Grassland and Maize Agronomy Guide.

CORTEVA™
agriscience

We're helping you to help your clients maximise their homegrown forage for a more sustainable and resilient future.

Our people, knowledge and expertise are on hand to help you advise them to grow the best quality and quantity forage for their livestock.

Our world increasingly cares about production methods, the environment and sustainability. In the UK and Ireland our emphasis on grass-based production systems resonates and consequently we are well placed to deliver on the consumer preferences that meet these concerns.

Farm More Forage offers a framework for a more in depth discussion on how to improve forage production and to be less reliant on bought-in feeds. This can reduce the overall environmental impact and bring financial benefits too.

We have a pipeline of new production solutions and a growing Forage Team focused on bringing together our current solutions, future innovation and expertise to help you drive excellence in forage agronomy.

Discover more at:
corteva.co.uk/forage
or scan the QR code.

SOW hybrid maize varieties from Pioneer, the world's leading breeder, to best suit your needs and maximise your yield potential.

NURTURE your forage crops with our wide range of proven, highly effective weed control solutions.

IMPROVE silage quality with our inoculants and enhance the use of nitrogen with our stabilizer technology.

Introduction to grassland

Grassland weed control

Choosing the right grassland herbicide for the right situation and applying it at the right time are key to livestock farmers being able to Grow Great Grass. Here are some of the main reasons why your livestock farmer should control weeds in their grassland.

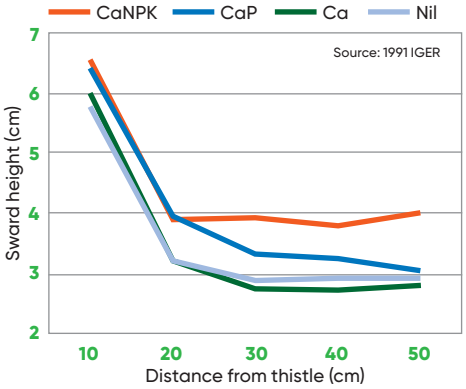
1 Financial

Grazed grass remains the lowest cost animal feed (Nix 2021) and production should be optimised in order to take full advantage of this.

According to AHDB every 1t DM/ha increase in utilised grass can equate to a potential increase in stocking rate of:

- 1.4 ewes per hectare
- 100kg of beef live weight gain per ha/year.

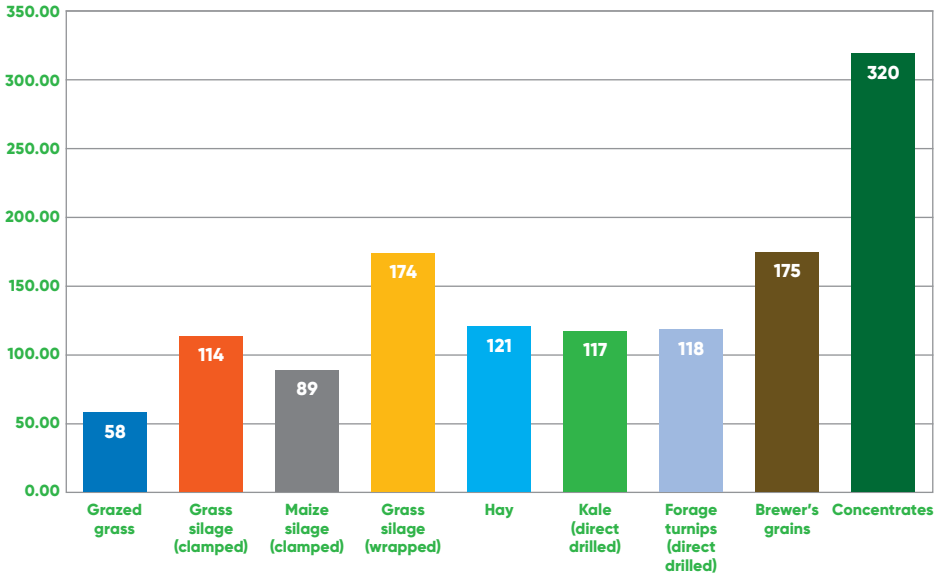
Another way of putting this is that each tonne of grass DM utilised would require almost a tonne of concentrates to be purchased as an alternative feed source.



Weeds reduce the area of land available to grazing animals e.g. each thistle can affect the grazing of 0.5m² of grass.

Relative costs of grazed grass to other fodder/forage options in £ per tonne Dry Matter.

Source: Nix 2022



The IGER study showed:

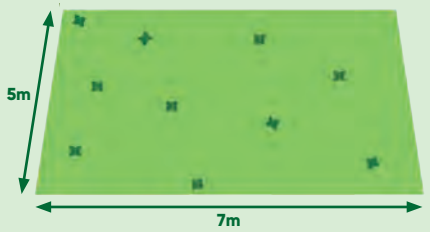
- Each thistle rosette exerted an influence on the surrounding sward height
- Thistles affected sward surface height for a distance of 30cm from the edge of the basal rosette
- Reducing inputs caused an increase in thistle abundance and substantially reduced the area for grazing.

Use the Farm More Forage App to calculate the true cost of docks and thistles.

Assessing weed populations

- The presence of even low levels of some weeds in grassland will drastically reduce grass production – a mere 10% dock infestation can reduce yield by 10% (SAC Trials).
- Count the number of docks in a 5m x 7m area.
- The number of docks counted equates to the % weed infestation.

The % dock population in a field can be calculated by counting the number of dock plants in a 5m x 7m block. One dock plant = 1% dock population.



SAC Trials concluded that once the dock population is at 10% or above, there is a direct correlation between the % dock population and the % of grass yield loss, e.g. 10 dock plants in the block (as above) represents a 10% dock population and this means a 10% grass yield loss.

2 Animal Welfare

- Some weeds cause stomach irritation e.g. chickweed and buttercup.
- Weeds reduce sward yields, energy content and quality e.g. docks.
- Some weeds are poisonous e.g. ragwort.
- Thistles can facilitate the spread of disease in animals e.g. orf in sheep.
- Buttercup can cause contact dermatitis in horses.

3 Legal

The Weeds Act 1959 requires that if an order is served on them, landowners have to control common ragwort, broad-leaved and curled docks and spear and creeping thistles. Ragwort is also covered by specific guidance applicable to each country within the UK.

Grassland herbicides choice and best practice

- Our portfolio of solutions meet a wide range of weed problems.
- All kill down to the roots yet offer excellent grass safety.
- All have a short stock exclusion period of just 7 days giving greater flexibility in use.
- They can be applied in a water volume down to 200 litres per hectare when using low drift nozzles.
- Our PET packaging is lightweight, strong, translucent to help gauge contents and conical to facilitate triple rinsing.
- We give comprehensive support through our Technical Hotline, a website with new Forage 'landing page', a dedicated Forage App for Advisors, valued supporting literature, Grassland and Maize Agronomy (GAMA) Updates, knowledgeable Area Managers and Forage Portfolio Specialists.

Best practice advice

- Always read the label.
- Know what restrictions are in place - stewardship schemes, codes of practice, IPM needs, cross compliance rules, etc).
- Choose the right (translocated) product for the right situation and weed spectrum.
- Use correct product rate, water volumes and nozzles to optimise coverage with minimal spray drift.
- For optimum results spray weeds whilst actively growing and, if possible, before they flower, or top them first and spray regrowth after 2-3 weeks.
- Not all weeds will be at the best growth stage for spraying at the time of application, so a follow-up treatment may be necessary.
- Ideal weed sizes to treat in established grass:

Broad-leaved and **Curled Dock**
Rosette stage, 150-250mm across or high

Too early | Just right | Too late

Creeping and **Spear Thistle**
Rosette stage, 150-250mm across or high

Too early | Just right | Too late

Common Nettle
Actively growing, before flowering

Buttercup and **Dandelion**
Actively growing, before flowering

Ragwort
Rosette stage, up to 200mm across or high

Bramble, **Broom** and **Gorse**
Between June and August when actively growing, before onset of senescence. Foliage must be thoroughly wetted.

