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Seeds

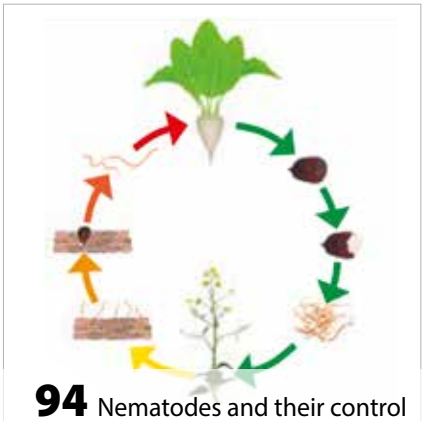
Agriculture

FELDSAATEN · FREUDENBERGER ·

6 Feldsaaten Freudenberger

24 Grassland management

56 Seeding by drones



94 Nematodes and their control

130 75th anniversary

Dear Reader,

Feldsaaten Freudenberger has been a family-run business since our company was founded in 1948, and is now led by the second and third generations. Our company culture has been one of horizontal hierarchies, allowing decisions to be made quickly and without red tape. This has given us the enormous advantage of being able to react swiftly to customers' needs and individual requests, not to mention the ability to adapt to market conditions as quickly as possible. The deep bonds our employees have with our company means that we don't just have long-term employees, but rather that there are families in which multiple generations have worked for Feldsaaten Freudenberger. We are very proud of the loyalty our employees have shown us, which gives us a bright outlook for the future.

A good team is the foundation of a company's success, and there's nothing that can replace it!

If you'd like to get to know us better, please pay us a visit.

We would be delighted to welcome you here in Krefeld!

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Feldsaaten Freudenberger

A family business with tradition

In 1948, Feldsaaten Freudenberger was founded in Krefeld by Siegfried Freudenberger as a one-man operation. He was able to acquire his first seeds from the military government of the British Army. His own bedroom served as the company's first office and storeroom. Its space requirements grew as the company enjoyed growing success, and in 1949 the operations had to be moved to a former restaurant, which became the company's headquarters. The business grew steadily, and so did the number of employees, along with offices and vehicles – all in order to fulfil the growing demand for seed.

Following additional growth and another move in the 1950s into a larger premises, construction began in 1968 on the first building of the current headquarters, located in Krefeld Gartenstadt (North Rhine-Westphalia, Germany). Since that move, the headquarters have been expanded through the construction or acquisition of new buildings, but the site remains to this day.

Further expansion is definitely on the cards!

FACTS & FIGURES

• Founding:	1948
• Employees:	> 210
• Storage and production facilities:	80,000 m²
• Annual sales volume:	> 60,000 t
• Own varieties:	> 200
• Annual turnover:	> €150 million
• Customers:	> 7,000 in over 70 countries
• Mixing machines:	17
• Cleaning plants:	3
• Small packaging plants:	10
• Bagging plants:	12
• Laboratories:	2
• Experimental and demonstration farm:	1

Today, Feldsaaten Freudenberger is one of the largest retailers of lawn grasses in Europe, offering an extremely broad product portfolio. It takes a particularly complex company structure to develop, produce and store a product, and then to deliver it to the customer. Some of these divisions are presented below:

Production
Numerous filling stations allow us to satisfy our customers' needs, filling packages in a variety of sizes and types, ranging from 250 grams up to 1 tonne. The types of packaging available include collapsible boxes, stand-up bags, pouches, flat foil bags, plastic bags, paper bags and big bags. The large fleet of machinery, along with highly motivated employees, ensures considerable flexibility when producing premium products.

Storage
The 80,000 m² of storage space is divided between five warehouses on the company's land as well as additional external warehouses. This is the only way that large enough amounts of seed can be kept on hand so that customers can always get just what they need. The warehouses contain both incoming raw product as well as fully processed items that are stored under optimal conditions until they are delivered. The smooth operation of the storage facilities is in the hands of an efficient team and a modern fleet of gas and electric forklifts, along with additional goods transport equipment.

Logistics
Especially in the spring months, effective logistics are indispensable when it comes to making sure that customers get their deliveries on time. As soon as the temperatures begin to rise and the first signs of spring emerge, there is a spike in the demand for seeds. Throngs of gardeners and farmers want to restore their fields as quickly as possible and bring life back to their garden with a timely planting. During this period, logistics runs at full tilt, using 20 loading bays to get orders onto trucks from early in the morning until late in the evening. This makes it possible to deliver massive quantities of seed to customers in a short timeframe.

Administration
In order to look after such a large number of products and customers as effectively as possible, Feldsaaten Freudenberger has an administration division with a large number of offices and meeting rooms. Individual departments communicate with one another over various channels in order to ensure customers receive outstanding service.

Show garden

Not far from the company grounds is the 12 000 m² show garden, which was created as a demonstration site as well as an experimental facility. Agricultural species, flowering plants and lawn grasses are cultivated in large quantities on hundreds of individual plots. The lawn grass plots are used for trials of different varieties and mixtures, making it possible for visitors to see and feel the differences between different varieties of a single species and come away with their own impression based on real-world conditions. A team of specialists helps keep the site in tip-top condition 365 days a year.

Research and development

The importance and scope of research and development at Feldsaaten Freudenberger have grown steadily in recent years. Seed-specific processes like rhizobia treatment and coating technology are researched in depth, and suitable solutions are perfected to market readiness. Seedlings of individual species and mixtures are also cultivated in a laboratory setting and exposed to various conditions. This helps to elucidate which candidates are best suited to difficult conditions like salt content, drought, standing water or certain temperature ranges. The research laboratory, with its modern and extensive facilities, is ideal for carrying out these studies.

A quality assurance lab also operates separately from the research lab.

Our Coated Seed

Water Efficiency during Climate Stress

COMPONENTS & CLIMATE STRESS

Every new generation of Coated Seed aims to find potential areas for improvement in the product itself while also tackling new challenges. In recent years, these challenges have predominantly been due to climate stress caused by lengthy periods of extreme heat. Consequently, one of the main areas of focus has been the search for coating components that have a positive effect on water use efficiency. Naturally, any change to the Coated Seed formula must retain all of the benefits of earlier iterations.

SAVING WATER RESOURCES

Using Coated Seed during increasingly prolonged dry periods should help ensure that the extremely limited water supply, often only available for short periods, is absorbed quickly and efficiently and passed along to the seedling as needed. This makes it possible to continually and sustainably improve existing stands or to sow new crops in spite of prolonged droughts.

IMPROVING WATER EFFICIENCY

Periods of warm weather in recent years have led to a spike in the use of irrigation. At times, uneven or compacted soil can result in the formation of small puddles, resulting in improper alignment of the irrigation systems. Coated Seed can also protect against the effect of standing water in these conditions, serving as a buffer and ensuring reliable germination in spite of the saturated soil.

ADVANTAGES OF COATED SEED OVER UNCOATED SEEDS

FEATURES OF COATED SEED

- Considerably **greater water use efficiency** in dry and wet conditions
- **Active seedling acceleration** (greater germination speed) and consistently **higher germination rates** (improved germination capacity) through the use of biostimulants

- Even seed distribution and homogeneous field emergence
- Higher emergence rates through improved soil contact
- Optimal early development of seedling
- Improved protection against abiotic (non-living) environmental hazards
- Improved clay-humus complex formation
- After breaking down, the material can be fully absorbed by plant roots
- Adjusted pH value
- Controlled release effect
- Long-lasting improvement to soil structure
- Low disease susceptibility and heightened resilience through a vitalisation of the young plants
- Harmless to humans and animals

UNCOATED VS. COATED SEEDS

EVAPORATION VS. WATER ABSORPTION

What the coating is made of

Coated Seed: A Cross Section

Coated Seed Varieties

The right coating for every use

The basis of all **Coated Seed varieties**

Supplemented with **rhizobia** inoculation for faster nitrogen fixation by legumes

With the **microorganisms** Bacillus sp. and Azospirillum sp. for natural vitalisation

With **organic certification**

Coated Seed

The surest path to successful sowing

With Coated Seed, seeds are enveloped in essential substances that promote germination. The coating is made up of several components, including calcium carbonate for pH regulation and rock meals. A variety of nutrients also make up important components of the coating. Coated Seed can be visually distinguished with ease from uncoated seed, even though the coating does not change the seed's shape.

The advantages of the coating apply to both individual seeds and seed mixtures, regardless of whether they are sown manually or mechanically. The contrast with normal non-coated seed becomes clearly visible within a few days: Plants whose seeds were covered with the coating have a head start in their growth when compared to normal non-coated seeds, which allows them to become established more quickly.

Simple sowing of Coated Seed using

Overseeding machine

Universal sowing machine

Drones

Permanent pastures

In addition to a high yield for fodder production and grazing, the grassland must be perennial and form a dense sward. To this end, the species and varieties contained in the mixtures must be adapted to the region's unique conditions, whether they are used for reseeding or for new planting. High-performance grasslands will grow in both favourable and unfavourable locations only if the sward contains exclusively high-quality grasses and clover species.
For these applications, ProGreen® offers a wide portfolio of grassland mixtures that offer the right product for both new planting and reseeding. Our product finder on the following page will help you select the right product for your specific site needs and desired intensity of utilisation. If you don't see the right mixture there, please feel free to contact us for a professional consultation.

Product finder: Permanent pasture

Product	Number of cuts per year		Pasture	Cut	Clover	Climate				Winter hardiness			Soil type				Description
						Dry	Normal	Wet	Standing water	l	m	h	s	sl	ls	c	
ProGreen® 3 with clover	Intensive permanent pastures and hay pastures	5–7	✓	✓	✓		←	—	→	■	■	■		■	■	■	For sites suitable for ryegrass cultivation that see frequent use, primarily for grazing
ProGreen® 3 without clover			✓	✓	-		←	—	→	■	■	■		■	■	■	
ProGreen® 7 with clover			(✓)	✓	✓		←	—	→	■	■	■		■	■	■	
ProGreen® 7 without clover			(✓)	✓	-		←	—	→	■	■	■		■	■	■	
ProGreen® 16		4–5	(✓)	✓	✓	←	—	—		■	■	■		■	■		For all sites with a high frequency of utilisation for grazing and/or cutting
ProGreen® 2 with clover			✓	✓	✓		←	—	→	■	■	■		■	■		
ProGreen® 2 without clover			✓	✓	-		←	—	→	■	■	■		■	■		
ProGreen® 6		3–4	✓	✓	✓		←	—	→	■	■	■		■	■	■	For all sites with moderately frequent utilisation for cutting and/or grazing, even ones that are temporarily flooded
ProGreen® 1			✓	✓	✓		←	—	→	■	■	■		■	■	■	
ProGreen® 17		3–4	(✓)	✓	✓	←	—	—		■	■	■		■	■		For sites at risk of drying up and sites that are dry in summer
ProGreen® 4			(✓)	✓	-	←	—			■	■	■		■	■		
ProGreen® 5	Reseeding				-		←	—	→	■	■			■	■	■	Reseeding mixture to maintain productive pastures and improve swards with gaps
ProGreen® 12					-		←	—	→	■				■	■	■	
ProGreen® 13					✓		←	—	→	■	■			■	■	■	
ProGreen® 9	Extensive pastures	2–4		✓	-	←	—			■	■	■		■	■	■	Grassland mixture for dry sites
ProGreen® 10				✓	✓	←	—			■	■	■		■	■	■	
ProGreen® 14 dry	Herb mixture				✓	←	—			■	■			■	■	■	Herb mixture for pastures, meadows and agricultural sites used to produce fodder with high dietary quality
ProGreen® 15 wet					✓		←	—	→	■	■			■	■	■	

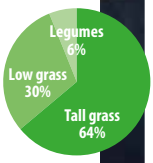
Legend				
Winter hardiness				Soil type
■			l - low	s - sandy
■	■		m - moderate	sl - sandy loam
■	■	■	h - high	ls - loamy sand
				c - clayey

ProGreen® 1

Permanent pasture standard G I

Clover-containing mixture for cool to damp sites

47% Meadow fescue
17% Timothy grass
10% Red fescue
10% Smooth-stalked meadow grass
6% White clover
4% Perennial ryegrass, late
3% Perennial ryegrass early
3% Perennial ryegrass intermediate



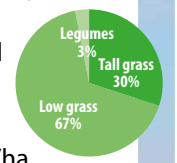
Sowing rate: 30 kg/ha
Container size: 10 kg
Product no. 40061

ProGreen® 2
with clover

Permanent pasture-hay pasture 2

Mixture containing clover for sites with favourable climates, suitable for both grazing and cutting

25% Perennial ryegrass, early
20% Perennial ryegrass, intermediate
20% Meadow fescue/ festulolium
15% Perennial ryegrass, late
10% Timothy grass
7% Smooth-stalked meadow grass
3% White clover



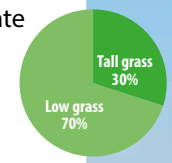
Sowing rate: 40 kg/ha
Container size: 10 kg
Product no. 40082

ProGreen® 2
without clover

Permanent pasture-hay pasture 2

Clover-free mixture for sites with favourable climates and intensive use, recommended for both cutting and grazing

25% Perennial ryegrass, early
20% Perennial ryegrass, intermediate
20% Meadow fescue/ festulolium
15% Perennial ryegrass, late
10% Timothy grass
10% Smooth-stalked meadow grass



Sowing rate: 40 kg/ha
Container size: 10 kg
Product no. 40092

ProGreen® 3
without clover

Permanent pasture-hay pasture 3

A mixture for sites suitable for ryegrass cultivation that see frequent use, primarily for grazing

30% Perennial ryegrass, early
25% Perennial ryegrass, intermediate
25% Perennial ryegrass, late
10% Timothy grass
10% Smooth-stalked meadow grass

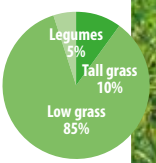
Sowing rate: 40 kg/ha
Container size: 10 kg
Product no. 40093

ProGreen® 3
with clover

Permanent pasture-hay pasture 3

A mixture for sites suitable for ryegrass cultivation that see frequent use, primarily for grazing

25% Perennial ryegrass, early
25% Perennial ryegrass, intermediate
25% Perennial ryegrass, late
10% Timothy grass
10% Smooth-stalked meadow grass
5% White clover



Sowing rate: 40 kg/ha
Container size: 10 kg
Product no. 40062

ProGreen® 4

Permanent pasture 4 without clover

Clover-free mixture for sites prone to drying up, can be used for grazing or mowing, early/intermediate perennial ryegrass is harvested in sync with cocksfoot

40% Cocksfoot, late
30% Perennial ryegrass early/intermediate
20% Timothy grass
10% Smooth-stalked meadow grass

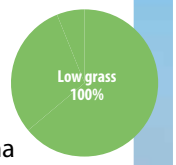
Sowing rate: 30 kg/ha
Container size: 10 kg
Product no. 40084

ProGreen® 5

Permanent pasture-hay pasture 5

Reseeding mixture to maintain productive pastures and improve swards with gaps

40% Perennial ryegrass, late
30% Perennial ryegrass, early
30% Perennial ryegrass, intermediate



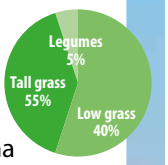
Sowing rate: 20 kg/ha
Container size: 10 kg
Product no. 40085

ProGreen® 6

Permanent meadow sowing with clover for all locations

Perennial meadow mixture containing clover; suitable for extensive use on all sites

40% Meadow fescue/ festulolium
25% Perennial ryegrass
15% Timothy grass
10% Red fescue, stoloniferous
5% Smooth-stalked meadow grass
3% White clover
2% Red clover



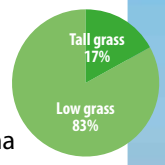
Sowing rate: 30 kg/ha
Container size: 10 kg
Product no. 40100

ProGreen® 7
without clover

Permanent pasture standard G III-S, without clover

A mixture without smooth-stalked meadow grass for sites suitable for ryegrass cultivation that see frequent use

40% Perennial ryegrass, late
23% Perennial ryegrass, intermediate
20% Perennial ryegrass, early
17% Timothy grass



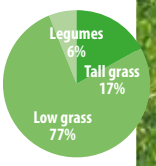
Sowing rate: 30 kg/ha
Container size: 10 kg
Product no. 40063

ProGreen® 7
with clover

Permanent pasture standard G III with clover

A mixture for sites suitable for ryegrass cultivation that see frequent use, primarily for grazing

27% Perennial ryegrass, late
20% Perennial ryegrass, early
20% Perennial ryegrass, intermediate
17% Timothy grass
10% Smooth-stalked meadow grass
6% White clover



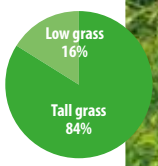
Sowing rate: 30 kg/ha
Container size: 10 kg
Product no. 40064

ProGreen® 9
Meadow seeding

For dry sites

A grassland mixture for dry sites or sites prone to summer droughts, containing a tall fescue variety with soft leaves which is consumed more readily than coarse-leaf varieties

40% Tall fescue (soft-leafed)
18% Festulolium
18% Cocksfoot
8% Timothy grass
8% Red fescue
8% Smooth-stalked meadow grass



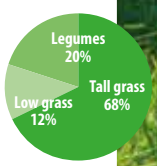
Sowing rate: 40 kg/ha
Container size: 10 kg
Product no. 40350

ProGreen® 10
Meadow seeding

For dry sites with clover

Grassland mixture with clover for dry sites or sites prone to summer droughts; contains tall fescue with soft leaves

35% Tall fescue (soft-leaved)
15% Festulolium
12% Cocksfoot
8% Bird's foot trefoil
8% Alfalfa
6% Timothy grass
6% Smooth-stalked meadow grass
6% Red fescue
4% Black medick



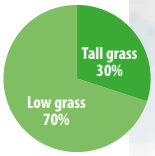
Sowing rate: 40 kg/ha
Container size: 10 kg
Product no. 40351

ProGreen® 12

Emergency repair with nurse grass

Quickly restore yield levels in damaged grasslands

70% Perennial ryegrass
30% Annual ryegrass



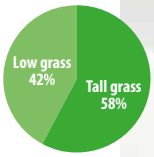
Sowing rate: 25 kg/ha
Container size: 10 kg
Product no. 40353

ProGreen® 13

Emergency new planting with nurse grass

Quick closure of transient gaps in fodder production; contains all important grass components for long-term usage

32% Perennial ryegrass
20% Annual ryegrass
15% Timothy grass
15% Meadow fescue
10% Smooth-stalked meadow grass
8% Festulolium



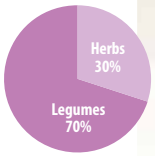
Sowing rate: 40 kg/ha
Container size: 10 kg
Product no. 40354

ProGreen® 14

Herb mixture for meadows and pastures Dry

Supplement of herbs for meadows, pastures and arable feed crop production areas that aim to produce feed with high dietary quality; the herb mixture is added into grassland/fodder crop mixtures and sown in a single step. For classic dry sites

35% Alfalfa
35% Bird's foot trefoil
10% Ribwort plantain
10% Forage chicory
10% Salad burnet



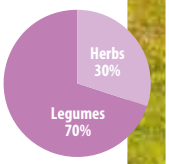
Sowing rate: see p. 19
Container size: 5 kg
Product no. 40355

ProGreen® 15

Herb mixture for meadows and pastures Wet

Herb mixture for pastures, meadows and agricultural sites used to produce fodder with high dietary quality. For wet sites

35% Mattenklee-type red clover
25% Alsike clover
10% White clover
10% Ribwort plantain
10% Forage chicory
10% Small burnet



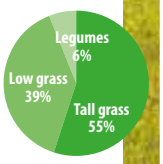
Sowing rate: see p. 19
Container size: 5 kg
Product no. 40357

ProGreen® 16

Permanent pasture-hay pasture

Clover-containing grassland mixture with a high capacity to compensate for dry sites

20% Tall fescue
20% Italian ryegrass
39% Perennial ryegrass
5% Cocksfoot
5% Meadow fescue
5% Timothy grass
2% Bird's foot trefoil
2% Alfalfa
2% Red clover



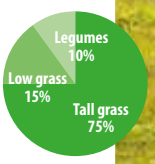
Sowing rate: 40 kg/ha
Container size: 10 kg
Product no. 40065

ProGreen® 17

Permanent pasture-hay pasture

Clover-containing grassland mixture with a high capacity to compensate for dry sites; designed for reseeding and new planting on meadows and pastures

35% Tall fescue
20% Hybrid ryegrass
15% Red fescue
10% Cocksfoot
10% Meadow fescue
7% Bird's foot trefoil
3% White clover



Sowing rate: 40 kg/ha
Container size: 10 kg
Product no. 40066

If you can't find the right product for your needs here, please get in touch with us. We'll find a solution together!

