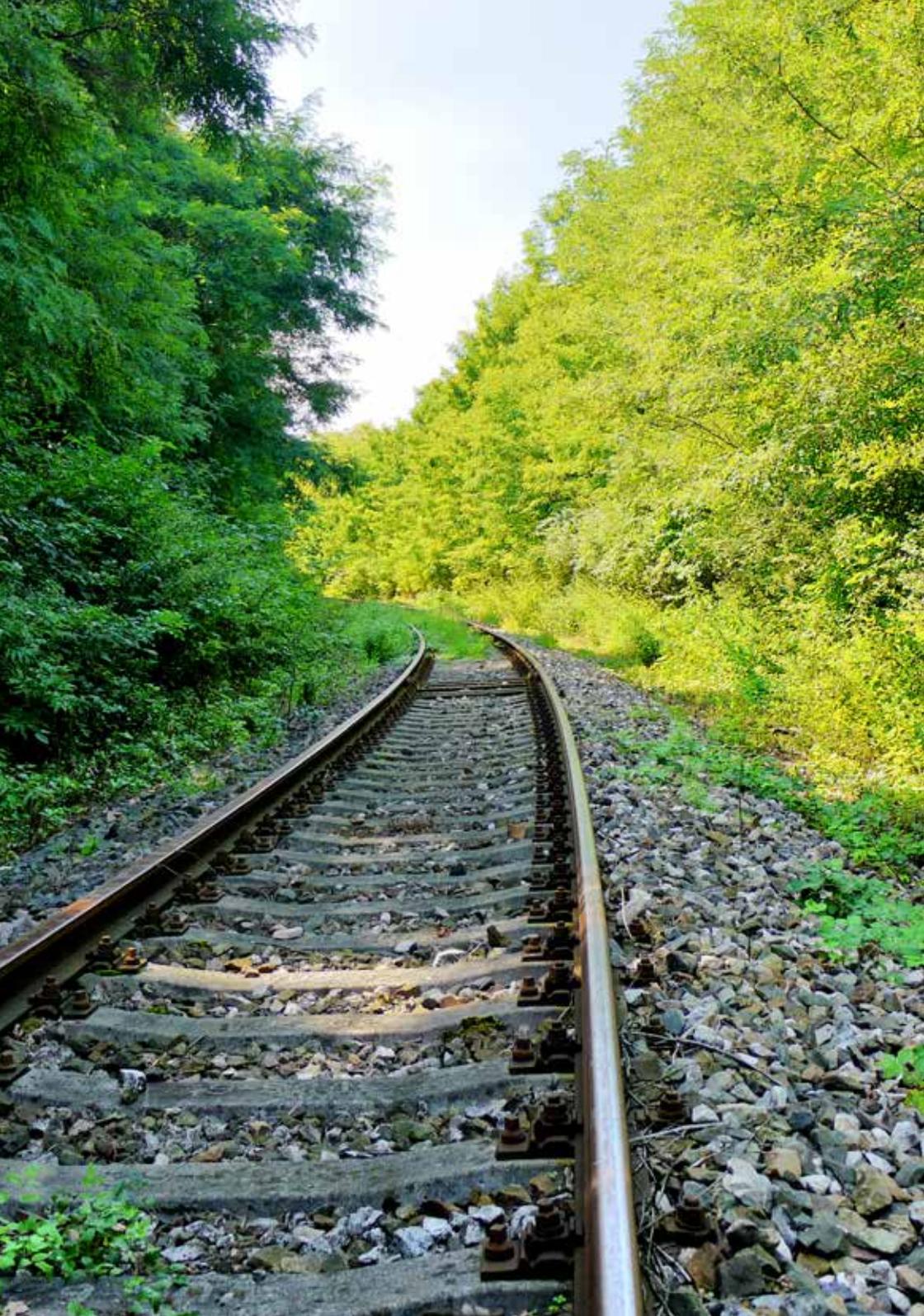


Nufarm

AMENITY



Nufarm Grow a better tomorrow.