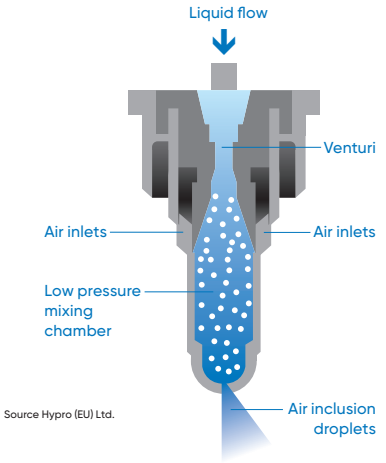
- Consider the proximity of any watercourses.
- We recommend that these products should be applied to grassland using low drift nozzles, if possible:
  - Reduced risk of drift
  - Water volume can be reduced down to 200L water per/ha.
- Observe pre-spraying rolling and cutting intervals.

- Observe post-spraying grazing intervals.
- Where ragwort is present, users should consult the relevant country Code of Practice on How to Prevent the Spread of Ragwort.
- Consider the presence of clover. The products covered in this guide will kill clover.
- Consider any grass/manure usage restrictions.
- Sprayer cleaning: to avoid subsequent injury to crops other than grassland and cereals, all spraying equipment must be thoroughly cleaned using the recommended method on our product label.
- It may be necessary to 'stitch' grass seed into the bare areas left behind after death of treated weeds to avoid new weeds replacing them.
- The Corteva Agriscience grassland herbicides covered in this guide are for professional use only, which means that they must be applied by someone with the relevant certificate, or by someone who is being supervised for the whole process by someone who has the relevant certificate. It is the responsibility of the purchaser to ensure that this is done.

Low drift nozzles use in grassland weed control

How does a low drift nozzle work?

- It is a flat fan nozzle where an internal venturi creates negative pressure inside the nozzle body.



Source Hypro (EU) Ltd.

- This creates larger droplets that contain small bubbles of air.
- The droplet is classified as a Coarse Spray, as defined by the BCPC system.
- The coarser droplet enables the spray to travel accurately from nozzle to target.
- On impact the bubble bursts leaving smaller droplets across the leaf for absorption.

Corteva Agriscience support the use of low drift nozzles for the application of our grassland herbicides and a water volume down to 200 litres/ha.

We encourage their use for the following reasons:

- Less drift (up to 75% reduction).
- Reducing spray drift is a requirement of the Plant Protection Products (Sustainable Use) Regulations 2012.
- Reduced buffer zone if 3 Star rating achieved.

Common grassland weeds

Docks (Broad-leaved and Curled)

Rumex obtusifolius and *Rumex crispus*

- A broad-leaved dock *(Rumex obtusifolius)* can produce 60,000 seeds.
- A curled dock *(Rumex crispus)* can produce 40,000 seeds.
- Seeds can remain viable for up to 80 years.
- It has been estimated that there can be up to there are approximately 12.5 million seeds/ha in top 15 cm of soil.
- They can regenerate shoots from tap roots.

Why control Docks?

- They thrive in intensively used and highly fertilised grassland.
- They compete aggressively with grass for light, water and nutrients.
- They provide just 65% of the feed value of grass from the same area.
- They are scheduled as an injurious weed so should not be allowed to spread or seed.

Treatment options for Dock control

- Topping is not enough as the deep roots allow them to recover and set viable seeds.
- Intensive grazing or silage cutting doesn't work.
- Corteva Agriscience solutions include Doxstar Pro, Forefront T, the Pas·Tor Agronomy Pack and Grazon Pro for spot treatment.
- Use Envy and Leystar in new sown leys to control seedling docks. Where docks have grown from root fragments and are stronger Envy is the better option.
- Use Forefront T when dealing with high populations and long established populations in grazing ground, otherwise use Doxstar Pro, unless there are also nettles present, in this case use Pas·Tor Agronomy Pack.

Common Chickweed

Stellaria media

- Annual broad-leaved weed.
- Propagates by seed in the soil.
- Common in autumn reseeds and under-sown grass after cereal crop has been removed.
- Capable of slow growth in low temperatures of winter.

Why control Common Chickweed?

- Rapid, prostrate growth.
- Competes aggressively with grass for light, water and nutrients.
- Can cause significant losses of yield especially when establishing new leys.
- Up to 25% reduction in silage yield has been recorded (SRUC Technical Note 2014).
- Presence in grass for silage increases difficulties when wilting.
- Presence in silage disrupts fermentation.
- Presence in hay increases difficulties when drying.

Treatment options for Common Chickweed control

- Grazing by cattle or sheep can graze chickweed out. Use adults animals, as young stock can experience digestive issues.
- New Sown Leys (Grassland <12 months old).
  Envy is the perfect choice for early spring control of chickweed. One of its powerful components, unlike most, works at much lower temperatures, meaning that chickweed can be sprayed from 1st February onwards, before it becomes a major problem.
  Later on in the spring when other weeds begin to grow either Envy or Leystar are ideal products to choose, depending on the weeds that are present.
  Whilst neither are clover safe, they do offer short re-sowing intervals of 12 weeks, if clover needs to be re-introduced.
- Established Grassland (Grassland >12 months).
  Where chickweed is a problem in established grassland, both Envy and Leystar can be used or where stronger perennial weeds, such as docks, are also present options include Doxstar Pro, Pas·Tor Agronomy Pack and Forefront T (for fields grazed by cattle and sheep only).

Creeping Thistle

Cirsium arvense

- A creeping thistle can produce up to 5,300 seeds, remaining viable for 10-21 years.
- Even a root fragment can remain viable for several years.
- Spreads primarily by vegetative growth of roots. The root system can grow as much as 6m horizontally in one season, with most patches spreading at the rate of 1-2 m/year.

Spear Thistle

Cirsium vulgare

- Biennial plant.
- Grows from seed - forms a rosette in first year and flowers in second year.
- Produces a tap root up to 70cm long
- Each plant produces up to 8000 seeds viable for up to 3 years.
- There can be as many as 16 million seeds/ha.
- Seed dispersed by wind up to 30m.

Why control Thistles?

- Established creeping thistle has extensive underground roots and competes strongly with grass.
- Spear thistle in the second year can spread to cover more than a square metre of ground, thus posing a serious threat to pasture productivity.
- Low infestation of just 1% will justify treatment.
- In addition, thistles can facilitate the spread of diseases such as orf in sheep and lambs.
- They are scheduled as an injurious weed so should not be allowed to spread or seed.

Treatment options for Thistle control

- Topping may be appropriate as a first step treatment to get different growth stages to the same stage ready for treatment with a suitable translocated herbicide.
- Preferred solution when thistles are the primary target is Thistlex. If other weeds are also present use Forefront T, Pas·Tor Agronomy Pack, or Grazon Pro for spot treatment.

Common Nettle

Urtica dioica

- Propagates mainly from extensive creeping rooting stolons.
- New plants develop from root sections- chopping them up does no more than multiply the problem.
- They will grow up to a height of 1 metre, eventually forming dense beds, which spread out across the field.
- Germination occurs if the soil is disturbed or sward open.