***Sowing rates for ProGreen® 14 & 15:**
For new planting: 5 kg/ha in combination with about 25 kg/ha of a site-appropriate grassland mixture.
For reseeding: 3 kg/ha on its own or 2 kg/ha in combination with 10 kg/ha of a site-appropriate reseeding mixture.

Arable feed crop production

In addition to grassland management, arable feed crop production is an alternative model for producing ruminant fodder. At large scales it is mainly used for cattle, but can also work for goats, sheep and horses. Like other forms of fodder production, it is crucial to find the right mixture, suitable species and high-performing varieties in order to ensure optimal results. High-yielding species such as annual or Italian ryegrass play a starring role here, while mixtures with legumes ensure excellent fodder quality and increase the feed's protein content. When choosing the right mixture, the factors to consider include the soil type, water supply, and the duration and intensity of use. Our product finder on the next page will help you to find the right mixture for your operation. If you don't see the right mixture there, please feel free to contact us for a professional consultation.

Product finder: Arable feed crop production

Product	Quantity cuts per year		Pas-ture	Cut	Legumes	Climate				Winter hardiness			Soil type				Description
						Dry	Normal	Wet	Standing water	l	m	h	s	sl	ls	c	
ProGreen® FU 1	Intensive permanent pastures and hay pastures	4–6	(✓)	✓	-		←	—	→	■				■	■	■	Arable fodder grass, particularly for sites where ryegrass can be grown and where only annual cultivation is possible due to the continental climate
ProGreen® FU 2					-		←	—	→	■				■	■	■	
ProGreen® FU 3					-		←	—	→	■	■			■	■	■	For 2- to 3-year cultivation, improved winter hardiness
ProGreen® FU 4		3–4	(✓)	✓	-		←	—		■				■	■		Only contains annual fodder grass for catch crop cultivation
ProGreen® FU 9				✓	✓		←	—		■				■	■		Annual clover-grass mixture that can quickly close gaps in fodder production
ProGreen® FU 8				✓	✓	←	—	→		■	■	■		■	■		Alfalfa-grass mixture for dry sites, high winter hardiness
ProGreen® FU 7		1–2		✓	✓		←	—		■	■			■	■	■	Winter variant of the Landsberger mixture; tolerates late sowing
ProGreen® FU 10					✓		←	—		■				■	■		Summer variant of the Landsberger mixture; all-rounder
ProGreen® FU 5					✓	←	—	→		■				■	■		Legume mixture for N fixation; deep roots
ProGreen® FU 6					✓	←	—	→		■				■	■		Pea-vetch mixture for N fixation

Legend				
Winter hardiness				Soil type
■			l - low	s - sandy
■	■		m - moderate	sl - sandy loam
■	■	■	h - high	ls - loamy sand
				c - clayey

ProGreen® FU 1

Arable feed crop production

A feed crop mixture with Italian ryegrass. The mixture can be cut in autumn if sown early enough; main harvest in the year following planting.

100% Italian ryegrass
(at least 2 varieties)

Sowing rate: 40 kg/ha
Container size: 20 kg
Product no. 40341

ProGreen® FU 2

Arable feed crop production

Annual fodder mixture for spring sowing; annual ryegrass forms tillers in the year it is planted and provides the required structure in the fodder

66% Italian ryegrass
34% Annual ryegrass

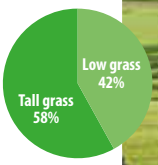
Sowing rate: 40 kg/ha
Container size: 20 kg
Product no. 40342

ProGreen® FU 3

Arable feed crop production

Fodder crop mixture for 2–3 year use; up to 5 cuts possible under suitable conditions

42% Perennial ryegrass
29% Italian ryegrass
29% Hybrid ryegrass



Sowing rate: 40 kg/ha
Container size: 20 kg
Product no. 40349

ProGreen® FU 4

Summer grass

Simple arable feed crop mixture for cultivation as a catch crop; greatest yield observed in the first growth

100% Annual ryegrass
(at least 2 varieties)

Sowing rate: 40 kg/ha
Container size: 20 kg
Product no. 40326

ProGreen® FU 5

Legume mixture

Mixture for catch crop cultivation; high legume content ensures N fixation

50% Field pea
25% Common vetch
15% Blue lupin
10% Field bean

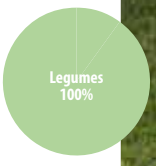
Sowing rate: 100 kg/ha
Container size: 20 kg
Product no. 40451

ProGreen® FU 6

Pea-vetch mixture

A catch crop mixture comprised of 100% legumes, capturing large quantities of nitrogen for the subsequent crop.

60% Common vetch
40% Field pea



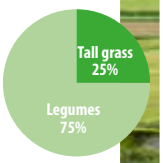
Sowing rate: 130 kg/ha
Container size: 20 kg
Product no. 40452

ProGreen® FU 7

Landsberger mixture

Universal clover-containing mixture for all sites; for use as a catch crop

50% Hairy vetch
25% Crimson clover
15% Italian ryegrass t. winter catch crop variety
10% Italian ryegrass t. winter catch crop variety



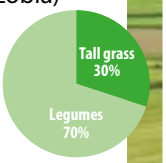
Sowing rate: 60 kg/ha
Container size: 20 kg
Product no. 40324

ProGreen® FU 8

PLATO alfalfa-grass mixture

Perennial; for cool and dry, calcareous sites; 3–4 crops; ideal ratio of protein and energy content; palatable fodder; can be used as fresh feed, hay or silage

70% Alfalfa PLATO (Coated Seed Rhizobia)*
10% Meadow fescue
10% Timothy grass
10% Cocksfoot, late



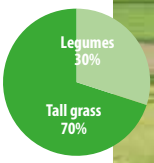
Sowing rate: 30 kg/ha
Container size: 20 kg
Product no. 40458 *

ProGreen® FU 9

Clover-grass annual

Annual clover-grass mixture that produces clover-rich fodder in the autumn and can quickly close fodder gaps

70% Annual ryegrass catch crop type
30% Egyptian clover



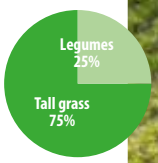
Sowing rate: 30–35 kg/ha
Container size: 20 kg
Product no. 40459

ProGreen® FU 10

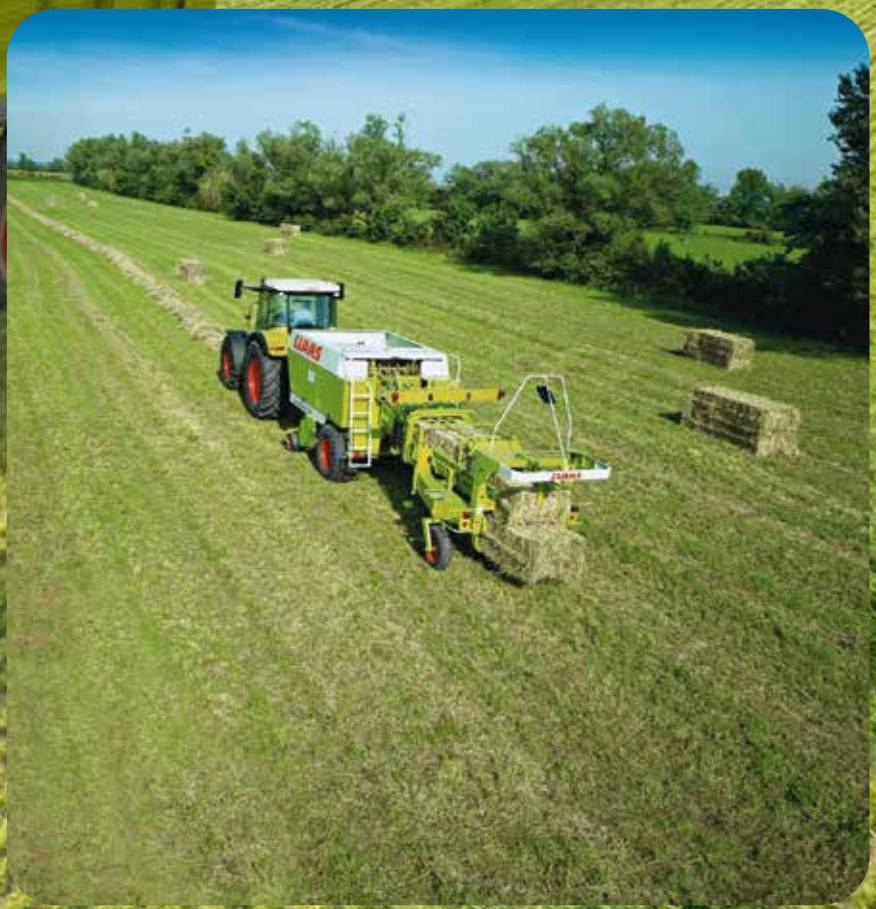
Landsberger Summer mixture

Legume-rich mixture designed as a summer version of the Landsberger mixture; can be harvested 2–3 times on all sites, with very high yields in the first and second cut

50% Common vetch
25% Annual ryegrass catch crop type
25% Egyptian clover



Sowing rate: 55 kg/ha
Container size: 20 kg
Product no. 40450



Manage grasslands right!

With just a few universally applicable tweaks, you can set your grassland on the path to long-term, sustainable success and control the plant population with precision.

NEW CULTIVATION

When do new grassland plantings take place?
There are two reasons for carrying out a new grassland planting:
- Transition of a field to grassland use following a different use
- Improvement of an existing grassland through the full removal of the existing sward and planting a new plant community

Renew your grassland, when:
… gaps in the sward reach more than 50% of the area
… low-value, low-yielding or unwanted species reach over 50% of the plant population
… weeds/weedy grasses reach a level of prevalence that cannot be fixed through reseeding or mechanical or chemical control methods.

4 STEPS TO A NEW GRASSLAND

1) **Kill off the old sward** while following all legal regulations (e.g. using a broad-spectrum herbicide)
   When should the old sward be removed?
   At least 4 weeks before the planned new planting, ideally in late summer or at the end of winter, depending on whether the planting is planned for spring or late summer.

2) **Carry out the new planting**
   Since nearly all desired grassland species have fine seeds and require light to germinate, keep in mind the following recommendations:
   - Fine, well-distributed seedbed that is only loosened at the very surface
   - Sowing depth: 0.5 to 1.0 cm
   - Seeding rate: 25 to 35 kg/ha (take note of product-specific seeding rates!)
   - Sowing time: generally in spring or late summer
   - Sowing technique: mechanical/pneumatic seed drill

3) Aftercare for the new planting

Objective: protecting the newly sown stand

Measures:

- Topping/maintenance cut once the newly planted stand reaches a height of 10–15 cm
  Goal: Stimulate tillering → Encourage sward closure + cut down seed-producing weeds
- Organic fertilisation should be avoided in the new planting year
- Sufficient interval before first grazing
  - New planting without breaking up prior sward: minimum waiting interval 2 months
  - New planting after breaking up prior sward: minimum interval 3 months

4) Maintenance

Regular wellness treatment for the grassland

- Timing: always at the start of the growing season in early spring; additional measures possible after each cut
- Measures:
  - Level the stand → Chain harrow
  - Consolidating the sward → Rollers
- Remove undesired weeds and thatching → Harrowing, combined with reseeding if needed
- Regular plant protection and fertilising activities as appropriate

Plant protection

Plant protection recommendations		
Weed control	Mechanical control	Topping, Targeted control of individual plants
Wireworms, beetle larvae, gnats	Chemical control	Calcium cyanamide application
	Biological control	Spreading nematodes
Rodents	Chemical control	Rodenticides
	Mechanical control	Bait box
	Biological control (for minor infestations)	Birds of prey

Fertilising

Nutrient need		
Nitrogen	Grasses	80–100 kg/ha for the first cut, 60–80 kg/ha for each additional one
	With a 5–10% share of legumes	20 kg/ha reduction
Phosphorous	Legumes	No requirement (generally)
Potassium	268–322 kg/ha	
Calcium	104–138 kg/ha	
Magnesium	35–40 kg/ha	

RESEEDING

Support existing swards and maintain their competitive vigour.
Preparation: Trim the existing sward to a height of < 5 cm

Prioritise reseeding technique – Precision pays off
As a basic principle, the following techniques can be considered for grassland reseeding:

Overseeding (If valuable grasses are > 50% of the population and sward gaps are < 20%)	**Interseeding** (If sward gaps are > 20% or weeds/weedy grasses are > 20%)
• Broadcast over liquid manure with a drag hose spreader or trailing shoe • Broadcast seeding with a fertiliser spreader or Lehner spreader	• Pneumatic reseeding processes, often mounted on grassland harrow combinations • Slit seeding processes

Focus: Determining the seeding rate when reseeding

Rule of thumb for calculating the reseeding needed

$$\frac{\text{Sward gaps in \%}}{2} = \text{xx kg/ha}$$

Focus: Timing
Reseeding can effectively be split into two dates, each with half of the desired seeding rate
• 1x in early spring after the beginning of the growing season, and...
• 1x in late summer, when the competition from the existing sward diminishes

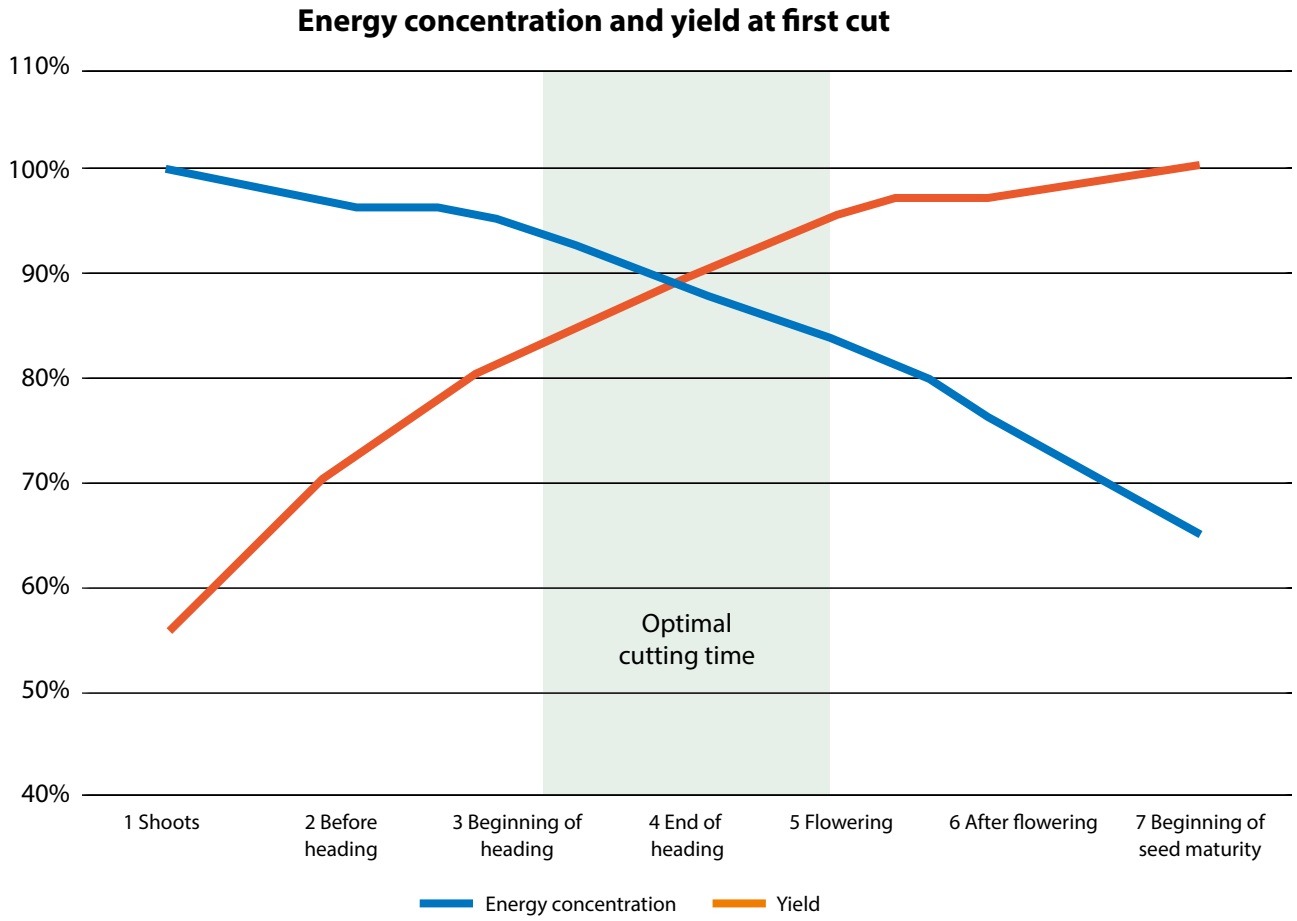
Focus: Ensuring long-lasting success
• At height of 15 cm → topping (controls seed-propagated weeds, encourages sward closure)
• Make the first cut soon after reseeding in order to keep the competition from the existing sward in check and support the reseeding growth

HARVEST

The timing of cuts is vitally important for ensuring optimal fodder quality. They should be timed in order to target an optimal balance between quantity and quality. How can this be done?

The fodder value is closely related to the optimal cutting time. While the highest fodder value is reached in the early development phase (1 to 3), the yield level is too low. Between phases 4 and 7, the yield increases but the fodder value sinks. An optimal cutting time is thus a compromise between yield and energy concentration. Depending on the specific plant community in the field, the optimal cutting time may be before the beginning of heading or up to the beginning of flowering (maturity stage 3 to 5). Mixtures have a higher utilisation elasticity than pure stands.

Recommended cutting heights: 6–8 cm for grasses, and 8–11 cm for alfalfa and alfalfa-grass mixtures



The correct post-harvest approach depends on how the fodder is to be used. In order to ensure the best possible preservation, silage is the best choice. The following values are ideal for ensuring optimal silage quality:

Target parameters of good silage	
pH value	4–5
Butyric acid content	< 3 g/kg DM
Acetic and propionic acid content	20–30 g/kg DM
Ammonia N content	< 8% of total N
Aerobic stability	> 3 days

PROGREEN®

HORSE PASTURES

Pastures for horse management

The path to success in horse rearing and feeding

There are various factors that must be considered and coordinated to meet the needs of a horse. In addition to their distinctive social behaviour, nutritional physiology plays a particularly important role in the welfare of a horse. Meeting these requirements requires intensive pasture management, since horses are animals of the steppes and thus depend on its plants. Mixed fields rich in grasses and diverse species ensure that their feed provides a balanced diet. Bearing this in mind, pasture and hay fields must be monitored closely. This requires attention to the composition of the species (proportions) and gaps in the fields. The success of reseeding or new planting with high-performance seed mixtures is particularly dependent on the techniques used to spread the seeds. Proper fertilisation, suitable care and the stocking density of horses should be set to match the desired intensity of use.

All horse pastures are free of endophyte treatments!

PROGREEN®

HORSE PASTURES

ProGreen® PF 10 Horse Pasture

Robust, durable, palatable

Ideal for pastures under significant strain due to intensive grazing and high numbers of livestock. The balanced mixture of early, intermediate and late ryegrasses ensures reliable establishment, leading to a thick sward throughout the entire growing season. Timothy grass, smooth-stalked meadow grass and red fescue make the forage particularly palatable.

25% Perennial ryegrass, fodder type, late
25% Timothy grass
15% Perennial ryegrass, fodder type, intermediate
15% Smooth-stalked meadow grass
10% Perennial ryegrass, lawn type
10% Red fescue

Sowing rate: 30–40 kg/ha
Container size: 10 kg
Product no. 40700

ProGreen® PF 20 Horse pasture with herbs

Resistant to trampling, reliable yields, high quality

The herb component should not be overlooked on pastures that see heavy use. This variant is largely similar to the original mixture, ProGreen® PF 10 Horse Pasture, with all of its advantages. The 5% herb component it contains, however, adds considerable value to the mixture in terms of palatability and horse health.

25% Timothy grass
20% Perennial ryegrass, fodder type, late
15% Smooth-stalked meadow grass
15% Perennial ryegrass, fodder type, intermediate
10% Perennial ryegrass, lawn type
10% Red fescue
5% Herb mixture for pastures

Sowing rate: 30–40 kg/ha
Container size: 10 kg
Product no. 40701

ProGreen® PF 30 Horse pasture reseeding

Fills gaps, fast and high-yielding

A high percentage of perennial ryegrass makes this mixture an excellent choice for reseeding heavily used pastures with gaps in the ground cover. Due to its rapid early development, perennial ryegrass can effectively prevail over existing grasses in the sward and fill any gaps that may be present.