Contents

4	Nufarm Introduction	12	Clinic UP
5	Grassland Definitions	13	Credit
6	Phenoxies Overview	14	Sven / Sumi Alpha
7	TurfMaster	15	Amenity Product Options
8	Thrust	16	Knapsack Use
9	Depitox	17	Weed Comparison Table
10	Duplosan KV / Compitox Plus	18	Best Practice / Stewardship
11	Kyleo	19	Notes

About Nufarm

Nufarm is one of the world's leading crop protection companies. With manufacturing and marketing operations based in Australia, New Zealand, Asia, Europe and the Americas, Nufarm employs more than 3,400 people, all of whom make a vital contribution to the company's reputation for quality products, innovation and first class marketing and technical support.

In the UK, Nufarm have a production site at Wyke (near Bradford), which was established in 1877 and produces Phenoxy

herbicides, Glyphosate, intermediates and inhibitors. The site employs over 300 people and is the largest flexible phenoxy herbicide production unit in the world.

A key selection of our grassland product range is approved for use in amenity, this booklet summarises their best use guidelines.



Grassland Definitions



**Amenity
Grassland**



**Managed
Amenity Turf**



**Amenity
Vegetation**



Grassland

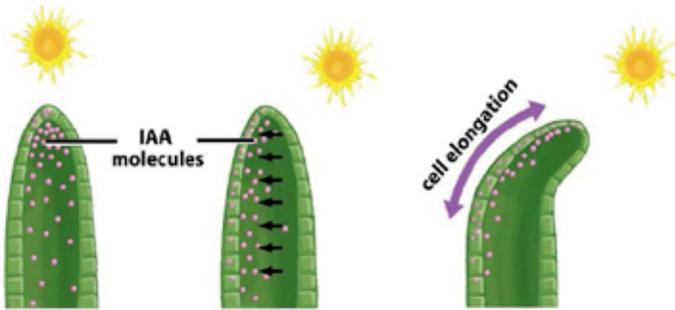
Nufarm are proud to be able to offer a wide range of products for use in amenity situations. These descriptions show the official CRD definitions. Our full list of approvals can be seen on Page 15.

<p>Amenity Grassland</p>	<p>Areas of semi-natural or planted grassland subject to minimal or non-intensive management. Includes areas that may be accessed by the public, such as golf roughs.</p> <p>May include airfields and predominantly grassed railway embankments and roadside verges. May be floristically rich and irregularly managed so that plants may flower and set seed.</p>
<p>Managed Amenity Turf</p>	<p>Areas of frequently mown, (i.e. mown at least one a week) intensively managed turf, including fields being used for turf production.</p> <p>May include areas for public use including all types of sports turf, golf greens, tees and fairways.</p>
<p>Amenity Vegetation</p>	<p>Any areas of semi natural or ornamental vegetation, including trees.</p> <p>May include railway embankments and roadside verges which are predominantly covered in vegetation other than grass.</p> <p>Also includes areas of bare soil around ornamental plants or intended for ornamental planting.</p> <p>Does NOT include hedgerows around arable fields.</p>
<p>Grassland</p>	<p>Land grown for grass production includes short and long-term grass leys and permanent pasture, which may be grazed and/or cut for subsequent animal consumption.</p> <p>Includes use on newly sown leys and moorland for grazing (unless specifically excluded on the label/authorisation).</p>

How do Phenoxies work?

Phenoxy herbicides mimic the effect of natural plant hormones called auxins. Auxins are only found in plants and regulate growth, one of their functions is to

make the plant grow towards the light. Phenoxy herbicides over stimulate plant cells causing abnormal growth and death.



Reference: A Brief Guide to Biology, Pearson, Prentice, Hall, Inc.

1. When sunlight is overhead, the IAA molecules (auxins) produced by the meristem are distributed evenly in the shoot.

2. Once the sunlight shines on the shoot at an angle, the IAA molecules move to the far side and induce elongation of cells on that side.