Why control Common Nettle?

- They make pasture unpalatable.
- They reduce the grazing area available to livestock.
- They reduce grass yield.

Treatment options for Common Nettle control

- Cutting clumps up to three times per year over successive years, first cut before flowering.
- Nettles are best controlled when young and actively growing at 15-25cm high.
- Corteva Agriscience solutions include Forefront T, Pas·Tor Agronomy Pack and Grazon Pro for spot treatment.

Creeping Buttercup

Ranunculus repens

- Perennial plant.
- Propagates from extensive creeping root stolons and seeds.
- Grows up to a height of 50cm.
- Flowers from May to September.
- Indicative of poorly drained, acidic soils.
- Acrid tasting and generally avoided by livestock.
- Can cause contact dermatitis.
- Can cause stomach irritation.

Why control Creeping Buttercup?

- To improve grass quality and palatability.
- To improve grass production (rejuvenation).
- To lengthen the life of the pasture.

Treatment options for Creeping Buttercup control

- Improve soil structure and drainage.
- Improve pH of soil.
- Preferred solution is Envy, but use Forefront T if other weeds are also present in fields grazed by cattle and sheep.

Photo taken June 2017 before treatment.

Sprayed with Envy - 2.0l/ha August 2017. Photo taken June 2018.

Dandelion

Taraxacum officinale

- Perennial plant.
- Has a deep tap root.
- Flowers from May to October.
- Propagates via seed that has adapted to wind dispersal.
- Can produce up to 400 seeds per flower head.
- An individual plant can produce between 2,000 to 12,000 seeds.

Why control Dandelion?

Dandelions:

- Compete for light
- Compete for water
- Compete for nutrients
- Compete for space.

This competition means that they reduce:

- Grass quality
- Grass yield.

Treatment options for Dandelion control

- Avoid overgrazing.
- Improve soil fertility.
- Corteva Agriscience solutions include Envy, Leystar and Doxstar Pro.

Common Ragwort

Senecio jacobea

- Biennial plant.
- Rosette stage in year 1.
- Taller flowering plant (up to 1 metre tall) in year 2.
- Damage to the crown will force growth habit to switch to perennial and the plant will flower every year.
- Severe cutting will keep the plant in the rosette stage.
- Live plants poisonous to livestock but not palatable in this state.
- Damaged/dying plants pose the most danger to livestock as they become more palatable.

Why control Ragwort?

- Poisonous to livestock, particularly when wilted, damaged or dead.
- Horses are particularly susceptible.
- Dried ragwort is a danger in hay.
- Ragwort present in silage will spread its poisonous alkaloids through the silage pit.
- Ragwort is also scheduled as an injurious weed so should not be allowed to spread or seed.

Treatment options for Ragwort control

- Uprooting ragwort will prevent spread of seed, although roots will remain.
- Cutting not a recommended option as assists persistency.
- Grazing by sheep in winter and early spring, but only for light infestations.
- Forefront T is the best herbicide treatment for grazing pastures grazed by cattle or sheep. Treat when plants are young and actively growing as this will speed up the senescence process.

Herbicides for grassland

Herbicide selection guide for grassland

New sown leys = grassland < 12 months old.
Established grass = grassland > 12 months old.

SITUATION	PROBLEM	SOLUTION*		DOSE RATE	WATER VOLUME**	PACK SIZE
Established Grassland (Silage/Cattle and Sheep Grazing)	Docks, Chickweed	Doxstar® PRO HERBICIDE	For use with a boom sprayer	2.0L/ha	300-400L/ha	2L
Established Grassland (Cattle and Sheep Grazing Only)	Thistles, Nettles	Thistlex® HERBICIDE	For use with a boom sprayer	1.0L/ha	200-400L/ha	3L
	Docks, Thistles, Nettles, Chickweed, Dandelions	Pas® • Tor® Agronomy Pack HERBICIDE	For use with a boom sprayer	Pas 1.0L/ha + Tor 1.0L/ha	300-400L/ha	2L + 2L Agronomy Pack
	Docks, Thistles, Nettles, Chickweed, Buttercups, Ragwort, Dandelions	Forefront® T HERBICIDE	For use with a boom sprayer	2.0L/ha	200-300L/ha	5L
New Sown Ley/ Established Grassland	Chickweed, Buttercups, Docks, Daisies, Dandelions	Envy® HERBICIDE	For use with a boom sprayer	1.5 L/ha *** New Sown Leys 2.0 L/ha Established Grass	200-400L/ha	3L
	Chickweed, Buttercups, Docks, Thistles, Daisies, Dandelions	Leystar® HERBICIDE	For use with a boom sprayer	1.0 L/ha *** New Sown Leys 2.0 L/ha Established Grass	200-400L/ha	2L
Spot Treatment	Docks, Thistles, Nettles, Brambles, Gorse, Broom	Grazon® PRO HERBICIDE	For use ONLY with a knapsack or hand-held lance	60 mls	10 Litres	1L

General conditions applying to all products
*The post-treatment stock exclusion interval for all the above products is 7 days in the absence of ragwort.
Pre-treatment grazing/cutting/rolling intervals may also apply.
**In addition to the direction on water volumes on the label, Corteva Agriscience supports the use of our grassland herbicides at 200 L/ha where low drift nozzles are used.
***Use All Clear Extra to clean sprayer after use.

Ragwort label guidance
†Where ragwort is present users should consult the Code of Practice on How to Prevent the Spread of Ragwort. Ragwort plants sprayed with these herbicides are more palatable and contain higher levels of toxins. Animals should be excluded from treated areas until any ragwort has completely recovered or died and there is no visible sign of the dead weed. Do not include treated ragwort in hay or silage crops.

Label changes for clopyralid containing products used on grassland (broadacre treatments)

Labels will begin to change during 2022 and certainly from 1st January 2023. This update is happening to mitigate against the risk of herbicide residues ending up in manures and composts which might be used where sensitive plants are grown. Why change now?

- More manure will be leaving farm of production for use elsewhere as interest in its use grows. For example, peat-based composts are being phased out and new raw materials are being substituted in such as animal manures
- Use of mulches and not digging in manures is practiced by a growing number of gardeners which can lead to longer break-down times of plant material and any clopyralid residues if present.

This change affects all products which contain clopyralid and have an approval for use on grassland.

Existing labels will permit sale and distribution up to 31st October 2022.

There will be a further 12-month period for "use" on farm up to 31st October 2023.

The updated labels will have a new MAPP number to help distributors manage old and new label stock.

Please review the key areas of risk mitigation below and follow them in 2022

Thistlex® **Pas®•Tor®** Agronomy Pack **Leystar®**

Established Grassland

DO NOT USE ON GRASSLAND that will be cut for animal feed (i.e. fresh cut grass, silage, hay and haylage), fodder or bedding nor for composting or mulching within one year of treatment.

DO NOT USE on grassland which will be grazed by horses and ponies.

Under no circumstances should manure resulting from the use of these products be supplied to gardeners or allotment holders, or commercial compost producers i.e. there must be no off-farm sale or supply, as sensitive plants may be affected by residues in the manure.

Leystar®

New Sown Leys

DO NOT make Hay, Haylage, Silage or Fresh Cut Grass if the resulting forage is going off farm.

If Hay, Haylage, Silage or Fresh Cut Grass is made and stays on farm then manure resulting from its use must also stay on the farm.

This manure must be returned back on to agricultural grassland, cereals or maize.