40% Perennial ryegrass, fodder type, late
20% Perennial ryegrass, fodder type, intermediate
18% Timothy grass
12% Perennial ryegrass, lawn type
10% Smooth-stalked meadow grass, fodder type

Sowing rate: 30–40 kg/ha
Container size: 10 kg
Product no. 40705

ProGreen® PF 40 Horse pasture Compense

Versatile, high-yielding, good for hooves

The composition of this mixture puts a particular emphasis on grasses with low fructans. Fructans are chains of sugar molecules that can lead to issues of laminitis in horses, especially during early spring grazing. In addition to supporting good health, Compense is also excellent for hay and silage preparation.

25% Timothy grass
25% Meadow fescue
15% Smooth-stalked meadow grass
10% Perennial ryegrass, early
10% Tall fescue
10% Red fescue
5% Creeping bentgrass

Sowing rate: 30–40 kg/ha
Container size: 10 kg
Product no. 40706

PROGREEN®

HORSE PASTURES

ProGreen® PF 50
Horse racecourse

Strong, high quality, extremely durable

This mixture was specially developed for racecourses and tournament grounds. It creates a dense, thick sward, which can even handle the significant wear and tear of racing activities.

35% Tall fescue, lawn type
35% Tall fescue, lawn type
30% Perennial ryegrass, lawn type

Sowing rate: 25 g/m²
Container size: 10 kg
Product no. 40708

ProGreen® PF 60
Horse hay

Perennial, prolific, substantial

The horse hay mixture is particularly recommended for the preparation of high-quality hay and silage with good palatability. This versatile grass combination heavily features meadow fescue, red fescue and smooth-stalked meadow grass, which ensure exceptionally high yields. Using the first cut for hay or silage is particularly effective, followed by extensive grazing. Additional cuts are possible if fertiliser is applied.

40% Meadow fescue
20% Perennial ryegrass, late
10% Red fescue
10% Smooth-stalked meadow grass
15% Timothy grass
5% Tall oatgrass

Sowing rate: 30–40 kg/ha
Container size: 10 kg
Product no. 40703

ProGreen® PF 70
Alfalfa-grass

Multi-year, high-yielding, versatile

This mixture offers excellent yields for multi-year field forage cultivation, even on dry sites. Alfalfa-grass mixes are very effective at providing horse hay that supports the animals' health and performance.

73% Alfalfa
17% Meadow fescue
10% Timothy grass

Sowing rate: 30–40 kg/ha
Container size: 10 kg
Product no. 40718

ProGreen® PF 80
Herb mixture for pastures

Diverse, tasty, healthy

Horses love the taste of these diverse pasture herbs, which, in turn, have a very beneficial effect on the horses' vitality and health. Reseeding the herb mixture is an important step towards naturally strengthening your horses' well-being. This mixture is also recommended for strip-seeding.

20% Salad burnet
15% Caraway
15% Parsley
15% Wild carrot
10% Fennel
10% Forage chicory
10% Cow parsleyl
5% Yarrow

Sowing rate: 1.5 kg/ha
Container size: 1 kg
Product no. 40702

PRO GREEN

HORSE PASTURES

Did you know...

...that horses can recognise themselves in the mirror? This makes them part of a small group of mammals that have this quality of "self-awareness". Other animals that can do this include magpies, apes and elephants.

Source: Article "Animal cognition": Baragli, Scopa, Maglieri & Palagi

Guaranteed no endophyte treatment

PROGREEN®

YOUR SELECTION

ProGreen® 8 Sheep and small animal pasture with herbs & clover

With ribwort plantain and forage chicory

Pastures for sheep and small animals consist of a species-rich grassland mixture for a medium to high intensity of use. The addition of forage chicory (Cichorium intybus) and ribwort plantain (Plantago lanceolata) contribute to the mixture's remarkable stand establishment. These herb species are also highly prized for their animal health benefits, since they can help prevent respiratory tract diseases (ribwort plantain) and gastrointestinal diseases (forage chicory).

20% Red fescue (for forage chicory)
18% Smooth-stalked meadow grass
14% Perennial ryegrass, intermediate, tetraploid
13% Cocksfoot, late
10% White clover
9% Forage chicory
8% Creeping bentgrass
8% Ribwort plantain

Sowing rate: 30 kg/ha
Container size: 10 kg
Product no. 40690

With ribwort plantain and forage chicory

Forage chicory Cichorium intybus

ANTLER

ANTLER is a forage chicory specially bred for use in fodder. This fodder variety is characterised by rapid early development and its excellent capacity for suppressing weeds. It also generates good dry matter yields and has a uniform yield distribution. Its tendency to flower in later cuts is quite low, ensuring the formation of a high leaf mass. ANTLER is extremely persistent and winter-hardy, allowing for 4 to 5 years of use. Its massive and wide-reaching root network results in a very high drought tolerance.

Sowing rate: 15 kg/ha (pure sowing)
Container size: 25 kg
Product no. 608307

Ribwort plantain Plantago lanceolata

DIVERSITY

DIVERSITY is a ribwort plantain variety that has been specifically bred for use in fodder, standing out thanks to its excellent dry mass yield and uniform yield distribution. Its tendency to flower in later cuts is quite low, ensuring the formation of a high leaf mass. As a result of its high persistence and winter-hardiness, DIVERSITY can be cultivated for 4–5 years. DIVERSITY exhibits astounding drought tolerance due to its massive and wide-reaching root network.

Sowing rate: 20 kg/ha (pure sowing)
Container size: 25 kg
Product no. 648213

PRO GREEN®

SHEEP AND SMALL ANIMAL PASTURE

Organic ProGreen® Quick Chicken Green

Fast-germinating organic chicken mixture with Coated Seed

The Quick Chicken Green mixture has been specially designed for rapid greening of the area around chicken coops. Whether it's an agricultural field that's being temporarily put to use in this manner or a permanent pasture, this mixture provides quick, beautiful greening.

The presence of Coated Seed annual ryegrass ensures particularly rapid establishment, meaning that chickens can go back to using the area in short order. The seed mixture is suitable for organic as well as conventional systems. The seed's coating allows for reseeding by machine as well as by hand. In most cases, the soil does not need any prior preparation before sowing.

60% Perennial ryegrass, Coated Seed*
40% Annual ryegrass, Coated Seed*

Sowing rate: 40–50 kg/ha
Container size: 5 kg
Product no. 44380

* Coated Seed BIO with bio coat

Vineyard greening

also for fruit orchards and fir tree forests

The soil structure of many vineyards has been damaged by years of single-crop cultivation and selective cover cropping (mostly with grass). Soil compaction and lack of humus are the most common problems. Mistakes from the past must be eliminated through short- and long-term measures for cultivation and cover crops. The aim is to maintain soil fertility in order to provide the vines with balanced nutrition. Healthy growth is otherwise impossible, meaning that such an approach is imperative for ensuring satisfactory development of the grapes to produce high-quality wines. This applies to both organic and conventional viticulture.

The success of sowing depends just as much on ideal and effective soil preparation as on a sufficient supply of water. Planting in early spring (March/April) is ideal, as soon as the soil conditions enable effective use of the winter moisture. Depending on the water supply (precipitation, soil quality) it may be recommended to carry out greening on every second row. This reduces the seed requirements by 50%. In order to increase the emergence rate, rolling the newly sown areas is recommended. Cambridge or Güttler rollers are both good choices. The advantage of rollers over mulchers when it comes to topping and maintaining work is that bending the stalks saves water, which is not the case when plants are chopped up by the mulcher.

Greening can also play a role in fruit orchards and Christmas tree farms. For example, greening the driving alleys can ensure that the field can be driven through safely. This means that maintenance work can be carried out even during poor weather.

ProGreen® WB 220

WOLFF Mixture (Original recipe)

3–4 year planting

This versatile, species-rich mixture can provide ground cover for a two- to three-year period. The plants it contains ensure a lengthy flowering period, which helps to feed insect populations. The species also have different root depths, which is conducive to good root penetration throughout the soil.

Depending on germination conditions (seedbed, warmth and water availability), the cover crop can support vehicle traffic after four to six weeks. Maintenance can be carried out with high mulching, though rolling is preferred. Rolling has the advantage of bending over the high-growing plants and pressing them into the soil. Loosely pressing down the plant mass in this manner helps all of the species in the mixture to survive, making it much more effective at insect protection.

During periods of drought, the additional soil cover and curtailed growth ensure that the degree of water competition with grapevines is significantly reduced. Indeed, the protection against erosion and improved infiltration of heavy precipitation can even represent an advantage over classic nutrient-poor grass plantings that require regular cutting. During periods of drought, heavier rolling of the cover crop area is recommended. Güttler rollers have proven themselves to be effective in this regard. After two to three years, it makes sense to replant in order to further improve species diversity through new seeding. Switching up the rows is good practice, such as switching from perennial greening rows to open rows or winter cover crops. This cover crop mixture has achieved 20 years of proven results, improving soil fertility and insect diversity in vineyards and beyond.

20% Hairy vetch
15% Sainfoin
7.5% Egyptian clover
7.5% Yellow sweet clover
7.5% Crimson clover
7.5% Alfalfa
  5% Black medick
  5% Persian clover
2.5% Lacy phacelia
2.5% Alsike clover

10% Bee pasture mixture
Borage
Buckwheat
Dill
Coriander
Cornflower
Chinese mallow
Common marigold
Black cumin
Sunflower
Fodder radish
Lacy phacelia

10% Aromatic fodder mixture
Fennel
Forage chicory
Bird's-foot trefoil
Salad burnet
Caraway
Parsnip
Parsley
Yarrow
Ribwort plantain
Wild carrot

ECOVIN
vibrant
sensory
genuine

We are grateful to Beratungsdienst Ökologischer Landbau for their support with the creation of this advisory guide and for the preparation of texts and image material by Mr Wolff.


Steep site greening

For greening steep sites, mix 70% of the WOLFF Mixture with 30% Mulch Mixture V.

Sowing rate: 40 kg/ha
Container size: 10 kg
Product no. 40291

PROGREEN®

COVER CROP FOR VINEYARDS

ProGreen® WB 225

WOLFF mixture without alfalfa

Also available as organic mixture WB 215

for very dry sites

This mixture has been tailored to particularly dry sites in several wine-producing regions. Under very dry conditions, alfalfa's strong root network can compete with productive grapevines for water. As such, alfalfa is not recommended for use in these areas. The remaining components have been increased proportionally to replace the alfalfa and maintain the mixture's versatility.

Sowing rate: 40 kg/ha
Container size: 10 kg
Product no. 40293

ProGreen® WB 250

Summer cover crop for all sites

Seeding for summer transition seeding with the aim of rapid greening, deep root penetration and good ground cover. In the case of dry spells in summer, rolling or high mulching are options.

46% Common vetch
20% Buckwheat
20% Hairy vetch
7% Egyptian clover
7% Lacy phacelia

Sowing rate: 60–80 kg/ha
Container size: 10 kg
Product no. 40288

ProGreen® WB 240

Vineyard cover crop with herbs**

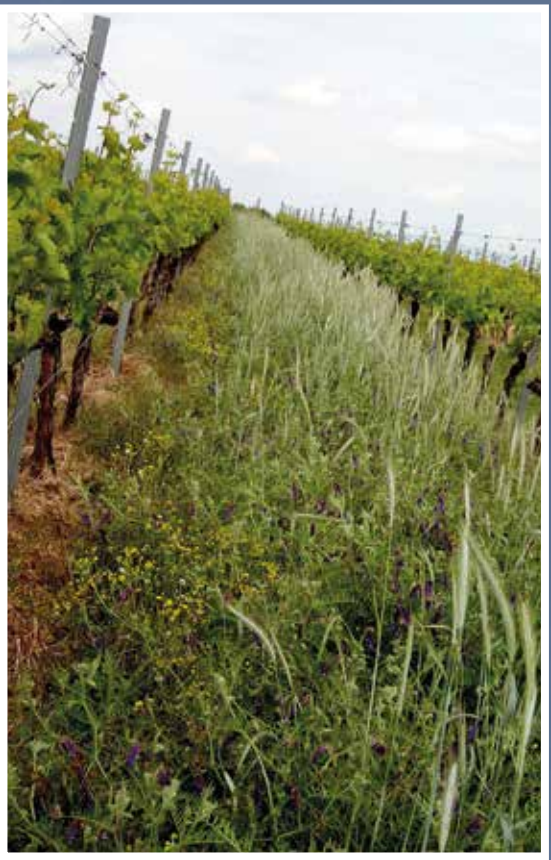
Also available as organic mixture WB 245

Multi-year vineyard cover crop

45% Winter rye
30% Hairy vetch
10% Crimson clover
8% Aromatic herb mixture*
4% Field mustard
3% Lacy phacelia

*Consists of: Salad burnet, caraway, ribwort plantain, forage chicory, yarrow, wild carrot, parsley, fennel, borage, bird's-foot trefoil, camomile, cornflower, corn poppy
**Developed by Timo Dienhart

Sowing rate: 50 kg/ha
Container size: 10 kg
Product no. 40287



Winter cover crop with herbs

PROGREEN®

COVER CROP FOR VINEYARDS

ProGreen® WB 110
Mulch mixture I

For all sites

30% Smooth-stalked meadow grass
20% Red fescue, stoloniferous
10% Perennial ryegrass
10% Common bentgrass
10% Short creeping red fescue
10% White clover
8% Black medick
2% Bird's foot trefoil

Sowing rate: 50 kg/ha
Container size: 10 kg
Product no. 40261

ProGreen® WB 120
Mulch mixture II

For sites with deep soils

40% Smooth-stalked meadow grass
20% Smooth-stalked meadow grass
20% Smooth-stalked meadow grass
10% Perennial ryegrass
10% Perennial ryegrass

Sowing rate: 40 kg/ha
Container size: 10 kg
Product no. 40262

ProGreen® WB 130
Mulch mixture III

For dry sites

30% Red fescue, stoloniferous
20% Red fescue, tussock-forming
20% Smooth-stalked meadow grass
20% Smooth-stalked meadow grass
5% Perennial ryegrass
5% Perennial ryegrass

Sowing rate: 40 kg/ha
Container size: 10 kg
Product no. 40263

ProGreen® WB 140
Mulch mixture IV

For intermediate sites

30% Hard fescue
20% Common bentgrass
20% Short creeping red fescue
10% Red fescue, stoloniferous
10% Smooth-stalked meadow grass
10% Smooth-stalked meadow grass

Sowing rate: 60 kg/ha
Container size: 10 kg
Product no. 40264

ProGreen® WB 150
Mulch mixture V

For sloped sites, clover-free

60% Hard fescue
25% Short creeping red fescue
15% Red fescue, tussock-forming

Sowing rate: 80 kg/ha
Container size: 10 kg
Product no. 40265

PROGREEN
GAMELAND SEED MIXTURES

Gameland seed mixtures

Nature – the habitat of wild animals

Due to the changes in our agricultural landscape over time, wild animals and insects face a steadily decreasing habitat. At the same time, nature is becoming increasingly important for providing leisure activities for city dwellers. This means that it is becoming more and more difficult for wild animals and insects to find a refuge of their own. Agricultural crops provide seasonal shelter and food. In order to counteract potential conflict between humans and nature, wildlife food plots and wildflower strips can offer a refuge for wild animals, birds and insects. These not only promote diversity in the species-poor agricultural landscape but also ensure preservation of biodiversity and a healthy, natural food supply for wild animals. In addition, they help increase public support. Furthermore, properly laid out wildlife food plots can keep animals away from agricultural crops and avoid potential wild animal damage.
General note: In accordance with Section 1 of the Federal Hunting Act, hunters, farmers and property owners have a duty to provide care and nurture. Note: When planting wildlife grazing plots for the first time, the legal frameworks in place in the respective federal state must always be noted and their guidelines must be complied with. In addition, the State Hunting Act must always be taken into account.

PROGREEN®

GAMELAND SEED MIXTURES

ProGreen® WA 10 Emergency feeding

- For large and small game animals
- For summer and winter grazing
- Can be used for up to two years

Buckwheat
Polycaul/fodder kale
White mustard
Cocksfoot
Fodder radish
Lacy phacelia
Red clover
Wild rye
White clover
Westphalian kale
Timothy grass
Winter rapeseed
Field mustard

Sowing period: From March to July
Sowing rate: 50 kg/ha
Sowing depth: 1–2 cm
Container size: 10 kg
Product no. 40601

ProGreen® WA 20 Gameland seeds

For roe deer, red deer and fallow deer

- For large and small game animals
- For summer and winter grazing
- Also suited to light soils
- Annual

Egyptian clover
Blue narrow-leaved sweet lupin
Buckwheat
Annual ryegrass
Field peas
Oat
Crimson clover
Marrow-stem kale
Red clover
Serradella (common bird's foot)
Common vetch
Wheat
Italian ryegrass
Winter rapeseed
Field mustard

Sowing period: From March to July
Sowing rate: 75 kg/ha
Sowing depth: 1–2 cm
Container size: 10 kg
Product no. 40602

ProGreen® WA 30 Gameland trio

- For large and small game animals
- Very rich in herbs
- Winter grazing primarily provided by wild rye and forage rapeseed

Polycaul kale
Borage
Buckwheat
Perennial Ryegrass
Fennel
Mallow
Forage rapeseed
Forage chicory
Black medick
Turnip
Crimson clover
Salad burnet
Lucerne (alfalfa)
Marrow-stem kale
Parsnip
Persian clover
Parsley
Red clover
Yarrow
Serradella (common bird's foot)
Ribwort plantain
Wild rye
White clover
Caraway
Hedge bedstraw
Timothy grass
Field mustard
Hairy vetch
Wild carrot

Sowing period: From March to August
Sowing rate: 30–35 kg/ha
Sowing depth: 1–2 cm
Container size: 10 kg
Product no. 40612

PROGREEN®

GAMELAND SEED MIXTURES

ProGreen® WA 40 Deer meadow

Also excellent for hares and pheasants!

- For large and small game animals
- Well-balanced clover-grass mix
- High palatability
- High species diversity; also attractive for hares
- Year-round forage provision
- Perennial

Yellow sweet clover
White sweet clover
Sainfoin
Fennel
Forage chicory
Black medick
Bird's-foot trefoil
Salad burnet
Cultivated teasel
Dandelion
Lucerne (alfalfa)
Parsnip
Persian clover
Reed canary grass
Red clover, t.
Red fescue
Yarrow
Black knapweed
Ribwort plantain
White clover
Westphalian kale
Cow parsley
Caraway
Timothy grass
Wild carrot
Hairy vetch

Sowing period: From March to August
Sowing rate: 40 kg/ha
Sowing depth: 0–1 cm
Container size: 10 kg
Product no. 40605

ProGreen® WA 50 Pioneer mixture

- For large and small game animals
- Annual to perennial
- Designed for covering forest aisles
- Can be used to divert wild boar

Egyptian clover
Field peas
Oat
Fodder radish
Red clover
Alsike clover
Wild rye
Wheat

Sowing period: From March to June
Sowing rate: 40–50 kg/ha
Sowing depth: 2 cm
Container size: 10 kg
Product no. 40608

ProGreen® WA 60 Wild herb mixture

- Supplements the diet of many game species
- Diverse supplement for all gameland mixtures
- Suitable for all game species
- Ample flowering for insects

Borage
Fennel
Burnet-saxifrage
Salad burnet
Caraway
Dandelion
Parsley
Yarrow
Ribwort plantain
Wild parsnip
Cow parsley
Hedge bedstraw

Sowing period: From March to June
Sowing rate: 2–3 kg/ha as a supplement to existing mixtures
Container size: 10 kg
Product no. 40610

PROGREEN®

GAMELAND SEED MIXTURES

GB 1 – Continuous and rotating fallow for good soils

Ryegrass-based fallow mixture for targeted greening with white clover. The mixture provides rapid coverage and, once the greening period comes to an end, can be brought back into production without any issues. The clover portion permanently closes gaps and provides nutrients for the ryegrass. In years when the statutory fallow period is lifted, the growth produced by this mixture can be utilised for high-quality fodder.

90% Perennial ryegrass (2–3 varieties)
10% White clover

Organic also available

Sowing rate: 30 kg/ha
Duration of use: 4–5 years
Ecological added value: Wildlife grazing, humus formation
Sowing period: March to September
Container size: 10 kg
Product no. 40207

GB 3 – Continuous and rotating fallow for all soils

Simple grass mixture with a high amount of red fescue and white clover. Ideal for simple fallow greening. The proportion of red fescue allows the formation of a very dense sward that provides no openings for unwanted species.

60% Red fescue
30% Perennial ryegrass
10% White clover

Organic also available

Sowing rate: 20–30 kg/ha
Duration of use: 4–5 years
Ecological added value: Wildlife grazing, humus formation
Sowing period: March to September
Container size: 10 kg
Product no. 40203

GB 7 – Continuous and rotating fallow, no clover

A simple grass mixture with a balance between red fescue and perennial ryegrass. Ideal for fallow greening in nutrient-rich areas. By not including clover, this mixture can help to combat eutrophication – especially in red zones. Red fescue and ryegrass form a dense sward, suppressing unwanted species and problematic weeds.