3. Cell elongation results in the bending of the shoot towards the light.

The twisting effect of a phenoxy treatment on docks.



Can be applied through mounted hydro sprayer



Can be applied through hand held equipment

Turfmaster combines the strengths of three active ingredients, Mecoprop-P, MCPA and Dicamba. Turfmaster controls a wide range of annual and perennial weeds and is

approved for use on amenity grassland and managed amenity turf. Turfmaster is a popular choice due to its wide weed spectrum.

Active Ingredients	43.3 g/l mecoprop-P, 245 g/l MCPA & 19.5 g/l dicamba
Approvals	Amenity Grassland & Managed Amenity Turf
Maximum Application Rate	5 l/ha
Maximum Total Dose	5 l/ha per year
Pack Size	10 litres
Application Timing	April to September (not before three leaves of grass)
Application	
LERAP	Unclassified

Product Benefits

- Useful control of perennial weeds
- Suited to amenity grassland and managed amenity turf
- Very broad spectrum
- The weeds below are moderately susceptible in managed amenity turf



Clover

Up to 25mm across/high



Dandelion

Up to 50mm across/high



Plantains

Up to 50mm across/high

Thrust combines the strengths of two active ingredients, 2,4-D and Dicamba. Thrust controls a wide range of annual and perennial weeds and is particularly effective against Ragwort.

Thrust is approved for use on amenity grassland and has approval for application through knapsack sprayers.

Active Ingredients	344 g/l 2,4-D & 120 g/l dicamba
Approvals	Amenity Grassland
Maximum Application Rate	3.5 l/ha
Maximum Total Dose	7 l/ha per year (amenity grassland only)
Pack Size	5 litres
Application Timing	April to September
Application	
LERAP	Unclassified

Product Benefits

- Broad spectrum
- Unique combination of actives to give excellent control of Ragwort
- Can be used through a knapsack sprayer



Ragwort



Buttercup



Docks

Depitox contains the active ingredient 2,4-D. Depitox controls a wide range of annual and perennial weeds and is very cost-effective.

Approved for use on amenity grassland and managed amenity turf, Depitox also has approval for application through knapsack sprayers.

Active Ingredients	500g/l 2,4-D
Approvals	Amenity Grassland, Managed Amenity Turf
Maximum Application Rate	3.3 l/ha
Maximum Total Dose	9.9 l/ha per year (Amenity Grassland & Managed Amenity Turf only)
Pack Size	5 litres & 10 litres
Application Timing	April to September
Application	
LERAP	Unclassified

Product Benefits

- Broad spectrum
- Cost effective
- Available in 5 & 10 litre packs
- Can be used through a knapsack sprayer



Buttercup



Plantains



Hawkweed

Duplosan KV / Compitox Plus contains the active ingredient mecoprop-P. Strengths include control of a wide range of

annual and perennial broad leaved weeds including chickweed.

Active Ingredients	600g/l mecoprop-P
Approvals	Amenity Grassland & Managed Amenity Turf
Maximum Application Rate	2.4 l/ha
Maximum Total Dose	2 per year
Pack Size	10 litres
Application Timing	April to September (not before three leaves of grass)
Application	
LERAP	Unclassified

Product Benefits

- Broad spectrum
- Useful control of chickweed
- Cost effective
- Can be used through a knapsack sprayer



Chickweed



Cleavers



Plantains

Non Selective Herbicides



Kyleo combines the strengths of two active ingredients, Glyphosate and 2,4-D. Kyleo is a total herbicide and controls all vegetative growth.

Due to the combination of active ingredients and formulation Kyleo gives better and quicker knock down of weeds than glyphosate alone.