Doxstar® PRO

HERBICIDE

For use with a boom sprayer

A selective translocated herbicide for use in silage fields and established grass where docks need killing right down to the roots.

Key points:

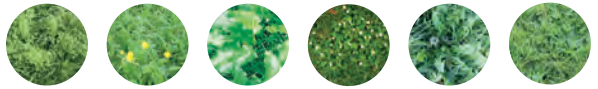
Active ingredients	150 g/L fluroxypyr + 150 g/L triclopyr
Weeds controlled	 Docks Chickweed Dandelions
Pack	2.0 litre PET
Application rate	2.0L/ha
Maximum total dose	2.0L/ha per year
Maximum number of applications	One per year
Application timing	When weeds are at the correct size and actively growing
Water volume	300L/ha or 400L/ha for high weed numbers or dense grass swards or down to 200L/ha if using low drift nozzles
Buffer zone	LERAP B
Weed health	Weeds must be actively growing; free from disease or insect damage; not suffering from frost, drought, waterlogging or nutrient deficiency
Post-treatment stock exclusion	7 days after treatment in the absence of Ragwort†
Cutting interval (pre-treatment)	Leave 14 - 21 days to allow sufficient regrowth of both grass and weeds
Cutting interval (post-treatment)	To allow maximum translocation to the weed roots, do not cut grass for 28 days
Rolling / harrowing interval	Avoid for 10 days before and/or 7 days after application
Rainfastness	2 hours when applied to a dry leaf
Clover	Will be damaged or killed
Re-seeding intervals	Grass 4 weeks Clover 6 weeks

Envy®

HERBICIDE

A selective translocated herbicide for use in horse paddocks, new sown leys, grass for seed and established grass where chickweed, buttercups, dandelions, daisies and docks need killing right down to the roots.

Key points:

Active ingredients	100g / litre fluroxypyr + 2.5g / litre florasulam
Weeds controlled	 Chickweed, Buttercups, Docks, Daisies, Dandelions, Plantains
Pack	3.0 litre PET
Application rate	1.0 - 1.5L/ha new sown leys and grass for seed 2.0L/ha established grass
Maximum total dose	1.5L/ha per year new sown leys and grass for seed 2.0L/ha per year established grass
Maximum number of applications	One per year
Application timing	New sown leys and established grass 1st February to 30th November Grass for seed 1st March to 30th November
Water volume	200L/ha on new sown leys. 200L/ha to 400L/ha (for high weed numbers or dense grass swards) on established grass or down to 200L/ha if using low drift nozzles
Buffer zone	LERAP B
Weed health	Weeds must be actively growing; free from disease or insect damage; not suffering from frost, drought, waterlogging or nutrient deficiency
Post-treatment stock exclusion	7 days after treatment in the absence of Ragwort† 14 days for high populations of buttercup
Cutting interval (pre-treatment)	Leave 14 - 21 days to allow sufficient regrowth of both grass and weeds
Cutting interval (post-treatment)	To allow maximum translocation to the weed roots, do not cut grass for 28 days
Rolling / harrowing interval	Avoid for 10 days before and/or 7 days after application
Rainfastness	2 hours when applied to a dry leaf
Clover	Will be damaged or killed
Sprayer tank cleaning	Use All Clear Extra
Re-seeding intervals	Grass 4 weeks Clover 3 months

Forefront® T

HERBICIDE

A selective translocated herbicide for use in established grass grazed by cattle and sheep where docks, thistles, nettles, dandelions, buttercups and ragwort need killing right down to the roots as part of a sward rejuvenation programme.

Key points:

Active ingredients	30g/L aminopyralid + 240g/L triclopyr
Weeds controlled	 Docks, Nettles, Thistles, Buttercups, Dandelions, Ragwort
Pack	5.0 litre PET
Application rate	2.0L/ha
Maximum total dose	2.0L/ha per year
Maximum number of applications	One per year
Application timing	When weeds are at the correct size and actively growing
Water volume	200L/ha or 300L/ha for high weed numbers or dense grass swards, or down to 200L/ha if using low drift nozzles
Buffer zone	LERAP B
Weed health	Weeds must be actively growing; free from disease or insect damage; not suffering from frost, drought, waterlogging or nutrient deficiency
Post-treatment stock exclusion	7 days in the absence of Ragwort† – only use on grazing ground grazed by cattle or sheep
Cutting interval (pre-treatment)	Leave 14 - 21 days to allow sufficient regrowth of both grass and weeds
Cutting interval (post-treatment)	Do not use Forefront T on fields to be utilised as fresh-cut grass, silage, hay or haylage, unless it is after the last cut
Manure	If manure is generated, keep it on the farm and apply to grazing grassland (see table on page 21)
Rolling / harrowing interval	Avoid for 10 days before and/or 7 days after application
Rainfastness	1 hour when applied to a dry leaf
Clover	Will be damaged or killed
Re-seeding intervals	Grass 4 weeks Clover 4 months

Forefront® T Stewardship guide

Forefront T is a very effective herbicide and is ideal for use on high populations of established weeds. It is an excellent product to rejuvenate permanent pasture where re-seeding is not possible. However, it cannot be used on grass being grown in the year of application to be utilised as fresh-cut grass, silage, hay or haylage, unless it is after the last cut. Also, it cannot be used on pastures where dung is collected e.g. horse or pony paddocks. Manure derived from such uses will contain traces of aminopyralid which could affect the subsequent growth of susceptible crops, especially tomatoes, beans, or potatoes.

For more information visit:
www.manurematters.co.uk

Forefront® T Stewardship Certification Course

It is a requirement of the product approval that advisors receive regular training in the use of Forefront T. A Forefront T Stewardship Certification Course for Advisors is available for this purpose and BASIS CPD points are awarded for completion.

We would like all BASIS Crop Protection Certificated Agronomists that already advise on the use of this product, or those that are interested in doing so for the first time, to undertake this training module.

The learning objectives of this course are:

- To improve your Forefront T product knowledge
- To understand the benefits of the Forefront T Stewardship programme
- To gain knowledge about using the Forefront T Stewardship Records Management Tool in the Corteva Forage App for Advisors
- To enable you to meet the standard required for Forefront T Advisor Certification.

The course will take experienced Forefront T Advisors approximately 45 minutes to complete. For those wishing to become Forefront T Certified Advisors for the first time, please allow another 15 minutes. The course doesn't need to be completed in one go. If you would like to access this course, please email **ukhotline@corteva.com** for registration.

Manure Matters

Manures are widely used by gardeners, as they are a great soil conditioner and can be an excellent source of nutrients. However, inappropriate use and dosage can lead to unwelcome plant growth symptoms. Weather factors, disease and viruses can also affect plant growth. Symptoms can resemble those from herbicide residue and can be wrongly attributed to the presence of herbicide residues.

manurematters.co.uk

This Corteva website will help gardeners and allotment holders who think they may have used manure or compost containing aminopyralid or clopyralid residues on their crops. Or who are concerned about possible residues in sources or manure or compost.

Discover more at **manurematters.co.uk**

Forefront® T Stewardship Record Management Tool

All sales of Forefront T must be recorded in this digital tool which resides in the 'Stewardship' section of the Corteva Farm More Forage App for Advisors. A PDF-based step-by-step course is available for those who are not familiar with the tool.

Forefront T manure management and following crops

This table is intended to be used as a visual to support the product label.