50% Red fescue, Stoloniferous
50% Perennial ryegrass

Organic also available

Sowing rate: 25–30 kg/ha
Duration of use: 4–5 years
Ecological added value: Wildlife grazing, humus formation
Sowing period: March to September
Container size: 10 kg
Product no. 40208

GB 8 – Continuous and rotating fallow, multi-year clover mix

The fallow clover mix is planted on fallow fields that are to be brought back under cultivation after a 2–3 year fallow period. The leguminous plants ensure that the fallow period enriches the soil, especially with the nitrogen it makes available for the following crop. The variety of clover species make this mixture suitable for all soils. By sowing the clover mix, the fallow period can serve as an in-house nitrogen source.

Composition:
20% White clover
55% Red clover, growth concentrated in first cut
15% Alfalfa
10% Sainfoin

Organic also available

Sowing rate: 25–30 kg/ha
Duration of use: 3–5 years

Ecological added value: Insect pasture, wildlife grazing, humus formation
Sowing period: April to early September

Container size: 10 kg
Product no. 40209

Maize-runner bean mixture

The advantages at a glance

More protein with runner beans

Runner beans have an especially high protein content, both in their seed pods as well as throughout the entire plant. Indeed, the full plant has a protein content of around 14%, twice as high as maize. Using this mixture reduces the amount of protein that must be added into the feed later. As such, runner beans make an important contribution to the German government's protein crop strategy, which aims to increase the production of protein from domestic production that does not use genetic modification.

Fast ground cover, high weed suppression

The runner bean component of the mixture helps to cover the ground and close the rows more quickly than maize would on its own. This means that any weeds that emerge are effectively suppressed right from the start, at the same time as the biological activity of the topsoil is increased. The mixture also makes a more efficient use of the light that falls on the field.

Legumes = Nitrogen fixation

Runner beans can enter into a symbiotic relationship with root nodule bacteria, which can convert atmospheric nitrogen into a plant-available form. This nitrogen, in turn, supplies the bean plant while also being made available to the neighbouring maize plants as well. The reduction in fertiliser requirements that this brings about is increasingly important, especially in light of new regulations under the German Fertiliser Ordinance.

BG 110 Runner bean mixture
for cultivation with
maize mixtures

1 unit/ha (45,000 seeds)
100% runner beans (at least 2 varieties)

Product no. 40153

The runner bean mixture is comprised of at least two varieties, which are particularly well-suited for cultivation in combination with maize. They have been chosen based on special criteria and rigorous testing. The varieties mature relatively late, allowing their harvest date to match that of maize.

In addition, their dry matter production is significantly higher than for varieties that are meant for vegetable production. The mixture can be cultivated together with maize.

Seeding rate: 1 unit/ha (45,000 seeds)
Sowing period: In a mixture with maize
Harvest: As with pure-sown maize
Sowing depth: 2–4 cm

Use of rhizobial inoculant

The cooled, liquid inoculant is ready for immediate use and should be applied right before planting. To ensure best results, the inoculant must be spread as evenly as possible over seeds. This can be done by using a pump sprayer or backpack sprayer. It is recommended to inoculate the seeds directly in the seed drill or in a container that is suited for the purpose. Careful mixing is required in order to reliably inoculate all seeds.

Application steps

1. Shake bottle well.
2. Open bottle and pour evenly on the seeds.
3. Thoroughly mix the treated seed several times.
4. Plant the treated seed immediately following treatment.

BIOGAS

BG 50
Biogas Express

Undersowing Coated Seed

Duration of use: Annual to perennial
Crops: 2–3 x after WPS,
4–5 x in the following year
Seeding rate: 25–30 kg/ha
Sowing period: After the beginning of the growing season
Fertilisation: 60 kg N/ha following WPS harvest
Harvest: July or later

50% Perennial ryegrass
50% Italian ryegrass

A special mixture for undersowing in cereals and maize. Coated Seed allows for easy application with a manure spreader, while the nutrients contained in the coating ensure better field emergence.

Container size: 20 kg **Product no.** 40149

BG 55
Biogas Express

Undersowing normal seed

Duration of use: Annual and perennial
Crops: 2–3x after WPS, 4–5x in the subsequent year, or only as a cover crop
Seeding rate: 15–20 kg/ha
Sowing period: At the beginning of the growing season for cereals, or in a knee-high maize field
Fertilisation: 60 kg N/ha following WPS harvest
Harvest: July or later in cereals, or in the following year after maize

50% Perennial ryegrass 50% Italian ryegrass

A special mixture for underseeding in maize and cereals. The mixture can be planted with a main crop of maize or cereals as a simple cover crop or as a subsequent crop for fodder production.

Container size: 20 kg **Product no.** 40142

ProGreen® Annual/Perennial Clover Undersowing

Duration of use: 1–2 years
Seeding rate: 25–30 kg/ha when sown pure, 10 kg/ha for undersowing
Sowing period: April to September

10% White clover
30% Egyptian clover
60% Fenugreek

An annual to perennial clover undersowing mixture for rapeseed and cereals that emphasises nitrogen fixation and weed suppression. The mixture can make nitrogen available to the main crop during the vegetative growth phase, or it can be left on the field as a cover crop after the main crop has been harvested. It can also be used for fodder. Meanwhile, it is also suitable for use as an annual fallow mixture with the aim of ensuring ground cover and N fixation.

Container size: 10 kg **Product no.** 40763

ProGreen® Rapeseed Undersowing Pest Protect

Seeding rate: 10 kg/ha
Sowing period: sown together with rapeseed (mid-August to mid-September)

35% Buckwheat
10% Garden cress
25% Flax
20% Fenugreek
10% White clover

This undersowing or companion planting mixture is effective against numerous rapeseed pests, providing early protection by attracting rapeseed pests to the trap crop. The clover effectively fixes atmospheric nitrogen, allowing for savings in mineral N fertilisers. White clover continues to provide protective, weed-suppressing cover between rapeseed plants, even post winter.

Container size: 10 kg **Product no.** 40766

BIOGAS

BG 70
Wild plant mixture

Perennial

25 high-performing annuals and wild/cultivated biennials, as well as long-lived herbaceous perennials.**

Container size: 10 kg
Product no. 40150

A mixture with annual and perennial species. Aside from fertilising and harvesting in subsequent years, no additional work is necessary. Dry matter yields of up to 11,000 kg DM/ha are possible. Methane yields can reach up to around 300 NL/kg oDM. The sowing period is the same as seed maize.

Duration of use: ≥ 5 years
Crops: 1 x
Seeding rate: 10 kg/ha
Sowing period: April–May
Fertilisation: First year: 50–100 kg N/ha*
Second year: up to 150 kg N/ha*
Harvest: August–October

BG 80
Field border flower mixture

Annual

11 different annual species**

Container size: 10 kg
Product no. 40151

Ideal for all growers who prioritise alternative substrate formation without wanting to commit to a multi-year process. With 11 different annuals, this mixture creates a diverse habitat while also ensuring generous yields.

Duration of use: Annual
Crops: 1 x
Seeding rate: 10 kg/ha
Sowing period: April–May
Fertilisation: 50 kg N/ha*
Harvest: September–October

BG 90
Wild plant mixture

Perennial

Wild and cultivated biennials as well as long-lived herbaceous perennials.**

Container size: 10 kg
Product no. 40148

Aside from fertilising and harvesting in subsequent years, no additional work is necessary. Dry matter yields of up to 11,000 kg DM/ha are possible. Methane yields can reach up to around 300 NL/kg oDM. BG 90 can also be sown quite late, for instance even after rye harvests.

Duration of use: ≥ 5 years
Crops: 1 x
Seeding rate: 10 kg/ha
Sowing period: May–June
Fertilisation: First year: 50–100 kg N/ha*
Second year: up to 150 kg N/ha*
Harvest: August–October

* According to N min ** Precise composition available on request

BIOGAS

BG 100
Vetch-rye mix

Duration of use: Annual
Crops: 1 x
Seeding rate: 100–120 kg/ha
Sowing period: September–October
Fertilisation: 40 kg N/ha when sowing and 40 kg N/ha in the spring
Harvest: Once lactic ripeness is reached in forage rye

Winter rye
Vetch

BG 100 provides impressive results even under difficult conditions by producing large quantities or biomass, stable harvests and high biogas yields. Hairy vetch is winter-hardy; the mixture is suitable for cooler sites as well as dry ones.

Container size: 20 kg
Product no. 40144

BG 105
Vetch-rye-ryegrass mix

Duration of use: Annual
Crops: 2 x
Seeding rate: 100–120 kg/ha
Sowing period: September–October
Fertilisation: 40 kg N/ha when sowing, 40–60 kg N/ha at lactic ripeness of the forage rye and at the time of second fodder cut
Harvest: First harvest once lactic ripeness is reached in the forage rye, second harvest at the end of heading in ryegrass

70% Winter rye
15% Hairy vetch/Hungarian vetch
15% Italian ryegrass, t. (2 varieties)

When sown in autumn, BG 105 efficiently uses the absorbed winter moisture in its subsequent growth, paying off with two strong cuts. The mixture is ideal for growers looking to make up for low production from earlier dry years. Its winter-hardy components help ensure a high, uniformly distributed yield in the year in which it is harvested. Italian ryegrass grows vigorously following the harvest of the vetch-rye mix, making it possible to obtain a grass-dominated, high-quality second cut.

Container size: 20 kg
Product no. 40140

BIOGAS

Sudan grass – Sorghum bicolor x Sorghum sudanense

Seeding rate: For biomass production, the aim should be to reach 45–55 plants/m^2, equal to 1 unit/ha. Row spacing of around 25–30 cm with the usual seed drill. As a catch crop for nitrate uptake: 2 packs/ha (90–110 plants/m^2).

Fertilisation: 120 kg N/ha, 50 kg P_2O_5/ha and 250 kg K_2O/ha. Take note of the results of soil testing.

Harvest: Harvesting can be done with a row-independent maize chopper. The target DM content is 25%.

SUSU
SUSU is a variety that is particularly suitable for main crop cultivation. It impresses with high yields and multi-cutting ability and has a lower water requirement than maize.

Container size: Pack á 15 kg
Product no. 104611

Rye
Secale cereale

Duration of use: Annual
Crops: 1 x
Seeding rate: 350 seeds/ha, approx. 150 kg/ha when sown pure
Sowing period: Before mid-October
Fertilisation: 40 kg N/ha when sowing; 80 kg N/ha in the spring
Harvest: Early to mid-May

Rye is very well suited for the production of biogas substrate. It is also ideal for winter catch crop cultivation, since its winter hardiness means its yield is reliable.

Yields of 4,000–6,000 kg of dry matter per hectare are possible. In addition to pure seed, forage rye can also be grown in a mixture containing legumes such as hairy vetch or winter peas (e.g. in BG 100).

Container size: 25 kg/Bigbag

TERRA GOLD®

Invest in gold!

Catch crop mixtures to shape the future

For over 10 years, catch crop mixtures have been steadily growing in popularity. Especially with the start of greening measures in 2015, their use in agriculture has become widespread. At Feldsaaten Freudenberger, we produce and sell top-quality catch crop mixtures under our TERRA GOLD® brand. We will continue to offer a broad spectrum of TERRA GOLD® catch crop mixtures even after greening initiatives wind down and the obligation to cultivate catch crops on many fields comes to an end. Because agriculture is constantly developing, we will also be adapting the portfolio of mixtures to be in line with current needs and technological developments. TERRA GOLD® offers top-quality catch crop mixtures with the following properties:

1. Mixtures tailored to crop rotations which are optimised to the most economically important subsequent crop.

2. The weighting of the species in the mixture is calibrated to ensure that the benefits of every individual species can be used.

3. Mixtures are species-rich and optimised to various site characteristics.

4. Many mixtures contain leguminous plants for nitrogen fixation, which are an important contribution to the commercial viability of main crops, especially in times of high fertiliser prices.

An important part of the development of the TERRA GOLD® range is constantly adapting to new technologies. For several years, there has been a rise in pre-harvest sowing of catch crops using broadcast seeding with drones. In order to stay abreast of this new technology, our TERRA GOLD® 21 and TERRA GOLD® 22 offer two new catch crop mixtures that have been adapted to the needs of pre-harvest sowing by drone.

Additionally, our TERRA GOLD® range now offers more new mixtures for you to discover: TERRA GOLD® 24 BlitzStart, a mixture containing cruciferous plants for cereal and maize rotations and TERRA GOLD® 25 Allround, an all-rounder that is especially effective in rotations with rapeseed and other cruciferous plants.

You may also be interested to know that many TERRA GOLD® mixtures are now also available as organic seeds.

The wealth of offerings in the TERRA GOLD® range is sure to have the right mixture for your needs.

TERRA GOLD® 9 Melioration in trial cultivation

TERRA GOLD®

The right mixture for your crop rotation

Mixture	Cereals	Rapeseed	Beets	Potatoes	Maize
TERRA GOLD® 1	+++	+++	+	0	+++
TERRA GOLD® 2	+++	-	+++	-	+++
TERRA GOLD® 3	+++	0	-	+++	+++
TERRA GOLD® 4	+++	0	-	-	+++
TERRA GOLD® 9	+++	0	0	0	+++
TERRA GOLD® 13	++	0	+++	+++	++
TERRA GOLD® 16	+++	-	-	-	+++
TERRA GOLD® 17	+++	+++	++	++	+++
TERRA GOLD® 21	+++	-	+	-	+++
TERRA GOLD® 22	+++	++	++	-	+++
TERRA GOLD® 24	++	-	-	-	++
TERRA GOLD® 25	+++	++	+	-	+++
TERRA GOLD® 27	+++	-	-	-	+++
TERRA GOLD® 51	+++	-	-	-	+++
TERRA GOLD® 52	+++	-	-	-	+++
TERRA GOLD® 53	+++	-	-	-	+++
TERRA GOLD® 54	+++	-	-	-	+++
TERRA GOLD® 55	+++	-	-	-	+++

Very well suited +++
Well suited ++
Suitable +
Neutral 0
Not suitable -

TERRA GOLD®

TERRA GOLD® 1
Humus

For cereal and rape-seed rotations

A diverse mixture for crop rotations involving cereals, maize and rapeseed without cruciferous plants. It is generally winterkilled in its entirety, following which it can be used for mulch seeding. The species it contains help to ensure that the soil is well penetrated by roots. The high share of legumes ensures efficient nitrogen fixation during the growth period along with significant amounts of aboveground biomass. Field peas and common bird's foot offer good growth potential in late summer, even under difficult conditions. Early sowing is recommended in order to ensure successful establishment.

Also available as an organic mixture!

Species	Proportion of weight in %
Field peas	20
Egyptian clover	7.5
Serradella	10
Persian clover	7.5
Lacy phacelia CS*	10
Sudan grass	25
Common vetch	20
Total	**100**
Total legumes	65%

Sowing rate: 30–40 kg/ha
Sowing: Before mid-August
Container size: 25 kg
Product no. 40161

TERRA GOLD® 2
Beetfit

For rotations with beets

A mixture that has a neutral effect on beet nematodes is an ideal component of beet rotations. This mixture contains fodder radish and lupin, both of which have root systems that help generate excellent soil tilth. The fodder radish and mustard varieties used reduce nematode populations. The legumes in the mixture enable efficient nitrogen fixation. Meanwhile, the multi-coloured flowers help ensure a highly attractive appearance and provide nectar for beneficial insects.

Nematode-reducing effect

Species	Proportion of weight in %
Blue (narrow-leaved) lupin	15
Seed vetch, common vetch	15
Fodder radish – nematode resistant	35
Lacy phacelia CS*	5
White mustard – nematode resistant	20
Egyptian clover	5
Persian clover	5
Total	**100**
Total legumes	40%

Sowing rate: 25–30 kg/ha
Sowing: Before mid-August
Container size: 25 kg
Product no. 40162

TERRA GOLD®

TERRA GOLD® 3
Solara

For rotations with potatoes

A mixture designed for rotations with potatoes. The high shares of blue lupin and fodder radish help ensure good root penetration and crumbly soil texture, facilitating the establishment of potatoes as a subsequent crop. The fodder radish variety used in the mixture stands out for its low height, late flowering and reduced tendency to carry the tobacco rattle virus. The fodder radish also reduces free-living nematodes, which can cause spraing in potato crops. When sown early, the legumes in the mixture can efficiently contribute to nitrogen fixation.

Also available as an organic mixture!

Species	Proportion of weight in %
Blue (narrow-leaved) lupin	40
Bristle oat	20
Fodder radish	20
Field peas	10
Lacy phacelia CS*	5
Egyptian clover	2.5
Persian clover	2.5
Total	**100**
Total legumes	55%

Sowing rate: 30–40 kg/ha
Sowing: Before mid-August
Container size: 25 kg
Product no. 40163

TERRA GOLD® 4
Bee feast

Tübinger Mixture

An annual mixture with easily blooming flowers that nourishes the insect and bee populations throughout the field. The remarkable appearance of the flowers also serves to beautify the landscape. This mixture helps to provide cover for small game and can also help round out wild food plots. Since this mixture contains no legumes, it can also be used in water conservation areas.

Species	Proportion of weight in %
Lacy phacelia CS*	40
Fodder radish	4
Cornflower	2
Buckwheat	25
Common marigold	5
Dill	2
White mustard	7
Black cumin	5
Borage	1
Chinese mallow	3
Coriander	6
Total	**100**

Sowing rate: 10 kg/ha
Sowing: Before mid-August
Container size: 10 kg
Product no. 40164

*Coated Seed

TERRA GOLD®

TERRA GOLD® 9
Melioration

For soil loosening

This mixture has been specifically designed for compacted soils affected by plough sole and other issues. The melioration radish in the mixture uses its massive taproot to break up compacted soils, helping to ensure excellent soil tilth. The mixture is rounded out with two deep-rooting species, lupin and fodder radish. The root channels these plants form allow air exchange to occur in deeper soil horizons and water to infiltrate. The water-filled root channels expand when they freeze in winter, loosening the soil further.

Species	Proportion of weight in %
Melioration radish	10
Buckwheat	40
Lacy phacelia CS*	5
Niger	5
Fodder radish	20
Blue (narrow-leaved) lupin	20
Total	**100**
Total legumes	20%

Sowing rate: 20–25 kg/ha
Sowing: Before mid-August
Container size: 25 kg
Product no. 40169

TERRA GOLD® 13
Vegetablefit

For complex crop rotations

A catch crop mixture geared towards complex crop rotations involving potatoes, beets and vegetables. The dually resistant fodder radish reduces both beet nematodes and gall-forming nematodes. Pathogens that cause spraing in potatoes are also driven back. Bristle oat reduces free-living nematodes. Its ability to reduce many kinds of nematodes means that TERRA GOLD® 13 acts as the perfect preceding crop for a wide variety of crops. The symbiotic rhizobia present on common vetch fix atmospheric nitrogen, which is then available to the plants that are sown in the following crop.

Nematode-reducing effect

Species	Proportion of weight in %
Bristle oat	35
Fodder radish double resistance	30
Common vetch	35
Total	**100**
Total legumes	35%

Sowing rate: 30 kg/ha
Sowing: Early August to early September
Container size: 25 kg
Product no. 40173

TERRA GOLD®

TERRA GOLD® 16 Winterfit

Winter-hardy and tolerates late seeding

A winter-hardy catch crop mixture that tolerates late seeding. It can even be applied after early-harvested maize silage and provide attractive yields. Well-suited for crop rotations with abundant maize and cereals. The legumes in TERRA GOLD® 16, crimson clover and hairy vetch, provide ample nitrogen fixation.

Species	Proportion of weight in %
Winter forage rapeseed	15
Field mustard	5
Crimson clover	15
Hairy vetch	40
Italian ryegrass	25
Total	**100**
Total legumes	55%

Sowing rate: 25 kg/ha
Sowing: Early August to late September
Container size: 25 kg
Product no. 40176

TERRA GOLD® 17 Feedstar

Highly palatable catch crops

A winter catch crop mixture that can provide one to several silage cuts in the following spring. It uses high-grade varieties of Italian ryegrass and two small-seed legumes, crimson and red clover. The high share of legumes helps ensure that the resulting forage is protein-rich and that the soil is enriched with nitrogen for the subsequent crop.

Species	Proportion of weight in %
Italian ryegrass recommended winter catch crop variety	30
Italian ryegrass	30
Crimson clover	25
Red clover	15
Total	**100**
Total legumes	40%

Sowing rate: 30 kg/ha
Sowing: Early August to late September
Container size: 25 kg
Product no. 40177

*Coated Seed

TERRA GOLD®

TERRA GOLD® 24
BlitzStart

An effective catch crop mixture that is reliably winterkilled, primarily comprised of white and brown mustard. It is well-suited for use in rotations that do not involve cruciferous plants, e.g. cereal or maize crop rotations. The mixture tolerates late sowing extremely well and offers exceptionally rapid development.