Active Ingredients	240g/l glyphosate & 160g/l 2,4-D
Approvals	Amenity Grassland, Amenity Vegetation, Railway Ballast
Maximum Application Rate	5 l/ha
Maximum Total Dose	5 l/ha
Pack Size	15 litres
Application Timing	No Restriction
Application	
LERAP	B

Product Benefits

- Unique combination of actives and formulation
- Better control of difficult broad leaved weeds than glyphosate alone
- Very quick acting
- Rainfast in 1 hour



Kyleo has useful activity on Mareestail



Kyleo



Standard Glyphosate

Clinic Up contains the active ingredient glyphosate at the standard loading of 360 g/l, and offers total control of vegetation.

Clinic Up is also approved for use on land immediately adjacent to aquatic areas.

Active Ingredients	360 g/l glyphosate
Approvals	Hard surfaces, Natural surfaces not intended to bear vegetation, Permeable surfaces overlaying soil. Forests / Woodlands
Maximum Application Rate	6 l/ha
Pack Size	1, 5 & 20 litres
Application Timing	No Restriction
Application	
LERAP	Unclassified

Product Benefits



- Tallow Amine Free formulation – No hazard classification
- Approved for use on land immediately adjacent to aquatic areas
- Quick acting
- Cost effective
- Available in a range of pack sizes



Clinic Up Has No Hazard Symbols



Field Trials

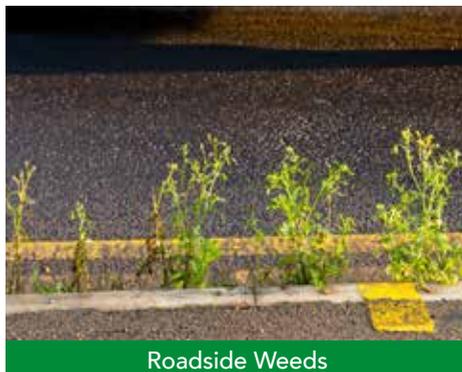
Credit contains the active ingredient glyphosate and offers total control of vegetation. Credit is formulated using two different glyphosate salts,

isopropylamine and ammonium. This gives better and faster control than standard glyphosate formulations.

Active Ingredients	540g/litre glyphosate
Approvals	Hard surfaces, Natural surfaces not intended to bear vegetation, Permeable surfaces overlaying soil. Forests / Woodlands. Amenity vegetation
Maximum Application Rate	4 l/ha (subject to application, see label)
Pack Size	15 litres
Application Timing	No Restriction
Application	
LERAP	Unclassified

Product Benefits

- Tallow Amine Free formulation – No hazard classification
- Highly effective dual salt technology
- Must be tank mixed with an approved adjuvant



Sven / Sumi Alpha contains the active ingredient esfenvalerate and is approved for use on amenity grassland for the reduction of damage caused by bibionid fly larvae.

Active Ingredients	25g/litre esfenvalerate
Approvals	Managed Amenity Turf
Maximum Application Rate	300ml/Ha
Pack Size	1 litre
Application Timing	Autumn
Application	

Product Benefits

- One of few insecticides approved for use on managed amenity turf
- Reduces damage caused by bibionid fly larvae

Bibionid Fly Larvae Damage

The adult St Mark's Fly and Fever Fly are relatively small (6 mm or less). After mating, the female lays around 30 eggs at a time and this results in small clumps or pockets of larval activity in the root zone.

The eggs are laid between May and August/September and hatch from late summer, producing larvae that will feed on the organic matter in the root zone or the roots themselves. Damage is often seen in late autumn/winter as small yellowing patches throughout the sward. Apply in the autumn using a high water volume (600-1000 L/Ha). Rain after application may assist control. Bibionid fly larvae damage may increase due to the withdrawal of chlorpyrifos.