	Year 1 (Year applied)	Year 2	Year 3	Year 4
	2022	2023	2024	2025
Manure Management				
Cattle and Sheep Grazing (7 day interval post spraying excl. ragwort)	Also see Manure Restrictions.	Also see Manure Restrictions.		
Cutting	Must not be cut for forage*.	Can be cut for forage*. **Forage must NEVER leave the farm.** Also see Manure Restrictions.	Forage* cut in Year 3 onwards can leave the farm.	
Manure Restrictions	Manure generated must NEVER leave the farm. ONLY use on grassland.	Manure generated must NEVER leave the farm. ONLY use on grassland.	Manure generated in Year 3 onwards can leave the farm.	
Following Crops				
Reseed (grass)	Can be stitched in 1 month from spray date or manure spreading.			
MUST PLOUGH: Wheat	1 month from spray date or manure spreading.			
MUST PLOUGH: Reseed (grass/clover)	4 months from spray date or manure spreading.			
MUST PLOUGH: Other cereals	4 months from spray date or manure spreading.			
MUST PLOUGH: Maize	4 months from spray date or manure spreading.			
MUST PLOUGH: Oilseed rape	4 months from spray date or manure spreading.			
MUST PLOUGH: Legumes	Do not plant.	Do not plant.	Ensure plant remains completely decayed before planting susceptible crops.	
MUST PLOUGH: Potatoes				
MUST PLOUGH: Sugar beet/fodder beet				

* Forage - Hay, Haylage or Silage

Approved Not Approved

Grazon® PRO

HERBICIDE

The ideal selective translocated herbicide for spot treatment on small weed patches and isolated weeds on steep ground and along fence lines. Kills docks, thistles, nettles, brambles, gorse and broom right down to the roots.

Key points:

Active ingredients	240g/l triclopyr + 60g/l clopyralid
Professional use	Grazon Pro is for professional use. It may only be applied by a person who holds a PA1 and PA6 certificate of competence in the Safe Use of Pesticides (issued by the National Proficiency Test Council)
Weeds controlled	 Docks, Nettles, Thistles, Bramble, Gorse, Broom
Pack	Grazon Pro 1.0 litre PET
Application rate	60ml Grazon Pro per 10 litres water
Maximum total dose	1.2L product per ha
Maximum number of applications	One per year
Application timing	Between 1st March and 31st October
Buffer zone	LERAP B
Weed health	Weeds must be actively growing; free from disease or insect damage; not suffering from frost, drought, waterlogging or nutrient deficiency
Post-treatment stock exclusion	7 days after treatment in the absence of Ragwort†
Cutting interval (pre-treatment)	Leave 14 - 21 days to allow sufficient regrowth of both grass and weeds
Cutting interval (post-treatment)	To allow maximum translocation to the weed roots, do not cut grass for 28 days
Rolling / harrowing interval	Avoid for 10 days before and/or 7 days after application
Rainfastness	2 hours when applied to a dry leaf
Clover	Grazon Pro will damage or kill clover, but a well-aimed spray onto the target weeds will enable high levels of weed control to be achieved whilst minimising the effect on the overall clover population
Re-seeding intervals	Grass 6 weeks Clover 6 weeks
Stewardship	DO NOT apply onto or around manure or other compost heaps

Leystar®

HERBICIDE

A selective translocated herbicide for use in new sown leys, grass for seed, established grass, maize, cereals and undersown cereals where chickweed, thistles, buttercups, dandelions, daisies and docks need killing right down to the roots.

Key points:

Active ingredients	100g / litre fluroxypyr + 80g / litre clopyralid + 2.5g / litre florasulam
Weeds controlled in grass	 Chickweed, Dandelions, Plantains, Seedling Thistles, Seedling Docks
Pack	2.0 litre PET (Treats 2ha in new sown leys and 1ha in established grassland)
Application rate	1.0L/ha new sown leys and grass for seed. 1.5-2.0L/ha on established grass
Maximum total dose	1.0L/ha per year on new sown leys, grass for seed 2.0L/ha per year on established grass
Maximum number of applications	One per year
Application timing	New sown leys and grass for seed: 1st February to 31st August and 7 days prior to harvest. Established grass: end September and 7 days prior to harvest
Water volume	200L/ha on new sown leys. 200L/ha to 400L/ha (for high weed numbers or dense grass swards) in established grass or down to 200L/ha if using low drift nozzles
Buffer zone	LERAP B
Weed health	Weeds must be actively growing; free from disease or insect damage; not suffering from frost, drought, waterlogging or nutrient deficiency
Post-treatment stock exclusion	7 days after treatment in the absence of Ragwort† 14 days for high populations of buttercup
Cutting Interval (Pre-treatment)	Leave 14 - 21 days to allow sufficient regrowth of both grass and weeds
Cutting Interval (Post-treatment)	To allow maximum translocation to the weed roots, do not cut grass for 28 days
Rolling / harrowing interval	Avoid for 10 days before and/or 7 days after application
Rainfastness	2 hours when applied to a dry leaf
Clover	Will be damaged or killed
Sprayer tank cleaning	Use All Clear Extra
Re-seeding intervals	Grass 4 weeks, Clover 3 months
Stewardship	Please review the key areas of risk mitigation on the Topic Sheet shown on page 18 or scan the QR code to view a downloadable version of the guidance.

Pas® • Tor®

Agronomy Pack

HERBICIDE

For use with a boom sprayer

A pack which contains two powerful selective translocated herbicides (Pas and Tor) for use in established grass where docks, thistles and nettles need killing right down to the roots.

Key points:

Active ingredients	Pas 150g/L fluroxypyr + 150g/L triclopyr Tor 200g/L clopyralid + 200g/L triclopyr
Weeds controlled	 Docks Thistles Nettles Chickweed Dandelions
Pack	2 x 2 litre PET
Application rate	Best applied as a tank mix Pas 1.0L/ha + Tor 1.0L/ha to control the broadest range of perennial grassland weeds
Maximum total dose	Pas: 2.0L/ha/per year Tor: 1.0L/ha/per year
Maximum number of applications	One per year
Application timing	Between 1st March and 31st October Pas: as per Tor when applied in tank-mix Tor: 1st March to 31st October and 7 days before grazing or 28 days before cutting
Water volume	300L/ha or 400L/ha for high weed numbers or dense grass swards or down to 200L/ha if using low drift nozzles
Buffer zone	LERAP B
Weed health	Weeds must be actively growing; free from disease or insect damage; not suffering from frost, drought, waterlogging or nutrient deficiency
Post-treatment stock exclusion	7 days after treatment in the absence of Ragwort†
Cutting interval (pre-treatment)	Leave 14 - 21 days to allow sufficient regrowth of both grass and weeds
Cutting interval (post-treatment)	To allow maximum translocation to the weed roots, do not cut grass for 28 days
Rolling / harrowing interval	Avoid for 10 days before and/or 7 days after application
Rainfastness	2 hours when applied to a dry leaf
Clover	Will be damaged or killed
Re-seeding intervals	Grass 6 weeks Clover 6 weeks
Stewardship	Please review the key areas of risk mitigation on the Topic Sheet shown on page 18 or scan the QR code to view a downloadable version of the guidance.

Thistlex®

HERBICIDE

For use with a boom sprayer

A selective translocated herbicide for use in established grass where thistles need killing right down to the roots.

