polygonum bistorta</i> 'Superbum'	
	<i>Potentilla</i>	

### CAUTION WHEN APPLYING TO HERBACEOUS PERENNIAL CROPS

There are a wide range of herbaceous perennial species and cultivars in commercial production, some of which are closely related to certain weed species. The list above is only for guidance and the grower should always test on a small number of plants at different growth to ensure that the cultivars grown are tolerant to AXIT GR.

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