Amenity Options Product Summary

Product Approvals	Active(s)	Amenity Grassland	Managed Amenity Turf	Amenity Vegetation	Hard surfaces*
Clinic Up ***	360g/l glyphosate				
Credit	540g/l glyphosate (twin salt)				
Depitox	500g/l 2,4-D				
Duplosan KV	600g/l mecoprop-P				
Kyleo	240g/l glyphosate + 160g/l 2,4-D				 **
Sven	25g/l esfenvalerate				
Thrust	344g/l 2,4-D + 120g/l dicamba				
Turfmaster	43.3g/l mecoprop-P + 245g/l MCPA + 19.5g/l dicamba				

Red symbols represent Non-Selective (complete kill) herbicides

* Hard surfaces, natural surfaces not intended to bear vegetation. Permeable surfaces overlaying soil.

** Kyleo is only approved for railway ballast under the Hard Surfaces category.

*** Clinic UP is also approved for Land immediately adjacent to aquatic areas.



Knapsack Use

Some of our products have approvals for use through hand held equipment. To safely and legally use this authorisation, the user must be PA1 (Safe use of Pesticides Module) and PA6 (Hand-held or Knapsack Sprayer Module) qualified.

Handheld equipment should be properly calibrated prior to use to ensure the application rate matches that approved for an individual product. All products are approved as a volume of product per treated Hectare.

1 hectare = 10,000 square metres.

Approved Products	Knapsack Approval
Thrust	
Depitox	
Duplosan	
Clinic Up	
Credit	

Label advice for the application of Thrust through a hand held applicator.

Size of Knapsack	THRUST	Water Volume
5 litres	45 ml	5 litres
10 litres	90 ml	10 litres
20 litres	180 ml	20 litres



Weed Comparison Chart

Selective Herbicides

	Creeping Buttercup	Daisy	Dandelion	Docks	Nettles	Plantains	Ragwort	Creeping Thistles
Depitox	√√√	√√(√)	√√(√)	√√(√)	√*	√√√	√√	√*
Duplosan KV	√*			√*	√√	√√√	√	√(√)
Thrust	√√√	√√√	√√√	√√(√)	√√√	√√	√√(√)	√√√
Turfmaster	√	√√	√√(√)	√	√√	√√(√)		√√

*Usually only aerial parts of the weed is controlled

Non-Selective Herbicides

	Grass	General Broad-leaved weeds	Clover	Mares Tail	Rosebay Willow Herb	Coltsfoot	Nettles	Oilseed Rape
Clinic UP	√√√	√√(√)	√√	√	√	√	√(√)	√√
Credit	√√√	√√(√)	√√	√	√(√)	√	√(√)	√√(√)
Kyleo	√√√	√√√	√√√	√√(√)	√√√	√√(√)	√√√	√√√

√√√ Susceptible, √√ Acceptable control can be achieved in ideal conditions, some regrowth may occur.

Seedlings usually controlled. √ Some suppression of weeds. (√) is a half mark.

The table above does not constitute a recommendation by Nufarm but is an indication of the level of control that might be obtained.

Ratings are from Nufarm experience and trials throughout Europe.

Different species of weed are controlled at different optimum size and timings. Please read product label for more specific advice.



Phenoxy herbicides are key tools in the control of grassland weeds. Due to their solubility in water, extra care must be taken to reduce potential pollution. The level of a pesticide in drinking water should not

exceed 0.1 parts per billion. These minute levels can be detected in water samples, so it is important to adopt effective Stewardship and observe the Best Practice Guidelines below.

Best Practice Guidelines

- Use approved products recommended by a BASIS qualified agronomist.
- Keep pesticides in a locked, bunded store.
- Application is made by a trained operator with current qualifications.
- Check and calibrate spray equipment on an annual basis.
- Fill in areas away from drains and water courses.
- Clear any spills immediately.
- Spray when weather and soil conditions are suitable i.e. no risk of drift and soils not too wet.
- Leave buffer strips between water courses and sprayed areas.
- Clean and wash sprayers at the end of the day.
- Dispose of washings on an untreated area of grassland.
- Never exceed label rates.





Nufarm Nufarm UK Ltd
Wyke Lane, Wyke, Bradford, West Yorkshire