Key points:

Active ingredients	200g/L clopyralid + 200g/L triclopyr
Weeds controlled	 Creeping Thistle Spear Thistle
Pack	3.0 litre PET
Application rate	1.0L/ha
Maximum total dose	1.0L/ha/per year
Maximum number of applications	One per year
Application timing	Between 1st March and 31st October and on grass that is >1 year old and 7 days before grazing
Water volume	300L/ha or 400L/ha for high weed numbers or dense grass swards or down to 200L/ha if using low drift nozzles
Buffer zone	LERAP B
Weed health	Weeds must be actively growing; free from disease or insect damage; not suffering from frost, drought, waterlogging or nutrient deficiency
Post-treatment stock exclusion	7 days after treatment in the absence of Ragwort†
Cutting interval (pre-treatment)	Leave 14 - 21 days to allow sufficient regrowth of both grass and weeds
Cutting interval (post-treatment)	To allow maximum translocation to the weed roots, do not cut grass for 28 days
Rolling / harrowing interval	Avoid for 10 days before and/or 7 days after application
Rainfastness	2 hours when applied to a dry leaf
Clover	Will be damaged or killed
Re-seeding intervals	Grass 6 weeks Clover 6 weeks
Stewardship	Please review the key areas of risk mitigation on the Topic Sheet shown on page 18 or scan the QR code to view a downloadable version of the guidance.

Weeds controlled in grassland

Where we have knowledge of how our products might affect weeds we have detailed it in the following tables. ◤indicates information based on anecdotal or limited data, and is only indicative and should not be considered as a recommendation for use on the part of Corteva Agriscience. The user assumes full responsibility for use on these weeds.

Weed control key

	Good control		No information
	Moderate control	◤	Anecdotal or limited information
	Some control	TL = True Leaves	
	No control		

Annual weeds	Doxstar Pro 2.0L/ha	Envy 1.0L/ha	Envy 1.5L/ha	Forefront T 2.0L/ha	Grazon Pro 60ml per 10L	Leystar 1.0L/ha	Pas•Tor Agronomy Pack 1.0L + 1.0L/ha	Thistlex 1.0L/ha
Bindweed (black)	6TL / 50mm	2TL	4TL			4TL		
Bristly ox-tongue								
Charlock	2TL	4TL	200mm			4TL		
Chickweed	Before flowering	Before flowering	Before flowering			100 mm / Before flowering		<100mm
Cleavers	Before flowering / 100mm	200mm	Before flowering			200mm		
Corn chamomile			150mm			150 mm		
Corn marigold			6TL			6TL		
Cranesbill								
Dead-nettles	4TL / 50mm	2TL	2TL			2TL		
Fat-hen	2TL		2TL	2TL	2TL	2TL	2TL	2TL
Fool's parsley								
Forget-me-not	4TL	4TL	4TL			4TL		
Fumitory	2TL / 50mm		2TL			2TL		
Groundsel		2TL	2TL			2TL		
Hemp-nettle		4TL	6TL / 100mm			4TL		
Himalayan balsam								
Knotgrass	2TL	<4TL	6TL	4TL	4TL	4TL	4TL	
Mayweeds		6TL	<200mm			<200mm		< 4TL
Nettle (small)	100mm							
Nightshade (black)	6TL / 100mm		<4TL					
Orache								
Pale persicaria			2TL			2TL		
Poppy			<4TL			4TL		
Redshank		2TL	2TL			2TL		
Scarlet pimpernel								
Shepherd's-purse	2TL / 50mm		<4TL			<4TL		
Speedwells								
Spurrey		2TL	2TL			2TL		
Wild radish	2TL	4TL	<6TL / 80mm			<4TL / 50mm		
Yellow rattle								

Perennial weeds	Doxstar Pro 2.0L/ha	Envy 1.5L/ha New Sown Leys	Envy 2.0L/ha Established Grassland	Forefront T 2.0L/ha	Grazon Pro 60ml per 10L	Leystar 1.0L/ha New Sown Leys	Leystar 2.0L/ha Established Grassland	Pas•Tor Agronomy Pack 1.0L + 1.0L/ha	Thistlex 1.0L/ha
Bindweed (field)									
Bracken				1000 mm / full frond					
Bramble									
Broom									
Burdock									
Buttercups				Before flowering		From seed	Rosette		
Cinquefoil (creeping)									
Clover, trefoil									
Coltsfoot									
Cow parsley									
Daisy (common)				<2TL / 25 mm					
Daisy (ox-eye)									
Dandelion			Before flowering	Before flowering			Rosette		
Docks	200 mm	Seedling *	200mm	Rosette up to 250mm high/wide		Seedling	200mm	200 mm	
Gorse									
Ground elder									
Ground ivy									
Hawthorn									
Hemlock									
Hogweed (giant)									
Horsetail *(Equisetum)*									
Japanese knotweed				<1000 mm high, good foliage cover	<1000 mm high, good foliage cover				
Knapweed (common)									
Lesser celandine									
Mallow (common)									
Medick (black)									
Mugwort (common)									
Nettle (common)				<300 mm	Before flowering (normally up to mid June)				
Old man's beard									
Plantain (greater)							Rosette		
Plantain (ribwort)							Rosette		
Ragwort				Rosette up to 200mm high					
Rosebay willowherb									
Rushes									
Self-heal									
Silverweed									
Sorrel (common)									
Thistles				Rosette up to 250mm high	Rosette 4-10 leaves, 150mm high/wide	1TL		Rosette 150-250 mm across/high	Rosette 200 mm across/high
Vetch, tare									
Yarrow									
Yellow/Flag Iris									

* includes Docks growing from root fragments

Pioneer silage inoculants

Produce great silage with our high performing inoculants to improve the success of the silage making process

- Improved stability and digestibility
- Developed from patented bacteria
- Faster, more efficient fermentation and less dry matter loss
- Some products available as Rapid React

Silage technologies

We use a range of both traditional technology and fibre technology, which contains Lactic acid producing bacteria and a unique patented strain of *Lactobacillus buchneri*. During ensiling *L. buchneri* releases ferulate esterase enzymes which increase fibre digestion rates by freeing the contents of cell walls locked up through their physical association with lignin. These cell wall contents would otherwise be unavailable for digestion.

This improvement in digestibility is in addition to the enhanced fermentation and aerobic stability that is provided by the Lactic acid producing bacteria and the compounds produced by *L. buchneri* included in all Fibre Technology products.

RAPID REACT
AEROBIC STABILITY

We've also recently introduced Rapid React technology which includes a newly registered strain of *L. buchneri* that speeds up the onset of aerobic stability by as much as five days when compared to non-Rapid React formulated inoculants. Selecting the most appropriate inoculant for any given forage is essential and can have dramatic effects on meat and milk production profitability.

Grass silage

Pioneer BRAND 1188 continues to be the product of choice for treating grass cut at 25% dry matter content or less. It has a unique ability to utilise the available sugars and lower the pH, so that a stable acid fermentation is reached as fast as possible.

To improve the aerobic stability of drier grass silage, **Pioneer BRAND 11A44** is recommended. **11A44** contains a single strain of *L. buchneri* and can also be used to improve the stability of drier silages, including whole crop cereals, maize, and crimped moist cereal and maize grains.

For producers seeking better silage quality combined with improved aerobic stability, **PIONEER BRAND 11G22 RAPID REACT** is suitable. **11G22** utilises a combination of homofermentative lactic acid producing bacteria with heterofermentative *L. buchneri* bacteria to increase lactic acid production, lowering pH quickly, followed by compounds that inhibit the growth of yeasts and moulds.

To improve the fibre digestibility of grass silage over 25% dry matter, we would recommend **Pioneer BRAND 11GFT** which uses fibre technology.