Also available as an organic mixture!

Species	Proportion of weight in %
White mustard	80
Brown mustard	10
Camelina	10
Total	**100**

Sowing rate: 10–12 kg/ha
Sowing: July to mid-September
Container size: 25 kg
Product no. 40186

TERRA GOLD® 25
Allround

A flower-rich catch crop mixture with Egyptian clover for nitrogen fixation. During its flowering period, this mixture offers a very attractive appearance and abundant nectar flow for beneficial insects. The plants serve as a source of sustenance and shelter for a variety of animals, including birds and small mammals.

Also available as an organic mixture!

Species	Proportion of weight in %
Lacy phacelia	40
Niger	35
Egyptian clover	25
Total	**100**
Total legumes	25

Sowing rate: 9–11 kg/ha
Sowing: August to early September
Container size: 25 kg
Product no. 40187

TERRA GOLD®

TERRA GOLD® 27
Green manure mixture

A mixture that aims to reliably meet minimum greening requirements as an alternative to pure-sown mustard. The fast-germinating species used reliably prevent erosion, while the leafy plants ensure good ground shading. Fodder radish and white mustard help to ensure good root penetration of the soil.

Species	Proportion of weight in %
White mustard	60
Fodder radish	25
Garden cress	5
Niger	10
Total	**100**

Sowing rate: 20 kg/ha
Sowing: August to mid-September
Container size: 25 kg
Product no. 40189

TERRA GOLD® 51
Green Ground 1

Good solution against soil compaction like plough soles due to optimal composition of mixture an effective loosening of soils. In the formed root canals, an air exchange takes place into deeper soil layers and water can infiltrate.

Species	Proportion of weight in %
Fodder radish	20
Melioration radish	10
Brown mustard	5
Lacy phacelia	5
Buckwheat	15
Bristle oat	20
Mung bean	10
Blue lupin	15
Total	**100**
Total legumes	25

Sowing rate: 20 kg/ha
Sowing: August to mid-September
Container size: 25 kg
Product no. 40189

TERRA GOLD®

TERRA GOLD® 52
Green Ground 2

A balanced, non-winter-resistant and fast-growing mixture that is primarily designed for soils with compaction. The melioration radish it contains effectively loosens the soil and contributes to faster soil warming in spring. The mixture improves both air exchange and the infiltration rate of the soil. The buckwheat and phacelia species in the mixture promote a fine, crumbly soil structure. In addition, nitrogen fertilizer can be saved in the following crop because summer vetch fixes atmospheric nitrogen. The mixture is particularly suitable for grain and maize crop rotations.

Species	Proportion of weight in %
Melioration radish	40
Lacy phacelia	10
Buckwheat	10
Common vetch	40
Total	**100**
Total legumes	40

Sowing rate: 25-30 kg/ha
Sowing: bis Mitte September
Container size: 25 kg
Product no. 40252

TERRA GOLD® 53
Budget

Versatile and cost-effective greening solution for crop rotations in which cereals, maize are prominent. The mixture has an excellent ability to suppress weeds. This mixture protects the soil against erosion and improves soil fertility. Besides, the mixture is reasonably drought tolerant.

Species	Proportion of weight in %
Fodder radish	10
White mustard	30
Lacy phacelia	10
Camelina	30
Niger	20
Total	**100**
Total legumes	0

Sowing rate: 9 kg/ha
Sowing: Juli bis Anfang Oktober
Container size: 25 kg
Product no. 40253

TERRA GOLD®

TERRA GOLD® 54
Leg 1

Cover crop and green manure mixture that is particularly suitable for grain and maize crop rotations and germinates reliably even in dry and warm summer conditions. Rapidly mass-forming species such as mustard and Bristle oats effectively absorb nutrients left behind by the previous crop and protect them from being transferred into the groundwater. Buckwheat also provides an attractive and insect-friendly flowering aspect. The mixture is rounded off by a high proportion of small-grain legumes, which cover the soil securely, fix atmospheric nitrogen and have an extremely high previous crop value.

Species	Proportion of weight in %
White mustard	5
Brown mustard	5
Bristle oat	5
Buckwheat	5
Camelina	20
Niger	5
Fenugreek	15
Bigflower clover	30
Squarrose clover	10
Total	**100**
Total legumes	55

Sowing rate: 10 kg/ha
Sowing: Juli bis Ende September
Container size: 25 kg
Product no. 40254

TERRA GOLD® 55
Leg 2

A balanced, non-winter-resistant cover crop and green manure mixture with a focus on atmospheric nitrogen fixation. The mixture consists of over 50% legumes, which not only produce excellent shade cooking, but also provide strong nitrogen fixation. This means you can save on expensive mineral fertilizer in the following crop. Mustard and Bristle oats also ensure rapid and safe emergence in the beginning with reliable green mass formation. All components enable the following crop to be cultivated, even with reduced tillage, using soil- and water-conserving mulch sowing methods. The mixture is particularly suitable for grain and maize crop rotations.

Species	Proportion of weight in %
White mustard	11
Bristle oat	22
Buckwheat	11
Egyptian clover	6
Blue lupin	35
Persian clover	2
Common vetch	13
Total	**100**
Total legumes	56

Sowing rate: 40 kg/ha
Sowing: Anfang August bis Anfang Oktober
Container size: 25 kg
Product no. 40255

Aerial sowing via drones

Agricultural drones are already revolutionising agriculture – convenient, flexible and deployable in a variety of situations. One of their key applications is broadcast seeding from the air.

Operations managers are always asking themselves how they can continue to optimise their business. Aerial sowing via drone could be an important step in that direction. Elements of digital smart farming can be intelligently linked to modern, site-specific crop production methods and current seed technology.

Where and how do agricultural drones make an impact?
Possibilities include seeding for catch crops and regeneration, grassland reseeding or undersowing, both in pure sowing and in mixtures. It's high impact and low cost, plus it saves an additional tractor pass over the field. Aerial sowing offers flexibility, saves time, eases peak workloads and reduces the effect of soil and weather conditions being too dry or too wet.

Broadcasting seeds for catch crops or regeneration prior to harvest
By carrying out catch crop or regenerative seeding via drone over the main field some two weeks before the main crop is harvested, it is possible to completely avoid the short post-harvest fallow period. This is a significant advantage over conventional catch crop seeding that ensures that the ground is continuously and actively covered.

Ensure gentler undersowing
Regardless of whether undersowing is done normally, with fields drilled in wide rows, or in crops with wide row spacing such as maize, it is possible to carry it out over the main crop in spring in a careful, efficient manner without an additional tractor pass. In addition to traditional grass under sowing, there is currently significant enthusiasm for clover undersowing due to the meteoric rises in energy and fertiliser prices.

Seamless grassland reseeding – even in rough terrain
Grassland reseeding is another area where drones can be employed. The advantage is that the reseeding can be carried out in a manner that is tailored to the specific objective, site, and topology on just the right date. Especially in the spring, when marginal and transitional sites cannot yet be driven on, reseeding can be reliably carried out with drones.

Results from a trial comparing aerial and conventional sowing

Our trials show that, when the right species or mixtures are chosen, it is possible to achieve rapid ground cover and establish good catch crop stands. This promotes continuous ground coverage, protecting the soil from counterproductive water evaporation and heavily suppressing weeds and volunteer crops. The following graphic provides an overview of the progression in ground coverage by four studied catch crop mixtures. The mixtures were sown by drone two weeks before the wheat harvest. In addition, strip-till sowing was carried out one week after threshing and conventional sowing was performed after two rounds of stubble breakage (four weeks after harvest).

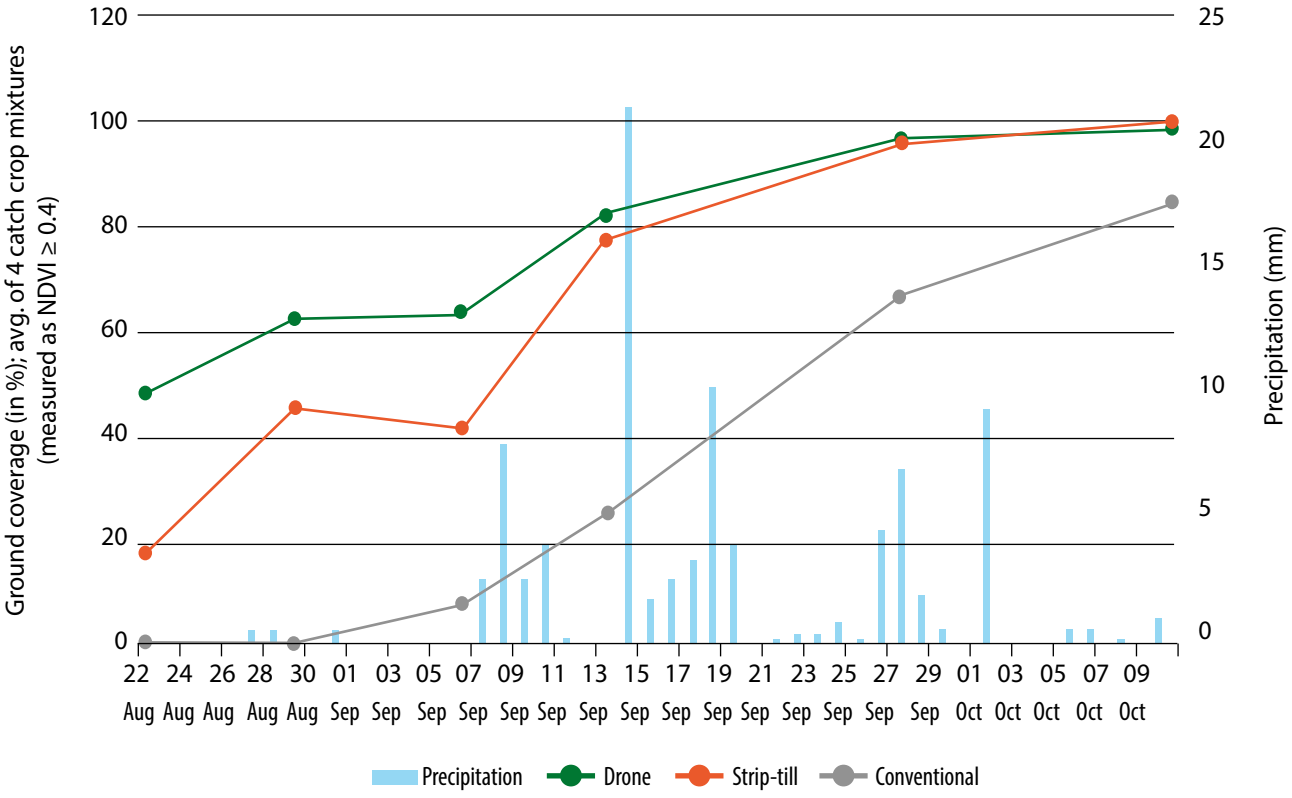


Figure 1: Progression in the degree of ground coverage (in %, defined as NDVI values ≥ 0.4), expressed as the average of four tested catch crop mixtures (50:50 white mustard:fodder radish reference mixture and TERRA GOLD® 11 Spread fix, as well as one crucifer-containing and one crucifer-free aerial sowing mixture).

Making up for the disadvantages of aerial sowing with Coated Seed

The disadvantages arising from the lack of a seed bed and insufficient soil contact for germination can be balanced out by the advantages of Coated Seed technology. Notably, coated seeds germinate a few days faster than uncoated seeds, and their germination rate is about 10% higher. In addition, coating the seeds allows for homogeneous storage and improved broadcasting ability. Combined with the advantages of drone seeding, pre-harvest aerial sowing processes and Coated Seed technology can work together in an overall crop production concept.

TERRA GOLD® 21
Aerial sowing mixture

Contains cruciferous plants

Our aerial sowing mixture with cruciferous plants has been developed for pre-harvest aerial sowing by drone. The mixture is well-suited for cereal and maize rotations. All of the seeds in the mixture are coated, which counteracts the drawbacks of not preparing the soil prior to sowing. The mixture offers impressive and uniform field emergence. The early sowing date, prior to the harvest of the main crop, enables astonishing gains in plant growth relative to conventional stands that are planted at least three to four weeks later.

Species	Proportion of weight in %	Share of seeds in % (approx.)
Fodder radish	25	8.9
Niger	10	13.5
Ethiopian mustard	15	18.9
Egyptian clover	30	44
White mustard	20	14.7
Total	**100**	**100**
Total legumes	30%	44%

Sowing rate: 25 kg/ha
Sowing: Late June to early October
Container size: 25 kg
Product no. 40181

TERRA GOLD® 22
Aerial sowing mixture

No cruciferous plants

A mixture designed specially for aerial sowing by drone. Since it contains no cruciferous plants, it can be used in rotations that include rapeseed. All components in the mixture are present in a Coated Seed formulation. Our Coated Seed technology efficiently counteracts the negative effects on germination and field emergence due to the lack of soil preparation. Because of its quick germination and the head start it gets from pre-harvest seeding, the mixture effectively suppresses weeds and plays a valuable part in agricultural designs for fields with a growing stand 365 days a year.

Species	Proportion of weight in %	Share of seeds in % (approx.)
Lacy phacelia CS*	10	16
Niger	25	24.7
Sudan grass	30	3.8
Egyptian clover	25	26.7
Persian clover	5	10.9
Balansa clover	5	17.8
Total	**100**	**100**
Total legumes	35%	55%

Sowing rate: 25 kg/ha
Sowing: Late June to early October
Container size: 25 kg
Product no. 40182

Sowing by drone: A topic for the future!

For several years now, we at Feldsaaten Freudenberger have been thinking about dropping seeds from the air. What sounded like science fiction 10 years ago has now arrived in agricultural practice. Many of us know about photography drones from private use. Aerial photography and drone-filmed videos are commonplace nowadays. In agriculture, drones are currently used for a wide variety of applications. The most widely known example is drones with thermal imaging cameras being used to rescue fawns before a field is mowed, or to check on solar plant functioning. In addition, imaging procedures are used to assess plant populations from the air. Drones can also be fitted with all kinds of sensors to collect site-specific data in order to use this information to set out future management strategies.

One of the best-known applications in agriculture is to distribute beneficial insects (Trichogramma) to combat the European corn borer. To accomplish this, drones are outfitted with "Trichogramma balls", and fly independently over the chosen site throwing out balls at regular intervals. This allows the drones to replace very time-intensive manual labour with enormous effectiveness. Today, over 70% of beneficial insect distribution in maize cultivation is done using drones.

In Europe, drone sowing remains in its infancy, but it has got off to a solid start. Large broadcast seeding drones come mainly from China, where the technology has spread rapidly. In addition to their use in sowing, many of these drones can also be fitted with a tank and nozzles to be used to apply plant protection products. This is the most important use of these drones. Spreading seeds is a secondary application for drones, offering a double use case that makes the investment a profitable one. In comparison to other agricultural technologies, purchasing drones is relatively inexpensive.

In the last three years, sowing by drone has become increasingly well known in Germany. To date, the most important area is sowing catch crops. Here, the usefulness lies in the ability to sow the seeds earlier in the standing fields of ripening grain. Sowing seeds before harvest is resource-saving, cost-efficient and effective, as sowing catch crops by drone reduces costs associated with preparing the soil and seedbed. The catch crop's growth window is also extended by three to four weeks. This means that the catch crop has more time in which to form biomass and for legumes to enrich the soil with nitrogen. This makes drone seeding particularly suitable for catch crop planting in summer crops, though it also enables catch crops to be sown before winter sets in. Since not all catch crops are equally suitable for sowing by drone, these pages also present two newly developed mixtures that are specially designed for this technology: TERRA GOLD® 21 and TERRA GOLD® 22. The species they contain have been shown to be particularly suitable in sowing trials and in practice.

An additional application is undersowing grasses and clover in cereal and maize cultivation. Drone sowing has certain unique advantages here as well: they can cover large areas at a low cost, with the interesting advantage that they can work regardless of weather conditions. Specifically, there do not need to be any questions regarding how well the spring soil can tolerate being driven on or handle heavy loads. Thus, drones offer significant advantages when sowing seeds on wet soils that cannot be driven on using conventional technology. This also means that seeds can be sown while the soil contains enough of the water that they need to germinate.

In the future, sowing by drone will play a larger role. In addition to sowing catch crops and undersowing, additional use cases for sowing by drone will come to the fore. Overseeding in grasslands is certainly one area of interest, including in steep sites where expensive mountain technology has to be employed. Wet grasslands are another example, as the optimal sowing period is often missed while growers have to wait due to issues with the ability to drive on the field. Drone-based overseeding offers a timely alternative for the future. Sowing by drone will also be useful when planting cover crops in steep areas of vineyards and in embankment greening.

Single seeds

We offer a wide range of individual seeds. You can obtain several hundred species from us, and some species have a truly comprehensive range of varieties for all requirements. A selection of the species we offer is below. If the species you are looking for is not there, please get in touch – we would be happy to help you!

Grasses

Hybrid ryegrass	Lolium hybridum
Perennial ryegrass	Lolium perenne
Annual ryegrass	Lolium multiflorum ssp. westerwoldicum
Festulolium / Meadow fescue	Festulolium
Tall oatgrass	Arrhenatherum elatius
Yellow oatgrass	Trisetum flavescens
Wood bluegrass	Poa nemoralis
Rescue grass	Bromus catharticus
Cocksfoot	Dactylis glomerata
Tall wheatgrass	Elymus (Agropyron) elongatum
Tall fescue	Festuca arundinacea
Common bentgrass	Agrostis capillaris
Red fescue	Festuca rubra rubra
Rigid ryegrass	Lolium rigidum
Sudan grass	Sorghum bicolor x Sorghum sudanense
Creeping bentgrass	Agrostis gigantea
Italian ryegrass	Lolium multiflorum ssp. italicum
Meadow foxtail	Alopecurus pratensis
Timothy grass	Phleum pratense
Smooth-stalked meadow grass	Poa pratensis
Meadow fescue	Festuca pratensis

Legumes

Field bean	Vicia faba
Blue (narrow-leaved) lupin	Lupinus angustifolius
Blue lupin	Lupinus angustifolius
Brown lentil	Lens culinaris L.
Wild perennial lupin	Lupinus perennis
Field peas	Pisum sativum
Yellow lupin	Lupinus luteus
Seed peas	Pisum sativum
Hungarian vetch	Vicia pannonica
Grass pea	Lathyrus sativus
Soybean	Glycine max
Common vetch	Vicia sativa
Runner beans	Phaseolus vulgaris
White lupin	Lupinus albus
Hairy vetch	Vicia villosa

Clover species

Egyptian clover	Trifolium alexandrinum
Fenugreek	Trigonella foenum-graecum
Yellow sweet clover	Melilotus officinalis
White sweet clover	Melilotus albus
Balansa clover	Trifolium michelianum

Strawberry clover	Trifolium fragiferum
Subterranean clover	Trifolium subterraneum
Sainfoin	Onobrychis viciifolia
Black medick	Medicago lupulina
Barrel medick	Medicago truncatula
Bird's-foot trefoil	Lotus corniculatus
Crimson clover	Trifolium incarnatum
Alfalfa	Medicago sativa
Persian clover	Trifolium resupinatum
Arrowleaf clover	Trifolium vesiculosum
Burr medick	Medicago polymorpha
Red clover	Trifolium pratense
Snail medick	Medicago scutellata
Alsike clover	Trifolium hybridum
Common bird's foot	Ornithopus sativus
Squarrose clover	Trifolium squarrosum
Greater bird's-foot trefoil	Lotus uliginosus
White clover	Trifolium repens
Kidney vetch	Anthyllis vulneraria

Oilseeds

Ethiopian mustard	Brassica carinata
Corn spurry	Spergula arvensis
Buckwheat	Fagopyrum esculentum
Wild carrot	Daucus carota
White mustard	Sinapis alba
Turnip	Brassica rapa var. rapa
Swede	Brassica napus
Marrow-stem kale	Brassica oleracea
Oriental radish	Raphanus sativus
Flax	Linum usitatissimum
Fodder radish	Raphanus sativus
Brown mustard	Brassica juncea
Summer forage rapeseed	Brassica napus
Summer seed rapeseed	Brassica napus
Sunflower	Helianthus annuus
Westphalian kale	Brassica oleracea
Winter forage rapeseed	Brassica napus
Winter seed rapeseed	Brassica napus
Field mustard	Brassica rapa L. silvestris

Other seeds

Cup plant	Silphium perfoliatum
Feed beet	Beta vulgaris
Garden cress	Lepidium sativum
Rye	Secale cereale
Camelina	Camelina sativa
Lacy phacelia	Phacelia tanacetifolia
Chinese mallow	Malva verticillata
Niger	Guizotia abyssinica
Bristle oat	Avena strigosa
Ribwort plantain	Plantago lanceolata
French marigold	Tagetes patula
Wild rye	Secale multicaule
Chicory	Cichorium intybus

Perennial ryegrass

Lolium perenne

Due to its optimal fodder value, perennial ryegrass is an important component of many meadows and pastures. It is one of the most important cultivated grasses throughout the world. Perennial ryegrass does well when cultivated in fresh, loamy soil, in low-lying areas and coastal regions. As a low grass, perennial ryegrass is very tolerant of foot traffic; it emerges the fastest and its overall fodder yield is high. The varieties are also differentiated according to the time of heading (early, intermediate, late) and ploidy (diploid or tetraploid). Due to its high competitive vigour, this species is excellently suited for reseeding.