Maize silage

For better quality silage and improved aerobic stability, **Pioneer BRAND 11C33 RAPID REACT** is suitable whilst **11CFT**, which utilises the fibre technology, can be used to enhance fermentation and fibre digestibility to improve animal performance. **Pioneer BRAND 11B91** can be used on crimped maize grain.

Cereal/pea silage

For wholecrop cereal silages, we recommend **Pioneer BRAND 11GFT** to improve fibre digestibility and stability.

Bio-gas production

Pioneer BRAND 11CH4 is particularly good for developing aerobic stability for any silage over 25% dry matter intended for biogas production.

Product form and application

Our silage inoculants are water-soluble and supplied in bottles sufficient to treat either 50 or 250 tonnes of forage. Our water-soluble inoculants can be easily applied using any **Pioneer Appli-Pro®** application equipment and many other types of liquid applicators.

PIONEER®

Unique fibre technology

Product	Forage	Improvement purpose
PIONEER® **11GFT**	Grass and wholecrop cereal silages	Fermentation, animal performance and fibre digestibility, aerobic stability
PIONEER® **11CFT**	Maize silage	Fermentation, animal performance and fibre digestibility, aerobic stability
PIONEER® **11CH4**	A wide range of high dry matter silages	Aerobic stability and gas production
PIONEER® **11GH4**	High dry matter grass and cereal silages	Fermentation and aerobic stability of grass and wholecrop silages intended for gas production

Traditional technology with Rapid React

Product	Forage	Improvement purpose
PIONEER® **11G22** RAPID REACT AEROBIC STABILITY	High dry matter grass, wholecrop cereal and pea/cereal silages	Fermentation, animal performance and aerobic stability
PIONEER® **11C33** RAPID REACT AEROBIC STABILITY	Maize silage	Fermentation, animal performance and aerobic stability
PIONEER® **11B91** RAPID REACT AEROBIC STABILITY	Crimped maize grain	Fermentation, animal performance and aerobic stability
PIONEER® **11A44** RAPID REACT AEROBIC STABILITY	A wide range of high dry matter silages	Aerobic stability
PIONEER® **1188**	Grass silage below 30% dry matter	Fermentation and animal performance
PIONEER® **11A44**	A wide range of high dry matter silages	Aerobic stability
PIONEER® **11XH4**	A wide range of high dry matter silages	Fermentation and aerobic stability in a wide range of silages intended for gas production

Pioneer maize hybrids

Sow great maize with our range of leading hybrids to maximise your growing situation

- High dry matter
- Early maturing
- Great starch content
- Strong vigour

Pioneer maize hybrids to produce forage and grain for animal production, and the generation of biogas.

Every year, we extensively test our maize hybrids to measure their performance in a variety of growing conditions using Pioneer Accurate Crop Testing System (PACTS®) trials and publish the results to help growers identify which Pioneer hybrids are best suited to their location and circumstances.

Pioneer maize seed is supplied in bags containing either 50,000 or 1.5 million kernels that are treated with LumiGEN Seed Treatment options, an industry-leading seed treatment that helps farmers establish healthy, uniform crops and maximise productivity.

PACTS® hybrid performance highlights

P7326

Is our biggest selling maize hybrid in the UK and for good reason; even on less favourable sites its earliness, quality and yield are consistent.

P7034

Is our first dent type hybrid adapted to cool maritime growing conditions, such as those found in the UK and Ireland, and can be grown on all but the least favourable sites. Its dent grain texture provides higher grain yields and silage starch content, and the in-built higher levels of ruminal starch degradability ensure the best possible silage quality immediately after ensiling.

P7378

With a dry matter content like that of P7326, this higher yielding hybrid provides growers on lighter soils the chance to lift their silage dry matter and starch yields.

P7524

Is ideally suited to growers looking for an early maturity hybrid that can surpass current silage dry matter yields. It is also suitable for biogas production due to its particular combination of high dry matter yield and gas production potential.

P7892

Is popular and very early maturity hybrid that combines high dry matter yields with high starch yields. It has a strong package of agronomic features including very good early vigour and fast stover dry down.

P7948

This intermediate maturity and large stature hybrid is a true flint grain type that will find favour with growers aiming to produce high dry matter yields for gas production and those growers looking for an intermediate maturity hybrid for sowing under film with the Samco System.

P8200

In PACTS® trials over many locations, P8200 has shown excellent adaptation to favourable sites when grown in the open, and a wide range of sites when sown using the SAMCO system. It's a very large stature hybrid that dries down rapidly at maturity, producing very high dry matter yields.

P8201

In recent years, P8201 has topped the PACTS Samco System trials summary. It combines a very high dry matter yield with a good starch yield, responding to the heat generated under the film to provide growers using the Samco System with the yield increase they are looking for when adopting this high output cultivation system.

PACTS® hybrid agronomic descriptions for 2022

Hybrid	PACTS® Maturity Description	Soil Type Preference			FAO Rating (Silage)	Early Vigour	Resistance to Lodging	Stover dry-down at Maturity	PACTS® Eyespot Resistance Scores*
		Light	Medium	Heavy					
P7326	Extra Early	←	——	→	180	Very Good	8.2	Fast	6.2
P7364**	Very Early	←	——	→	180	Very Good	8.2	Fast	-
P7378	Very Early	←	——		180	Very Good	7.4	Fast	4.4
P7034	Very Early	←	——		190	Good	8.2	Moderate	5.4
P7892	Early	←	——		200	Very Good	8.3	Very Fast	6.3
P7524	Early	←	——	→	200	Very Good	8.3	Moderate	7.6
P7948	Early	←	→		230	Good	8.3	Moderate	7.8
P7460	Intermediate	←			230	Average	8.3	Slow	-
P8201	Intermediate	←	→		230	Very Good	8.1	Moderate	6.5
P8200	Intermediate	←	——	→	230	Good	7.8	Moderate	8.6
P8329	Very Late	←	——		250	Very Good	8.2	Moderate	-
P8171	Very Late	←	——		250	Good	7.8	Slow	-

*Scores based on a 1 - 9 scale where 9 = high resistance; data sourced from registration trials and PACTS® trials depending upon hybrid

**Available in Ireland in 2022

For the full list of Pioneer maize hybrids for the UK and Ireland, download the 2022 -23 PACTS book: www.corteva.co.uk/pioneer

Accent®

HERBICIDE

A high-load nicosulfuron much valued for its post emergence control of a broad spectrum of weeds in forage maize.

Key points:

Active ingredient	750g/kg nicosulfuron
Weeds controlled in forage maize and cereals	Broad-leaved weeds and grasses
Application rate	60g/ha + adjuvant
Maximum total dose	60g/ha
Maximum number of applications	One per year
Application timing	Apply from the two leaf stage (BBCH 12) up to and including the eight leaf stage of crop growth (BBCH 18)
Water volume	200-300L/ha
Buffer zone	LERAP B
Weed health	Weeds must be at the correct growth stage and actively growing
Following crops after forage maize	Winter wheat and winter barley may be sown, after ploughing, in a normal crop rotation. All other crops may be sown in the following spring. In the case of crop failure, maize may be re-sown after ploughing.
Rainfastness	-
Sprayer tank cleaning	Use All Clear Extra

For further information refer to
https://www.corteva.co.uk/products-and-solutions/crop-protection/accent.html

Dow Shield® 400

HERBICIDE

A foliar acting herbicide effective against a range of perennial and annual weeds, in particular thistles and mayweeds.

Key points:

Active ingredient	400g/l clopyralid
Weeds controlled in forage maize	Broad-leaved weeds including Thistles, Mayweeds and Groundsel
Application rate	0.25L/ha
Maximum total dose	0.25L/ha
Maximum number of applications	One per year
Application timing	Up to and including 9 or more true leaves unfolded (BBCH19). Do not use between 31st August and 1st March.
Water volume	200-250L/ha
Buffer zone	None
Weed health	Weeds must be at the correct growth stage and actively growing
Following crops after forage maize	Dow Shield 400 residues in plant tissues (including manure and digestate) which have not completely decayed may affect succeeding susceptible crops. The presence of soil bacteria in aerobic conditions leads to the breakdown of clopyralid. With a digester being anaerobic, and unlikely presence of soil bacteria, clopyralid is not significantly broken down, and consequently clopyralid residues may be present in digestate and can affect subsequent crops. If treated crop remains have not fully decayed by the time of planting following crops then avoid planting: peas, beans and other legumes; carrots and other Umbellifers; potatoes; lettuce and other Compositae; glasshouse and protected crops.
Rainfastness	6 hours

For further information refer to
https://www.corteva.co.uk/products-and-solutions/crop-protection/dow-shield-400.html

Leystar®

HERBICIDE

A new herbicide option for forage maize, comprising three very effective herbicide actives which combine together to control a very wide range of broad-leaved weeds.

Key points:

Active ingredients	100g / litre fluroxypyr + 80g / litre clopyralid + 2.5g / litre florasulam
Weeds controlled in forage maize and cereals	Cleavers, Chickweed, Corn Spurrey, Thistle, Forget-me-not, Mayweeds, Shepherd's Purse, Volunteer OSR, Runch
Application rate	1.0L/ha maize 1.0L/ha winter and spring wheat, barley, oats, rye, triticale, spelt and durum wheat and these crops undersown with grass
Maximum total dose	1.0L/ha maize 1.0L/ha winter and spring wheat, barley, oats, rye, triticale, spelt and durum wheat and these crops undersown with grass
Maximum number of applications	One per year
Application timing	**Forage maize:** before 7 leaves unfolded and before 30th June **Cereals and cereals undersown with grass:** from 1st February once the crop has reached the 3 leaf stage up to and including GS39 or until 30th June
Water volume	150-400L/ha maize 80-250L/ha cereals and cereals undersown with grass
Buffer zone	LERAP B
Weed health	Weeds must be at the correct growth stage and actively growing
Following crops after forage maize	**Crops that can be sown in the same year as a maize crop treated with Leystar is harvested:** cereals, oilseed rape, grass and vegetable brassicas as transplants. **Crops that can be sown in the calendar year following treatment with Leystar:** cereals, oilseed rape, field beans, grass, linseed, peas, sugar beet, potatoes, forage maize, clover (for use in grass/clover mixtures), carrots and vegetable brassicas as transplants
Rainfastness	2 hours when applied to a dry leaf
Sprayer tank cleaning	Use All Clear Extra

Note Some AD plants may have restrictions on Leystar® use if digestate is used on certain crops or in green waste.

Starane® HI-LOAD HL

HERBICIDE

An excellent contact herbicide for some key weeds in forage maize, notably cleavers, chickweed, bindweed and black nightshade.

Key points:

Active ingredient	333g/l fluroxypyr
Weeds controlled in forage maize	Broad-leaved weeds including Black Nightshade
Application rate	0.6L/ha
Maximum total dose	0.6L/ha
Maximum number of applications	-
Application timing	From 3 leaf stage (BBCH 13) to before the 7 leaves unfolding stage (BBCH 16). Do not apply once the buttress roots (side roots) have started to develop on the first node.
Water volume	200-400L/ha
Buffer zone	5m aquatic
Weed health	Weeds must be at the correct growth stage and actively growing
Following crops after forage maize	No following crop restrictions. Allow 5 week interval, 6 weeks for clover.
Rainfastness	6 hours

Note Do not apply in tank mix with any other product or if the crop is beyond the recommended growth stage. Avoid boom overlap.

Weeds controlled in maize

Where we have knowledge of how our products might affect weeds we have detailed it in the following tables. ◤ indicates information based on anecdotal or limited data, and is only indicative and should not be considered as a recommendation for use on the part of Corteva Agriscience. The user assumes full responsibility for use on these weeds.

Grasses	Accent 45g/ha	Accent 60g/ha	Dow Shield 400 0.25L/ha	Leystar 1.0L/ha	Starane Hi-Load 0.6L/ha
Annual meadow grass					
Blackgrass					
Canary grass* (Pre tillering)					
Cockspur grass					
Common couch (top growth only)					
Creeping fescue					
Ryegrass – Italian and Perennial					
Silky bent					
Volunteer cereals					
Wild-oats					

Weed control key

	Good control		No control	TL = True Leaves
	Moderate control		No information	
	Some control	◤	Anecdotal or limited information	

Broad-leaved	Accent 45g/ha	Accent 60g/ha	Dow Shield 400 0.25L/ha	Leystar 1.0L/ha	Starane Hi-Load 0.6L/ha
Annual mercury		4TL			
Bindweed (black)		4TL	1TL	4TL	6TL
Bindweed (field)		4TL			
Charlock		4TL		4TL	
Chickweed		4TL		100 mm / b4 flowering	up to flowering
Cleavers		4TL		200mm	up to flowering
Comfrey		4TL			
Common amaranth		4TL			
Corn chamomile				150 mm	
Corn marigold			2TL	6TL	
Corn mint		4TL			
Cranesbill (small-flowered)		4TL			
Docks (from seed)					4TL
Fathen		4TL		2TL	
Field pennycress		4TL			
Forget-me-not				4TL	up to flowering
Fumitory		4TL		2TL	2TL
Gallant soldier		4TL			
Goosefoot (many seeded)		4TL			
Goosefoot (maple-leaved)		4TL			
Groundsel		4TL	6TL	2TL	
Hemp nettle		4TL		4TL	up to flowering
Knotgrass		4TL		4TL	2TL
Mayweeds		4TL	4TL	<200mm	2TL
Nettle (small)					
Nightshade (black)		4TL			4TL
Orache					
Pale Persicaria		4TL	1TL	2 TL	2TL
Pansy (field)		4TL			
Poppy				4TL	
Red dead nettle		4TL		2TL	4TL
Redshank		4TL	1TL	2TL	2TL
Runch		4TL			
Shepherd's purse		4TL		<4TL	
Sow thistle		4TL	2TL		
Speedwell (common field)		4TL			2TL
Spurrey (corn)		4TL		2TL	2TL
Thistle (creeping, from seed)		4TL	4TL	1TL	
Volunteer oilseed rape		4TL			
Wild radish		4TL		<4TL / 50mm	
Volunteer potatoes					

Notes

Notes

For forage advice call the Technical Hotline on: 0800 689 8899 or email: ukhotline@corteva.com, or visit: www.corteva.co.uk/forage

Earn CPD Points.

2 BASIS points and/or 1 NRoSO point will be awarded to those reading this Guide.

BASIS

City & Guilds NROSO
National Register Of Sprayer Operators

For BASIS points please include course name 'Grassland and Maize Agronomy Guide' and the relevant BASIS ref number:

CP/111067/2122/g valid until 31st May 2022
CP/116055/2223/g valid until 31st May 2023

and add to the training record, then send to cpd@basis-reg.co.uk

For two NRoSO points please include course name 'Grassland and Maize Agronomy Guide' and NRoSO ref number:

NO470535f valid until 31st Jan 2023

and add to the training record, then send to nrosocpd@cityandguilds.com

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