Seeding rate: 25–30 kg/ha
Sowing period: Before September
Sowing depth: 1–2 cm
Distance between rows: Similar to cereals
Fertilisation: As a main crop in spring: 80–100 kg N/ha, For each subsequent cropping: 60–80 kg N/ha

Important components for grassland mixtures

ARTONIS, t.

German leader in the very early maturity segment

Second on the podium after Arvicola

The successor to ARVICOLA has been found. ARTONIS is a new variety that has been approved in the early maturity group. It is classed as very persistent and is recommended for both boggy as well as high-altitude sites.

Container size: 25 kg
Product no. 100329

ARVICOLA, t.

The top performer in persistence

A very early M variety with very strong mass formation. It also has excellent rust resistance and persistence.

Container size: 25 kg
Product no. 100372

SALMO, t.

A winter-hardy plant that goes the distance

An early M variety characterised by strong mass formation in early development. In trials, SALMO demonstrated impressive winter hardiness.

Container size: 25 kg
Product no. 100584

BELLATOR, t.

The high-yielding variety

BELLATOR is a tetraploid variety that belongs to the intermediate maturity group and stands out for its excellent establishment and very strong mass formation after planting. The yield figures for BELLATOR have set a new standard for the intermediate maturity group, especially given the variety's extreme durability.

Container size: 25 kg
Product no. 100656

Perennial ryegrass – Lolium perenne

SORONIA, t.
Highest yields in the early maturity group*

A tetraploid variety from the early maturity group, it exhibits strong growth in spring. SORONIA is very winter-hardy and achieves high yields in its first growth, as well as high overall yields.

Container size: 25 kg
Product no. 100536

SORAYA, t.
Even yield distribution

SORAYA is a tetraploid ryegrass variety of the medium-late maturity group. Despite the relatively late heading in spring, it forms ample leaf mass quite quickly, resulting in very high yield of the best quality in the first cut. Thanks to its excellent resistance to diseases, particularly to crown rust, the feed quality remains good even in the summer growths.

Container size: 25 kg
Product no. 100408

TRIBAL, t.
Excellent persistence

The tetraploid variety TRIBAL belongs to the mid-season maturity group. Special features of this variety include very high persistence, uniformly high yields and even yield distribution. TRIBAL has a high sward density and low susceptibility to all ryegrass diseases.

Container size: 25 kg
Product no. 100458

MELFROST, t.
Highest-yield variety*

An M variety that comes with persistence, leaf health and winter-hardiness. MELFROST was also rated ++ for rust resistance.

Container size: 25 kg
Product no. 100462

AKURAT, t.
Extraordinary first and overall yields

AKURAT is a late variety of perennial ryegrass with impressive yield figures, both in its first cut and overall. AKURAT exhibits good rust resistance and persistence. In addition, AKURAT shows high winter-hardiness.

Container size: 25 kg
Product no. 100353

MELPAULA, t.
Suitable for planting in boggy soils and very late

A late, tetraploid M variety with high persistence and yield performance. MELPAULA is also very winter hardy.

Container size: 25 kg
Product no. 100569

* According to the German Federal Plant Variety Office from the descriptive list of varieties forage grasses, sainfoin, clover, alfalfa 2018.

Variety of perennial ryegrass	Ploidy	Heading (maturity group)	Development after sowing	Tendency to winterkilling	Susceptibility to rust	
ARTONIS (M) (H)	t	1 (Very early)	7	4	4	
ARVICOLA (M) (H)	t	1 (Very early)	8	4	4	
SALMO (M)	t	2 (Very early to early)	7	4	3	
SORONIA	t	3 (Early)	7	4	3	
BELLATOR	t	4 (Early to intermediate)	7	4	4	
TRIBAL (M)	t	4 (Early to intermediate)	6	4	3	
SORAYA (M) (H)	t	5 (intermediate)	6	4	4	
MELGRAPPA	t	6 (Intermediate to late)	5	4	4	
AKURAT	t	8 (Late to very late)	5	5	5	
MELFROST (M)	t	8 (Late to very late)	5	4	4	
MELJAM	d	8 (Late to very late)	4	5	4	
MELPAULA	t	8 (Late to very late)	5	4	3	

Source: Bundessortenamt (German Federal Plant Varieties Office), Descriptive List of Varieties, 2022 edition

particularly good

M = Suitable for boggy soil H = Suitable for high altitudes

Grade	Mass formation, Tendency to winterkilling, Susceptibility to diseases	Sward density	Yield, Persistence
1	Absent or very low	Very loose	Very low
2	Very low to low	Very loose to loose	Very low to low
3	Low	Loose	Low
4	Low to medium	Loose to medium	Low to medium
5	Medium	Medium	Medium
6	Medium to high	Medium to dense	Medium to high
7	High	Dense	High
8	High to very high	Dense to very dense	High to very high
9	Very high	Very dense	Very high

	Persistence	Sward density	Total DM yield	Product no.
	6	5	6	100329
	6	6	5	100372
	5	5	5	100584
	5	5	6	100536
	7	5	7	100656
	6	5	6	100458
	6	4	6	100408
	7	5	6	100307
	6	5	6	100353
	7	5	6	100462
	6	6	6	100728
	7	5	5	100569

Italian ryegrass

Lolium multiflorum ssp. italicum

Italian ryegrass is a fast-growing, medium-sized grass that grows in tussocks over several years and is mainly used for field forage cultivation. Italian ryegrass differs from perennial ryegrass mainly in terms of its higher dry matter yields, greater height and lower persistence. Under ideal conditions it can be cropped up to six times a year. The rapid growth of Italian ryegrass makes it possible to get a 2–4 week edge over grasslands when cultivated on arable soils with sufficient water supply, with 2–3 more cuts per year. An extra cut for feed can be obtained for the autumn if sown in good time after harvesting the main crop.

Seeding rate: 40–45 kg/ha when sown pure, 20–25 kg/ha for undersowing
Sowing period: When sown pure, before September; when undersown with cereals in March and April
Sowing depth: 1–2 cm
Distance between rows: Similar to cereals
Fertilisation: As a main crop in spring: 80–100 kg N; for each subsequent cropping 60–80 kg N/ha, for stubble sowing 60 kg N/ha

MELSPRINTER, t.

The highest-yielding winter cover crop

MELSPRINTER is a tetraploid and an excellent species for use as silage or fresh forage. The yields are very good in the first growth, which has led the North-West German Chamber of Agriculture (NWL) to recommend it as a winter cover crop. This is an important factor when the plan is to only cut once and then sow maize. In addition to the excellent yield levels, the variety's low susceptibility to rust and mildew results in impressively healthy leaves.

Container size: 25 kg
Product no. 104934

MERVANA, t.

The rust-resistant winter cover crop

As a tetraploid cultivar, it has a strong first cut followed by a uniformly good yield performance in the following cuts. MERVANA's high sugar content and excellent palatability make it an excellent choice for fresh forage. MERVANA is also used in the mixtures recommended by the NWL. The variety received the WZ rating from NWL in 2021, indicating its suitability as a winter catch crop. Another noteworthy aspect of the variety is its even better rust resistance, with a top rating of 2.

Container size: 25 kg
Product no. 104979

MELINA, d.

The new diploid winter cover crop

MELINA is our new top-rated diploid variety. In cultivation value trials, the variety showed impressive early development in spring. Its advantages also include good stability and winter hardiness. Compared with other diploid varieties, MELINA has very good rust resistance as well as low susceptibility to bacterial wilt. Yield levels are also a decisive factor in the approval process. MELINA went above and beyond in this area, with high yields in the first growth as well as high overall yields.

Container size: 25 kg
Product no. 104890

Variety – Italian ryegrass	Ploidy	Heading (maturity group)	Development after sowing	Tendency to lodging	Tendency to winterkilling	Susceptibility to rust	Vulnerability to Fusarium	Total DM yield	First cut	Additional cuts	Product no.
MERVANA WINTER COVER CROP RECOMMENDATION	t	4 (early to intermediate)	5	4	4	3	4	6	5	6	104979
MORUNGA	t	4 (early to intermediate)	6	5	4	3	3	6	4	7	104913
ORYTTUS	t	4 (early to intermediate)	6	5	4	3	-	6	4	7	105034
ORYX	d	4 (early to intermediate)	6	5	4	4	4	6	5	7	105094
GEMINI	t	5 (intermediate)	6	5	4	7	4	6	5	7	105065
MELDUO WINTER COVER CROP RECOMMENDATION	d	5 (intermediate)	6	4	4	3	-	6	5	6	104886
MELINA WINTER COVER CROP RECOMMENDATION	d	5 (intermediate)	5	4	4	3	-	5	5	6	104890
MELSPRINTER WINTER COVER CROP RECOMMENDATION	t	5 (intermediate)	6	5	4	3	-	6	5	7	104934
MELQUATRO	t	5 (intermediate)	5	5	4	4	4	6	5	7	104997
XANTHIA	d	5 (intermediate)	6	5	5	-	-	6	4	7	104938

Source: Bundessortenamt (German Federal Plant Varieties Office), Descriptive List of Varieties, 2022 edition

For a detailed legend, see p. 64

particularly good

Italian ryegrass – Lolium multiflorum ssp. italicum

MELQUATRO, t.
A top variety with high yields

This variety has been approved by the German Federal Plant Varieties Office and offers a high yield potential and remarkably even yield distribution. The tetraploid variety also stands out for its high sugar content and elevated digestibility. These characteristics also makes it excellent as silage. MELQUATRO is used for silage and hay, as well as in fresh forage. While it can be sown in pure stands, it is also very highly recommended as a component in feed crop mixtures.

Container size: 25 kg
Product no. 104997

GEMINI, t.
Even yield distribution

This variety is characterised by its high yield in summer and its excellence as fresh forage. It also has high sugar content and good palatability. The A1 feed crop mixture is a highly successful formulation, which includes GEMINI alongside ORYX and MELQUATRO. GEMINI can be used for fresh forage, silage and hay. It can be sown in autumn for harvesting the following year, or else during the summer with enough time for one cut in autumn prior to overwintering, with the main harvest occurring in the following year.

Container size: 25 kg
Product no. 105065

ORYX, d.
The energetic cultivar

A rapid starter among Italian ryegrasses. ORYX is a variety that is recommended throughout Germany, with strong mass formation during its early development. This diploid variety is not prone to bolting during regrowth. This means that it provides high-quality feed throughout the growing season. Furthermore, the yield distribution of ORYX is also excellent. ORYX also rapidly covers the ground and thus effectively suppresses weed growth.

Container size: 25 kg
Product no. 105094

ORYTTUS, t.
Weed suppression for organic cultivation

ORYTTUS is our first Italian ryegrass that was bred specifically for the needs of organic farming. ORYTTUS is characterised by very rapid stand establishment and excellent mass formation in its early development. It also received top marks in its test category for the parameters of weed suppression and degree of coverage. In terms of yield, ORYTTUS tends to have a summer peak in its yield distribution, reaching an average of 5% higher yield than the current top varieties.

Container size: 25 kg
Product no. 105034

MELDUO, d.
The hay queen
Winter cover crop recommendation

For many years, tetraploid cultivars were the breeder's favourite. Recently, however, diploid varieties have come into the limelight. MELDUO, a new diploid variety, has been approved thanks to its high overall yield and even yield distribution. In addition, the variety exhibits good leaf health compared to other diploid varieties. Thanks to its high degree of stability, MELDUO is ideally suited to hay production.

Container size: 25 kg
Product no. 104886

Hybrid ryegrass

Lolium hybridum

Hybrid ryegrass is a cross between Italian ryegrass and perennial ryegrass. Its appearance is similar to the stronger of its two crossbreeding partners. It is extremely competitive and also produces very high yields. Hybrid ryegrass is best sown in mixtures, e.g. with red clover.

Seeding rate: 40–45 kg/ha when sown pure, 20–25 kg/ha for undersowing
Sowing period: When sown pure, before late August; when undersown with cereals in March and April
Sowing depth: 1–2 cm
Distance between rows: Similar to cereals
Fertilisation: As a main crop in spring: 80–100 kg N; for each subsequent cropping: 60–80 kg N/ha, for stubble sowing 60 kg N/ha

RUSA, t.

The early Italian variety

A variety in a class of its own. As a tetraploid, RUSA provides high-quality fodder. Its excellent winter-hardiness combined with high overall yields make RUSA a great addition to the feed plant range. RUSA is usually grown in mixtures with other grass species. Cultivation of a mixture of hybrid ryegrass and red clover has proven particularly effective as a high-energy feed.

Container size: 25 kg
Product no. 100122

MELCOMBI, t.

Balanced yield variety

MELCOMBI is a tetraploid early-season variety and is classified under type "italicum". MELCOMBI has good rust resistance and showed impressive yields in the VCU test. It also exhibits good winter-hardiness and sward density. MELCOMBI works very well in mixtures with red clover for use over two to three years.

Container size: 25 kg
Product no. 100149

PALIO, t.

The highly digestible English variety

The PALIO variety is a new addition to the range. It is a cross between perennial and hybrid ryegrass. The variety's habit is thus more in the area of a perennial ryegrass. PALIO forms dense, leafy stands with practically no tillering in the summer growths. This also results in high fodder value. PALIO is winter hardy and, above all, very healthy. Its resistance to rust is particularly impressive.

Container size: 25 kg
Product no. 100106

Annual ryegrass

Lolium multiflorum ssp. westerwoldicum

Annual ryegrass belongs to the family of short-lived ryegrasses, which form tillers in the same year they are planted. Annual ryegrass breeding is aimed at two use types:

1. Catch crop planting after the grain harvest

2. Annual arable feed crop production with multiple crops in a single year and in mixtures with Italian ryegrass

Seeding rate: Diploid varieties 40–45 kg/ha, tetraploid varieties 45–50 kg/ha
Sowing period: As a main crop, before late April; as a catch crop before late August
Sowing depth: 1–2 cm
Distance between rows: Similar to cereals
Fertilisation: At the time of the first cut: 80–100 kg N, at each subsequent cropping: 60–80 kg N/ha

Both diploid and tetraploid varieties are bred. The annual ryegrass ANDREA is particularly suitable as a so-called nurse grass when establishing new permanent grassland and when overseeding heavily damaged grassland areas.

MELWORLD, d.

Recommended variety with enormous yields

As a diploid variety, MELWORLD is very well suited for growing as a main crop. Its yield potential is extraordinary, especially in later cuts. This is combined with rapid ground coverage and excellent weed suppression. In catch crop cultivation, MELWORLD is an excellent partner in mixtures with Egyptian or Persian clover.

commendation:
max. 40–45 kg/ha

Container size: 25 kg
Product no. 101066

MELMONDO, t.

Best suited as catch and main crop

The tetraploid ryegrass MELMONDO is bred specifically for use as a catch crop; it can, however, also be grown as main crop because of its consistent yields. MELMONDO is a very leafy variety that produces high-quality feed and can be used fresh or silaged. It grows very quickly in the early stages, leading to rapid ground cover and weed suppression

Container size: 25 kg
Product no. 101014

MELJUMP, t.

A top variety recommended as a main crop and catch crop

Many years of intensive breeding work culminated in the approval of the tetraploid variety MELJUMP. During the two years of VCU testing, it proved its effectiveness in main crop cultivation with very high overall yields.
Its resistance to rust and good stability are equally impressive. MELJUMP also exhibits good catch crop yields, earning a recommendation for catch crop use as well.

Recommendation:
max. 40–45 kg/ha

Container size: 25 kg
Product no. 101021

	Catch crop							Main crop		
									Dry matter yield	
Variety – Annual ryegrass	**Ploidy**	**Heading** (maturity group)	**Development after sowing**	**Tendency to lodging**	**Susceptibility to rust**	**Susceptibility to mildew**	**DM yield, first cut**	**Development after sowing**	**Total**	**1st cut**
LEMNOS	t	4[1] (early to intermediate)	-	-	-	-	-	7	6	6
MENDOZA	d	4 (early to intermediate)	-	-	-	-	-	6	6	5
MELJUMP	t	6 (intermediate to late)	6	5	4	-	5	5	7	4
MELWORLD	d	6 (intermediate to late)	5	-	5	-	4	5	7	4
MELMONDO*	t	7 (late)	6	4	4	5	7	5	6	6

[1]No inflorescence formation observed when grown as a catch crop

Source: Bundessortenamt (German Federal Plant Varieties Office), Descriptive List of Varieties, 2022 edition

particularly good

*Plant breeder classification

For a detailed legend, see p. 64

The nurse grass ANDREA

Use a grassland mixture that is suitable for your location and add 7–10 kg of the nurse grass. The annual ryegrass ANDREA is recommended and is well-suited for this purpose. This variety exhibits quick and stable establishment and is highly competitive, which helps to suppress sprouting weeds. At the same time, it also offers excellent yield and quality characteristics in the first growth. The variety then recedes drastically, making room for the actual reseeded plant stand that is developing underneath.

By the second and third growth the stand shows its typical composition. There is almost no yield loss.

Pasture components

Cocksfoot

Dactylis glomerata

Seeding rate:	20–25 kg/ha
Sowing period:	Before late August
Sowing depth:	1–2 cm
Distance between rows:	Similar to cereals
Location:	Dry areas

TRERANO (early)
A winter-hardy cocksfoot variety with very early to early panicle formation. TRERANO also has strong mass formation during early development and offers high yields in the first cut.

Product no. 102620

TREPOSNO (early-intermediate)
This variety has early to intermediate panicle formation and an upright growth form. TREPOSNO offers strong mass formation and a high-yielding first cut. It is best put to use in mixtures for permanent pastures and forage cropping.

Product no. 102633

LYRA (intermediate)
Panicle formation in this variety is intermediate to late. LYRA is an ideal component of permanent grassland mixtures on dry sites, offering high persistence and winter hardiness.

Product no. 102629

DICEROS (very late)
The latest cocksfoot variety in our range is DICEROS, which has received a grade of 6 in overall yield. Outstanding winter hardiness and persistence.

Product no. 102659

Tall fescue

Festuca arundinacea

Seeding rate:	30 kg/ha
Sowing period:	Before late August
Sowing depth:	1–2 cm
Distance between rows:	Similar to cereals

OTARIA
This tall fescue variety is characterised by very fine leaves and therefore belongs to the "soft leaf" group. The plant is almost entirely free of the jagged ligules often found on the leaf blades of tall fescue, which makes it naturally more appealing to animals.

Product no. 10304

ELODIE
With its fine leaves, ELODIE is a member of the "soft leaf" group. It also stands out for its high early mass formation, high overall yield and low susceptibility to rust.

Product no. 103061

HYKOR
HYKOR is an extremely persistent, highly adaptable tall grass. This tall fescue variety is particularly suited for winter grazing for suckler cows.

Product no. 103123

Red fescue

Festuca rubra rubra

Seeding rate: 25 kg/ha
Sowing period: Before late August
Sowing depth: 1–2 cm
Distance between rows: Similar to cereals

REVERENT
REVERENT is an extremely persistent red fescue variety with uniformly high yields. It is very vigorous, winter hardy and forms a very thick sward. It is a very good addition to mixtures for extensive permanent pasture applications.

Product no. 103550

Smooth-stalked meadow grass

Poa pratensis

Seeding rate: 15 kg/ha
Sowing period: Before late August
Sowing depth: 1–2 cm
Distance between rows: Similar to cereals

SELISTA
SELISTA is a variety with outstanding agronomic performance. Its excellent rust resistance and persistence make SELISTA an impressive variety. It is also an important component in many permanent pasture and meadow mixtures thanks to its good sward density and high yields.

Product no. 105543

KUPOL
KUPOL comes from a Scandinavian variety of smooth-stalked meadow grass with outstanding agronomic performance. Particularly impressive are KUPOL's excellent regrowth potential and high yield performance. KUPOL is also an important component of many grassland mixtures thanks to its good sward density and disease resistance throughout the year, especially against rust.

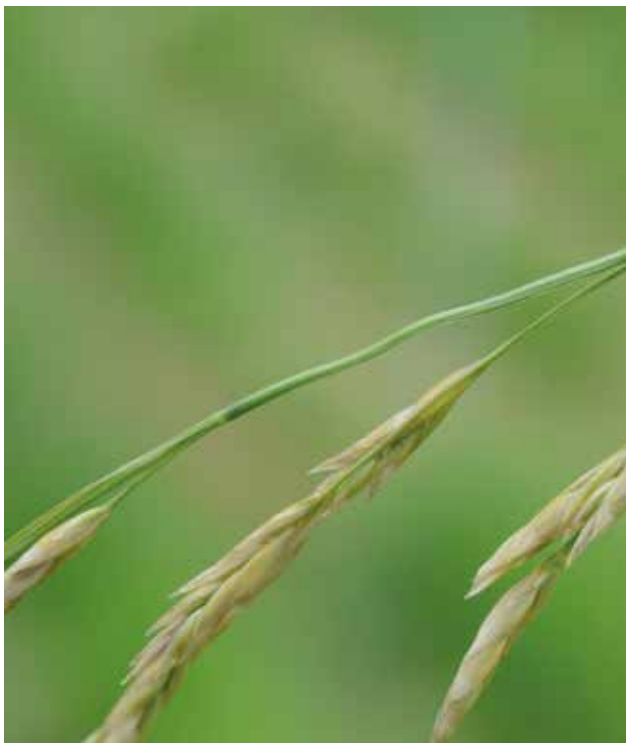
Product no. 105521

Meadow fescue

Festuca pratensis

Seeding rate: 25 kg/ha
Sowing period: Before late August
Sowing depth: 1–2 cm
Distance between rows: Similar to cereals

PARDUS
This highly recommended meadow fescue variety is known for its huge yield potential both in the first cut and in regrowth. PARDUS exhibits rapid early development and fast regrowth. It is also very winter hardy and persistent.



Product no. 106055

Festulolium

Italian ryegrass x meadow fescue

Seeding rate: 30 kg/ha
Sowing period: Before late August
Sowing depth: 1–2 cm
Distance between rows: Similar to cereals

Festulolium is a cross between fescue and ryegrass species. The objective of this cross was to combine the advantages of both species. The focus was on properties like persistence, winter-hardiness and yield. Depending on their breeding, different varieties resemble one of the original parents or combine their traits in equal measures. Different varieties available. Please ask for further information.

Timothy grass

Phleum pratense

Seeding rate: 15 kg/ha
Sowing period: Before late August
Sowing depth: 1–2 cm
Distance between rows: 15–20 cm

POLARKING

This variety belongs to the highest category of Timothy grasses thanks to its good winter hardiness and persistence. POLARKING can also provide impressive yields with a very good yield distribution, and is rated as an early to mid-season variety in terms of heading. It can be used successfully in mixtures for permanent grassland, as well as for arable feed crop production.

Product no. 103550

RASANT

RASANT is a well-established timothy-grass variety, characterised in particular by its good stand. It is valued for its high mass formation after sowing and high yield in the first cut, which helps to suppress weeds and other unwanted species and achieve a good plant stand. In addition, RASANT is characterised by good yields through the remaining year.

Product no. 104706

Meadow foxtail

Alopecurus pratensis

Seeding rate: 25 kg/ha
Sowing period: Before late August
Sowing depth: 1–2 cm
Distance between rows: Similar to cereals
Location: Alpine areas

ALOPEX

The meadow foxtail variety ALOPEX is now also available as Coated Seed. The seed coating increases germination capacity under field conditions by up to 15%, as well as significantly improving seed flow in the seed drill. You can learn more about the advantages of Coated Seed on page 10.

ALOPEX is a high-yielding variety with late heading that offers excellent winter hardiness and persistence.

Product no. 105120 (Coated Seed)

Large-seeded legumes

Supplying protein with native crop plants

Large-seeded legumes have gained significant prominence, with the cultivation area nearly doubling in the last five years. The reasons for this include the increased cost of protein-rich feed. Furthermore, the increased emphasis on legume cultivation means that the potential applications are only increasing. A considerable percentage of growers focus on using the plants as protein-rich feed, which is an option on both dairy and swine farms. Sales in retail stores and cooperatives are also growing steadily. Grain legumes are a group that comprises field beans, seed peas and soybeans, as well as the three species of lupins (yellow, white and blue lupin), which are described in more detail on the following pages. In addition to their high protein values, lupins also provide a free source of nitrogen. With the help of root nodule bacteria, nitrogen can be fixed and made available to the following crop on the field. When planting lupins, it is important to be aware of whether they have been planted on the field previously. The signs of successful symbiosis can be seen in the formation of small root nodules as well as in the deep green colour of the aboveground plant tissues. These factors are indications of the ideal conditions for a high yield potential. Planting lupins depends on a seedbed that is well distributed and, most importantly, free of weeds. Loamy, medium-heavy soils are preferred, though lupins can be cultivated on lighter, sandy soils as well. Soil that can be warmed easily and which has a good water supply is conducive to germination. The minimum temperature is 4°C, while optimal pH levels are between 6.5 to 7, though they can be a little higher as well. Yellow lupins can also handle a pH of under 6.5.

Legumes – the nitrogen factory that lives in the field

Blue lupin – Lupinus angustifolius (sweet lupin)

Seeding rate: 60–80 seeds/m² when used for seeds
Sowing period: As a main crop, before April; as a catch crop, before August
Sowing depth: 4–6 cm
Distance between rows: Similar to cereals
Fertilisation: Basic fertilisation (P/K)

BOLERO / BOREGINE

The blue lupin BOLERO / BOREGINE is characterised by very good grain and protein yields. The combination of nitrogen accumulation, early maturity, short plant height and a particularly low susceptibility to pod bursting helps to ensure a reliable harvest while also making the variety an ideal preceding crop for winter grains. BOLERO / BOREGINE performs best on the typical lupin locations with light soil and early summer drought.

Container size: 25 kg / **Product no.** 151138 (BOLERO) **Product no.** 151518 (BOREGINE)
Branching type (undetermined)

Yellow lupin – Lupinus luteus (sweet lupin)

Seeding rate: 60–80 seeds/m² when used for seeds
Sowing period: As a main crop, before April; as a catch crop, before August
Sowing depth: 2–5 cm
Distance between rows: Similar to cereals
Fertilisation: Basic fertilisation (P/K)

MISTER

The yellow sweet lupin MISTER matures early and is not very susceptible to lodging; it also exhibits relatively good resistance to anthracnosis, making it a reliable and high-yielding variety. As a nitrogen fixer, MISTER is also a valuable preceding crop. High crude protein yields, a good protein content of around 45% and extremely low alkaloid content make MISTER an important source of protein-rich native feed and food for humans.

Container size: 25 kg / **Product no.** 151550 Branching type (undetermined)

White lupin – Lupinus albus (sweet lupin)

Seeding rate: 50–60 seeds/m² when used for seeds
Sowing period: As a main crop, before April; as a catch crop, before August
Sowing depth: 2–4 cm
Distance between rows: Similar to cereals
Fertilisation: Basic fertilisation (P/K)

CELINA / FRIEDA

CELINA is a white lupin variety that is ideal for reliable, high-yield harvests thanks to its low height, very high stability and enhanced tolerance against anthracnose. In particular, CELINA's extraordinarily high crude protein content combined with low alkaloid bitterness makes it an important component of native protein-rich fodder and human diets. As a nitrogen fixer, CELINA is also a valuable preceding crop.

Container size: 25 kg / **Product no.** 151516 (CELINA) **Product no.** 202408 (FRIEDA)

Summer peas – Pisum sativum

Seeding rate: 140–170 kg/ha
Sowing period: As a main crop, before April; as a catch crop, before August
Sowing depth: 4–6 cm
Distance between rows: Similar to cereals
Fertilisation: Basic fertilisation (P/K/Mg)

SUSAN

SUSAN is a fast-growing feed pea that can be used both as forage and green manure. Its rapid mass formation allows it to produce high yields.

Container size: 25 kg **Product no.** 152600

Winter peas – Pisum sativum

Seeding rate: 90–120 kg/ha
Sowing period: Before October
Sowing depth: 4–6 cm
Distance between rows: Similar to cereals
Fertilisation: Basic fertilisation (P/K/Mg)

ARKTA

The winter field pea is a valuable fodder plant and a nitrogen supplier. Well suited for mixtures including winter rye or triticale, among others (20–40 seeds/m^2 and max. 200 seeds/m^2 of grain).

Container size: 25 kg **Product no.** 152528

Winter field beans – Vicia faba

Seeding rate: 350–380 kg/ha or 40-45 seeds/m^2
Sowing period: Before mid-October
Sowing depth: 5-7 cm
Distance between rows: Similar to cereals or precision sowing
Fertilisation: Basic fertilisation (P/K/Mg)

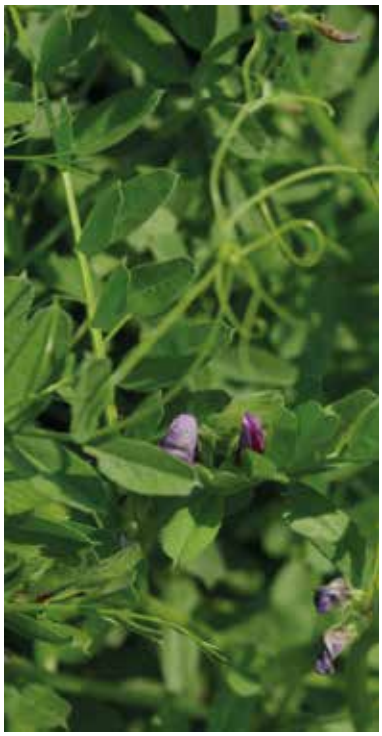
WIZARD / AUGUSTA / TUNDRA

Its long endurance provides the winter field bean WIZARD with significant yield advantages over summer field beans. This native grain legume also offers benefits such as the fixation of atmospheric nitrogen, lengthy periods of soil cover and high-quality shade provision. WIZARD's high protein yields represent a valuable contribution to achieving the German government's protein strategy.

Container size: 25 kg
Product no. 105034 (WIZARD) **Product no.** 150009 (AUGUSTA) **Product no.** 150011 (TUNDRA)

Common vetch – Vicia sativa

Seeding rate: 120 kg/ha
Sowing period: Before August
Sowing depth: 4–6 cm
Distance between rows: Similar to cereals
Fertilisation: Basic fertilisation (P/K/Mg)



EBENA

With its high and uniform yields, especially of crude protein, EBENA has made a name for itself as a top variety. A prolific grower, EBENA covers the ground quickly after being sown. Its low tendency to flower allows it to be grown for longer without the risk of losses in fodder quality. EBENA can also be used in mixtures with field peas and field beans, offering a protein-rich fodder that is ideally suited for fresh feed or silage. The plant's rapid early development and leafiness ensure rapid ground coverage and effective weed suppression. Since common vetch has no adverse effects on crop rotation, it is a very good component of sugar beet rotations and is reliably winterkilled. EBENA especially thrives on lighter soils, and is relatively unaffected by drought.

Container size: 25 kg / **Product no.** 154000

Hairy vetch – Vicia villosa

Seeding rate: 80–160 kg/ha
Sowing period: As a main crop, before April; as a catch crop, before October
Sowing depth: 4–6 cm (in mixtures)
Distance between rows: Similar to cereals
Fertilisation: Basic fertilisation

PAULA / VILLANA / HUNGVILLOSA

Hairy vetch or winter vetch is an excellent ingredient in overwintering catch crop cultivation and a key component of the Landsberger mixture. As a legume, it can transform atmospheric nitrogen into plant-available forms, providing free nitrogen for the following crop. HUNGVILLOSA, VILLANA and PAULA are winter-hardy varieties that stand out for their rapid establishment and good mass formation during early development.

Container size: 25 kg / **Product no. 1**54497 (PAULA) **Product no.** 154510 (VILLANA)
Product no. 154503 (HUNGVILLOSA)

Hungarian vetch – Vicia pannonica

Seeding rate: 80–160 kg/ha
Sowing period: As a main crop, before April; as a catch crop, before October
Sowing depth: 4–6 cm (in mixtures)
Distance between rows: Similar to cereals
Fertilisation: Basic fertilisation

DETENICKA PANONSKA / BETA

Hungarian vetch is a vetch species that closely resembles hairy vetch, with white flowers and slightly hairy stems. The species is very winter hardy and can be a good addition to mixtures. Sown similarly to hairy vetch.

Container size: 25 kg / **Product no.** 154515 (DETENICKA PANONSKA) **Product no.** 154501 (BETA)

RhizoFix®

RhizoFix® products for conventional and organic agriculture

In organic agriculture, fertilisation and humus management help to build soil fertility. The goal is to close the cycling of material within the system to the greatest extent possible. At the same time, the use of mineral fertilisers such as nitrate and ammonium compounds is legally forbidden.

As a result, nitrogen fixation by legumes represents the only way to absorb elemental atmospheric nitrogen and make it available to plants. The successful symbiosis between plants and bacteria (nodule formation) can only occur if specific active bacterial strains are present. RhizoFix® liquid inoculants make it possible to ensure the formation of root nodules in all common legume species, and thus support the resulting nitrogen fixation. This means that seed inoculation plays an especially meaningful role in organic operations when introducing new crop species such as soybeans. However, inoculation can also provide an enormous advantage in the case of established species in which nodules fail to develop.

! Advantages of seed inoculation with RhizoFix®

- Higher yields vs. non-inoculated plants (even with repeated cultivation)
- Fastest possible symbiosis between plants and rhizobia
- Direct contact with seeds
  ➜ Rapid root settlement
- A specific strain of rhizobia for every species
- Allows cultivation on areas without naturally occurring rhizobia
- Sturdier growth
- Easy-to-handle inoculant
- Ready to apply immediately
- Simple visual control of wetting

RhizoFix® – Fuel for legumes

RhizoFix® is a liquid inoculant for legume seeds. In recent years, Feldsaaten Freudenberger has been carrying out intense research to develop its own rhizobia strains. The best strains were chosen over the course of numerous laboratory and field trials.

The aim of the selection was to find strains that form a symbiotic relationship with the host plant as quickly as possible while simultaneously contributing to optimal yields. By using RhizoFix® products, it is possible to grow appropriate legumes even on areas that do not have any natural rhizobia populations. Freudenberger offers suitable rhizobia strains for all common crops. The product is ready to be used immediately – it is not necessary to mix the individual components beforehand. All that is required is for the seed to be mixed thoroughly to ensure that all the seeds come into contact with the inoculant.

It is recommended to inoculate the seeds directly in the seed drill or in a container that is suited for the purpose. A pump sprayer or backpack sprayer is a good choice to finely distribute the inoculant.

Name	Content	For	Also suitable for	Application rate per 100 kg of seed	Contents for approx.	Sowing rate in kg/ha	Sufficient for approx.	Product no.
RhizoFix® RF-10	1000 ml	Soybean (Glycine max)	Serradella (common bird's foot)	750 ml	130 kg	100–150	1 ha	5210
RhizoFix® RF-20	1000 ml	Field bean (Vicia faba)	-	700 ml	150 kg	150–250	0.75–1 ha	5220
RhizoFix® RF-30	1000 ml	Pea (Pisum spp.)	Lentil	500 ml	200 kg	150–250	1 ha	5235
RhizoFix® RF-40	1000 ml	Vetch (Vicia spp.)	Grass pea, chickpea	500 ml	200 kg	100	2 ha	5240
		Lupins (Lupinus spp.)		500 ml	200 kg	150–200	1 ha	
RhizoFix® RF-45	500 ml	Clover (Trifolium spp.)	Red clover, white clover, alsike clover, Egyptian clover, black medick, crimson clover	1000 ml	50 kg	25	2 ha	5245
RhizoFix® RF-50	500 ml	Lucerne (alfalfa) (Medicago sativa)	Sweet clover	1000 ml	50 kg	25	2 ha	5255
RhizoFix® RF-60	75 ml	Common bean (Phaseolus vulgaris)	Bush bean	500 ml	15 kg	15	1 ha	5260
In the case of small-seed legumes such as clover and alfalfa, we can also recommend the use of Coated Seed Rhizo.								

All values are guidelines which can change due to a variety of factors.

Lucerne (alfalfa)

Medicago sativa (x varia)

The queen of fodder crops shines with optimum green and dry matter yields and excellent forage quality. Its extremely high protein content of around 20% makes alfalfa an excellent candidate for high-protein forage cultivation. As a legume with deep roots, alfalfa is an outstanding preceding crop as it provides the following crop with free nitrogen. Alfalfa is also a pioneer plant, meaning that it can be used to great effect for remediating mine dumps. Calcareous, deep soils are preferred. Harvesting should ideally take place between the budding and flowering phases. In order to improve persistence, the stand should be allowed to flower fully once per growing season so that it can store sufficient quantities of reserve nutrients in the roots. Our range offers persistent, winter-hardy varieties that can be used over 3 years.

Also available as Coated Seed inoculated with nodule-forming bacteria

PERFORMANCE PROFILE

- ✓ Nodule bacteria replace mineral N fertilisation
- ✓ End of rotation: 350 kg N/ha = around €1100 of savings on nitrogen fertiliser
- ✓ Rhizobia viable for over 12 months

Alfalfa seed with nodule bacteria (rhizobia) in a protective coating: a ready-to-sow product that saves up to 160 kg of mineral N/ha

- **Long viability**
- **Long storage life**

ProGreen® FU 8

PLATO alfalfa-grass mixture

Perennial; for cool and dry, calcareous sites; 3–4 crops; ideal ratio of protein and energy content; palatable fodder; can be used as fresh feed, hay or silage

70% Alfalfa PLATO (Coated Seed Rhizobia)*
10% Meadow fescue
10% Timothy grass
10% Cocksfoot

Sowing rate: 30 kg/ha
Container size: 20 kg
Product no. 40458

Alfalfa – Medicago sativa

Seeding rate: 25–30 kg/ha when sown pure; 19–23 kg/ha for undersowing with summer cereals, 25 kg/ha in a grass mixture with 6 kg/ha meadow fescue or tall oatgrass or 28 kg/ha in a grass mixture with 3 kg/ha cocksfoot or Timothy grass.
Sowing period: When planted on its own, March to late August
Sowing depth: 1–2 cm
Distance between rows: Similar to cereals
Fertilisation: P and K following the recommendations of the soil testing results

MILKY BLUE

The quality choice

The impressive qualities of this highly persistent variety include high protein content and low susceptibility to disease, especially lucerne wilt. These characteristics, along with high yields, make this a sought-after variety. The good yield levels on drier sites are a further plus point. MILKY BLUE can be used in multiple applications, from hay and silage to conservation or fresh forage. Growers also choose the variety for dry feed preparations because of its high protein content.

Container size: 25 kg
Product no. 201187

PLATO

The healthy choice

This alfalfa variety produces pale blue to purple flowers and has an upright habit. Its high yields of green and dry matter, excellent stability and very high resistance to lucerne wilt and sclerotinia trifoliorum (clover rot) make PLATO a very special plant. PLATO is ideal for use as fresh feed or for the production of pellets or grass meal.

Container size: 25 kg
Product no. 201210

VERKO

The leafy choice

A leafy, thin-stemmed alfalfa variety which is popular thanks to its high protein content, prolific growth in spring and outstanding regrowth performance, which makes it possible to yield 3–4 crops. VERKO is suitable for use as fresh feed, the production of dried green feed and for silaging in an alfalfa/grass mixture.

Container size: 25 kg
Product no. 201223

OSLAVA

The protein-rich choice

A very winter-hardy alfalfa variety, suitable for long-term perennial cultivation. It has good resistance characteristics and yields a good amount of fresh and dry matter. Like all alfalfa varieties, it must be allowed to flower once a year in order to improve its winter-hardiness. This should ideally be done at the third growth stage.

Container size: 25 kg
Product no. 201278

VOLGA

The high-yield choice

VOLGA is a new French cultivar with outstanding agronomic performance. VOLGA was approved in Germany for the first time in 2020. The variety has blue to purple flowers and an upright habit. Its high yields of green and dry matter, excellent stability and very high resistance to lucerne wilt and sclerotinia trifoliorum (clover rot) make VOLGA a promising alfalfa variety. VOLGA's deep and wide-reaching root network provides powerful drought resistance.

Container size: 25 kg
Product no. 201222

Clover species

Also available as Coated Seed Rhizo!

As an annual or perennial plant, red clover is found less commonly in permanent grasslands than white clover, and is instead planted more frequently in field forage systems. It can also be used in extensive pastures at low intensities. Red clover is very leafy and is a high-quality feed component. Two cuts can take place in the year in which direct seeding occurs.

In the next year, it can tolerate up to four cuts per year if they take place during the bud stage. For multi-year use, cultivation in a mixture with grasses is recommended. In these cases, a reduction in the amount of clover in the stand can be observed over time. Red clover forms a clear taproot and prefers loams to heavy soils.

Red clover – Trifolium pratense

Seeding rate: 25 kg/ha when sown pure, or in a mixture with 12 kg/ha red clover with 20 kg/ha Italian ryegrass
Sowing period: Spring to late August
Sowing depth: 1–2 cm
Distance between rows: Similar to cereals
Fertilisation: Basic fertilisation based on soil survey results

FIELD RED CLOVER

BLIZARD, t.

The healthy one

A tetraploid variety that produces astonishing fresh and dry mass yields. BLIZARD stands out because of its high health quotient, especially in terms of its low susceptibility to clover rot and stem canker. Another notable feature of this variety is the high crude protein content, which is important when it comes to feeding and production of protein on one's own field.

Container size: 10/25 kg
Product no. 201958

FIELD RED CLOVER

TEMPUS, t.

A tasty treat for your cattle

The tetraploid red clover TEMPUS is just waiting for your animals to bite into it. Increased milk production and high palatability are the two reasons milk cattle producers keep choosing TEMPUS. Its even yield profile ensures that TEMPUS will provide high-quality forage all year round. TEMPUS is very winter hardy.

Container size: 10/25 kg
Product no. 202026

FIELD RED CLOVER

GLOBAL, d.

An ideal partner in mixtures

A diploid variety for multi-year arable feed crop production, GLOBAL is very vigorous and rich in protein. It produces high-quality staple feed in mixtures with grasses such as meadow fescue or Italian ryegrass. GLOBAL's persistence allows it to be cropped for two to three years. Also recommended in Austria and Switzerland.

Container size: 10/25 kg
Product no. 202054

FIELD RED CLOVER

GARANT, d.

The robust one

This diploid variety stands out for its excellent yield and strong early development. It boasts excellent resistance against fungal infections such as sclerotinia trifoliorum (clover rot). An early- to intermediate flowering variety, GARANT is an ideal partner in mixtures for short-lived ryegrasses such as Italian or hybrid ryegrass.

Container size: 10/25 kg
Product no. 202099

Why reseed meadows and pastures with red clover?
Red clover forms deep roots and can outlast even long dry spells. As a legume, it contributes to the protein supply. Persistent diploids, called Mattenklee varieties, are the main ones used in reseeding. The varieties MERULA and COLUMBA are especially highly recommended for reseeding existing grasslands. When used in a grass reseeding mixture, they can be used at a rate of 5–10 kg/ha.

CLOVER MATTENKLEE TYPE

COLUMBA, d.

The perennial one

COLUMBA represents a quantum leap in the world of diploid red clover varieties. This variety is on par with tetraploid varieties and stands out due to its excellent yield and quality characteristics. COLUMBA is notable for its high yield in the second main production year and its tremendous persistence. Furthermore, it offers excellent resistance to major legume diseases.

Container size: 10/25 kg
Product no. 201935

CLOVER MATTENKLEE TYPE

MERULA, d.

The healthy, persistent Mattenklee

A diploid Mattenklee red clover variety. Its main feature is its high persistence. In addition, it is highly resistant to red clover anthracnose and not prone to sclerotinia trifoliorum (clover rot). Its uniform yield distribution helps ensure a balanced grazing period throughout the year. Particularly suitable for mixtures.

Container size: 10/25 kg
Product no. 202056

CLOVER MATTENKLEE TYPE

FREGATA, t.

The high-yielder

A very early to early-maturing variety. FREGATA is characterised by extremely high mass formation and extensive ground cover. It offers high yields and is very winter hardy and persistent: a valuable nitrogen-fixing plant.

Container size: 10/25 kg
Product no. 201969

Egyptian clover – Trifolium alexandrinum

Seeding rate: 35 kg/ha when sown pure
Sowing period: As a main crop, late March to early April; as a catch crop, July to mid-August
Sowing depth: 1–2 cm
Distance between rows: Similar to cereals
Fertilisation: Basic fertilisation based on soil survey results

WINNER

The multiple-cut clover

The annual Egyptian clover WINNER provides valuable, protein-rich staple feed for main crop or catch crop cultivation. The variety offers impressively uniform and powerful growth. It establishes very high, dense stands, effectively suppressing weed growth. When grown as a catch crop, it can yield 3,000 to 4,000 kg/ha of dry matter. As a variety that can withstand multiple cutting and has an excellent capacity for regrowth, WINNER is ideally suited for cultivation in mixtures with short-lived ryegrasses such as BIGBANG and MELJUMP. WINNER's roots penetrate the soil evenly, and it has a deep taproot which opens up the soil very well. WINNER reliably dies back in winter. These characteristics mean that the variety is not only suitable as a fodder plant but also provides excellent green manure, which enables the strip-tilling of maize and sugar beet.

Container size: 25 kg / **Product no.** 200012

Black medick – Medicago lupulina

Seeding rate: 15–20 kg/ha
Sowing period: Before August
Sowing depth: 1–2 cm
Distance between rows: Similar to cereals
Fertilisation: Basic fertilisation based on the results of soil testing

EKOLA

A clover for extensive grazing

The only variety approved by the German Federal Plant Varieties Office. The black medick EKOLA is an annual to perennial variety that is at home on calcareous soils. This early, yellow-flowering clover species is mainly used in mixtures.

Container size: 25 kg **Product no.** 200403

Bird's foot trefoil – Lotus corniculatus

Seeding rate: 15–20 kg/ha
Sowing period: Spring to August
Sowing depth: 1–2 cm
Distance between rows: Similar to cereals
Fertilisation: Basic fertilisation based on soil survey results

MARIANNE / BULL

The prolific grower

MARIANNE is a high-yielding bird's-foot trefoil variety with early to intermediate flowering and outstanding winter hardiness. Very stable and vigorous. Excellent source of protein and very resilient.

Container size: 25 kg **Product no.** 201019 (MARIANNE)
Product no. 201014 (BULL)

Crimson clover – Trifolium incarnatum

Seeding rate: 30 kg/ha when sown pure, 20 kg/ha in the Landsberger mixture with 20 kg/ha Italian ryegrass and 20 kg/ha hairy vetch
Sowing period: Early to late August
Sowing depth: 1–2 cm
Distance between rows: Similar to cereals
Fertilisation: Basic fertilisation based on soil survey results

HEUSERS OSTSAAT

The fast-growing winter clover

HEUSERS OSTSAAT performs exceptionally well as a preceding crop thanks to roots which reach depths of up to 90 cm, making it the perfect green manure. In addition, the nodule bacteria provide free nitrogen for the following crop. It has few soil requirements, meaning that it can be cultivated on light soils and loams. Such soils must, however, have sufficient lime content. Crimson clover is widely used in crop rotations, though cultivation intervals of 5–6 years are advisable.

Container size: 25 kg **Product no.** 201100

Persian clover – Trifolium resupinatum

Seeding rate: 20 kg/ha when sown pure as a main crop or catch crop
Sowing period: As a main crop, late March to early April; as a catch crop July to mid-August
Sowing depth: 1–2 cm
Distance between rows: Similar to cereals
Fertilisation: Basic fertilisation based on soil survey results

PASAT

Ideal for catch crop specialists

Persian clover is a species that can be used in high-value, protein-rich fodder and grown as a main crop as well as a catch crop. It can be planted on its own, though mixtures with annual and Italian ryegrass are an equally valid option. This crop plant has thin stems and ample foliage, as well as distinctively attractive pale purple and white flowers.

LASER gives you options, including both fresh feeding and silaging.

PASAT's impressive features include intensive root penetration, complete dieback in winter and especially delicate mulch residues, which make it a solid partner for soil protection. Soil conservation through plant residues ensures the best conditions for strip-tilling of the next main crop. Sow in mixtures of 10 kg Persian clover with 20 kg of annual or Italian ryegrass. Also suitable for dry sites.

Container size: 25 kg **Product no.** 201513 (LASER) **Product no.** 201523 (PASAT)

Alsike clover – Trifolium hybridum

Seeding rate: 20 kg/ha
Sowing period: Before mid-August
Sowing depth: 1–2 cm
Distance between rows: Similar to cereals
Fertilisation: Basic fertilisation based on soil testing

LOMIAI

Robust and long-living

With the entry of LOMIAI, an Alsike clover variety is once again on Germany's Descriptive Variety List after an absence of many years. LOMIAI stands out for its very good and uniform stand establishment. The variety shows high, well-balanced overall yields. In addition, LOMIAI is particularly robust and demonstrates excellent disease resistance.

Container size: 25 kg
Product no. 202412

White clover – Trifolium repens

Seeding rate: 12–15 kg/ha when sown pure, 10 kg/ha for undersowing
Sowing period: Spring to late August
Sowing depth: 1–2 cm
Distance between rows: Similar to cereals
Fertilisation: Basic fertilisation based on soil survey results

JURA / MERLYN

The reliable partner

JURA and MERLYN are varieties recommended by the Chamber of Agriculture and are ideally suited for high-quality mixtures. MERLYN has a good yield distribution and is both winter hardy and persistent. White clover is capable of converting large quantities of atmospheric nitrogen into plant-available forms with the help of nodule bacteria. JURA and MERLYN both fulfil these criteria. Thanks to their excellent ability to absorb nitrogen, permanent pastures that are rich in white clover can reduce their need for nitrogen fertiliser. A good rule of thumb: every 1% of white clover in the pasture provides about 3 kg of nitrogen.

Container size: 10/25 kg
Product no. 202522 (JURA)
Product no. 202566 (MERLYN)

BOMBUS

The only winter-hardy ladino type

BOMBUS is a winter-hardy ladino white clover. It has large leaves and is very well suited for arable feed crop production. BOMBUS produces high yields.

Product no. 202568

APOLO

The universal choice

The white clover variety APOLO shows medium-high growth, which results in good stability and steady yields. It is a good ingredient in seed mixtures for permanent grasslands and can be used for both new sowing and reseeding.

Container size: 10/25 kg
Product no. 202592; 202623 (Coated Seed Rhizo)

PERICON

The top performer

PERICON is a high-performance variety that is ideally suited for use in mixtures and undersowing. The variety stands out for its uniform yield distribution with slight advantages in the first cut. Thanks to its prolific runner formation, PERICON can close gaps very rapidly.

Container size: 10/25 kg
Product no. 202502

Sainfoin – Onobrychis viciifolia

Seeding rate: 200 kg/ha
Sowing period: Before August
Sowing depth: 2–3 cm
Distance between rows: 15–25 cm
Fertilisation: Basic fertilisation based on soil survey results

Sainfoin is a perennial legume, tasty and rich in protein, and highly suitable for perennial cultivation as a pioneer plant. Sainfoin is mainly cultivated in mixtures with grasses (e.g. with tall oatgrass and other grasses).

Container size: 25 kg
Product no. 200303

Common bird's foot – Ornithopus sativus

Seeding rate: 40 kg/ha
Sowing period: Before August
Sowing depth: 2–3 cm
Distance between rows: 15–25 cm
Fertilisation: Basic fertilisation based on soil survey results

An annual, one-cut fodder plant. It is primarily suited to light, nutrient-poor and acidic soils. Common bird's foot can be sown as a catch crop from July to mid-August or used as green forage. Since the degree of lignification in the plant is low, it can also be used as a fodder plant.

Container size: 25 kg
Product no. 202100

Beet nematodes

on the rise

Tolerant sugar beets do not show any visual damages, yield potential falls by the wayside.

Resistant catch crops can help!

On observing sugar beet cultivation in Germany it becomes clear that beet cyst nematodes (Heterodera schachtii) are present in all main cultivation areas. Considerable damage can be seen depending on the crop rotation and infestation density. In addition, latent infestation densities have been noticed on many fields. Though they do not yet present a serious risk, they do indicate the presence of nematodes. It is extremely important to use horticultural measures to keep infestation levels as low as possible, avoiding severe damage right from the beginning.

When does the damage start to happen?

A crucial direct measure is selecting the right sugar beet variety, since severe infestations can cause a reduction in yield of 30% or more. The commercial damage threshold for nematode-prone sugar beet varieties is 500 eggs and larvae per 100 ml of soil. For nematode-tolerant varieties this threshold is 1500 eggs and larvae per 100 ml. Various institutes provide proper soil testing. The lost yield potential is shockingly high, even in nematode-tolerant varieties. Yield reductions of 15–20% can occur without visible symptoms on the tolerant beets.

Resistant catch crops can help

Despite the use of nematode-tolerant beet varieties, current trial results have shown that it is still possible to significantly increase yields by cultivating nematode-resistant fodder radish varieties. The potential yield increase is at least 5–10%, which corresponds to revenue increases of about €150/ha if a premium-quality catch crop such as nematode-reducing fodder radish is used. One of the reasons for this is the deep soil penetration of fodder radish roots. This controls the beet nematodes present in the deeper soil layers and considerably reduces the nematode population immediately before sugar beet cultivation. Sowing the catch crop early is absolutely essential for this to work. Moreover, fodder radish can also be sown using coated seed within existing cereal stands. This can result in a growth lead of about 4 weeks. Resistant white mustard varieties have the advantage that they can be sown even later (until the beginning of September) and exhibit good nematode reduction during the warm autumn weather.

Please note! In regions prone to stem nematode or onion bloat (Ditylenchus dipsaci), it is absolutely necessary to plant fodder radish because it is neutral to the pathogen. On the other hand, white mustard acts as a host and allows the pest to propagate.

How do resistant white mustard and fodder radish varieties work?

Special substances in the root exudates of resistant varieties lure the beet cyst nematode larvae, which then enter the roots. Larvae generally mature and reach the reproductive stage within the plant; resistant plants severely inhibit this process. Almost exclusively male nematodes are formed and the number of fertile female nematodes is greatly reduced. The result is a considerable reduction in the propagation of nematodes. The percentage of female nematodes depends on the variety's resistance level. In grade 2 varieties, the propagation rate drops by 70–90%; in grade 1 varieties, the reduction is more than 90%.

A good catch crop population

Seedbed preparation: Professional seedbed preparation and a precisely drilled catch crop stand provide enormous benefits over seed broadcasting, especially under difficult conditions (drought etc.).

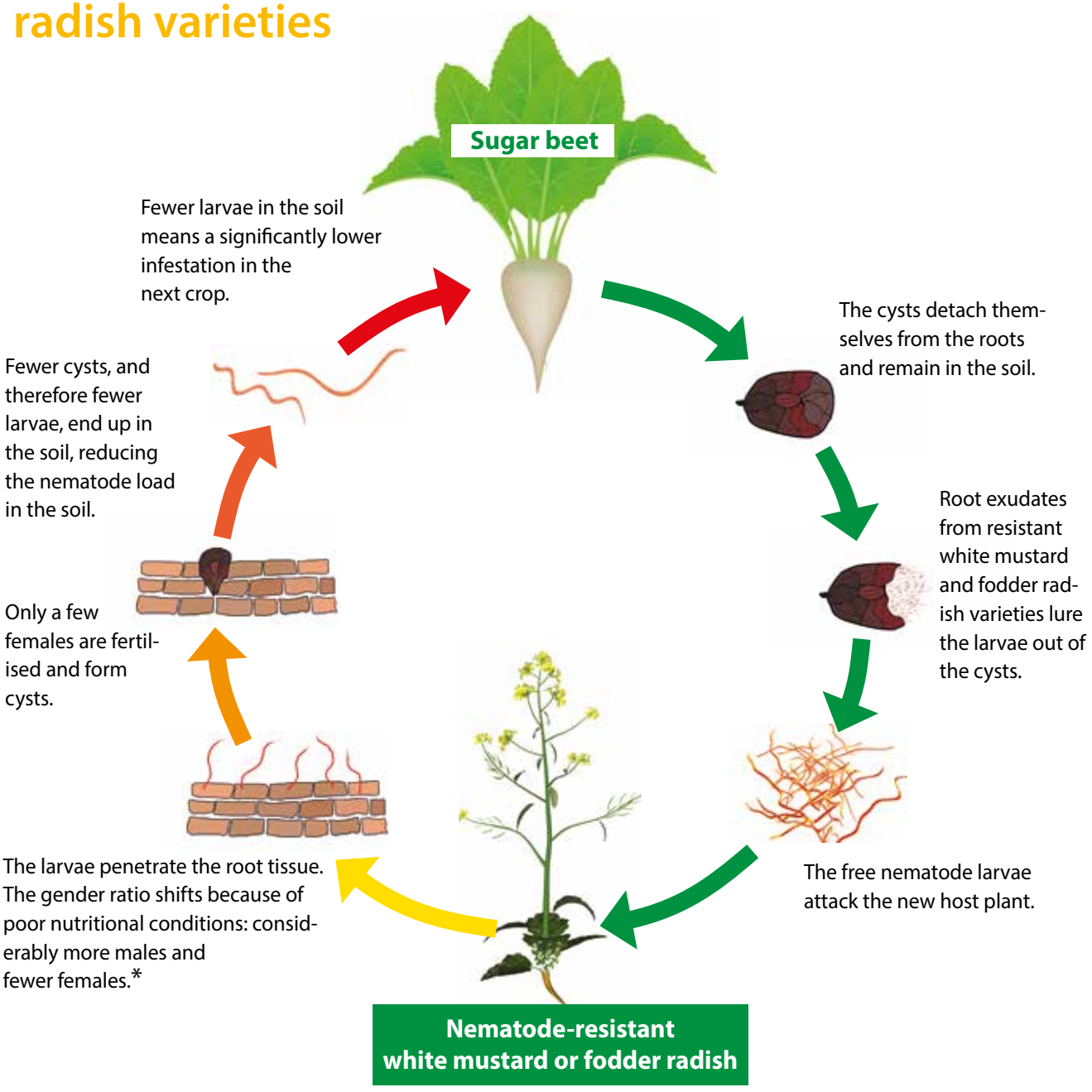
Sowing time: The fodder radish stand requires time and warmth in order to develop properly and effectively reduce nematodes. White mustard develops faster; however, even in this case, the plants require a minimum of 8–10 weeks and sufficiently high temperatures to show their full potential.

Seeding rate: The denser the plant stand, the better the root penetration in the soil and, thus, the nematode reduction. Recommended sowing rate: 25–30 kg/ha

Variety selection: Choose from the wide range of varieties. Decide what flowering and mass formation characteristics are ideal for your location and target nematode reduction by using varieties with high grades.

Reducing beet cyst nematodes

by using resistant white mustard and fodder radish varieties



* The roots of resistant white mustard and fodder radish varieties provide deficient nutritional conditions for nematode larvae. Since the female nematodes are thus unable to form the required nutritive cell, almost only male nematodes reach sexual maturity. As a result, only very few females grow to maturity and are able to form new cysts and produce offspring. This method helps to drastically reduce the beet cyst nematode infestation in the soil. The reduction in the propagation rate depends on the variety used. Resistance grade 1 varieties reduce nematodes by more than 90% and grade 2 varieties reduce nematodes by 70 to 90%.

Potato cyst nematodes

Complex problems and strategies – choosing the right catch crop!

Unlike sugar beets, where beet cyst nematodes are almost the only pests that present a direct problem, various types of nematodes with different patterns of damage are on the rise in potato cultivation. The following is an overview:

Potato cyst nematodes
The damage caused by potato cyst nematodes is indisputably high. There are two different species of potato cyst nematodes: Golden nematode (Globodera rostochiensis) and white potato cyst nematode (Globodera pallida), a quarantined pest for which reporting is mandatory. Both species can survive in the soil for years in the form of cysts, leaving them only when potatoes are planted on the field. Catch crop selection does not require much thought, as they are neutral to these nematodes.

Free-living nematodes – free, mobile, uncontrollable?
In terms of potato crop rotations, the following four free-living nematodes are considered to be the most harmful pathogens:

- Root lesion nematode (Pratylenchus penetrans)
- Stem nematode or onion bloat (Ditylenchus dispaci)
- Stubby-root nematodes (trichodorids)
- Root-knot nematodes (Meloidogyne chitwoodi)

Unlike cyst nematodes, free-living nematodes are identified by the fact that they do not rely on the potato as a host plant. They can propagate on other cultivated crops as well, meaning that selecting the right species is crucial in regulating and reducing these harmful species. What is particularly insidious about free-living nematodes is that they go through several propagation cycles in a year. This means that explosive outbreaks are a possibility.

Root lesion nematodes *(Pratylenchus penetrans)*
Root lesion nematodes can cause yield losses of over 50%. In recent years, they have been increasingly destroying maize and cereal stands as well as potatoes. Under favourable conditions, the nematode can have up to six propagation cycles per year. The crop rotation system in combination with the right catch crop selection can greatly influence the situation. Use of fodder radish should be avoided on heavily infested fields. Planting of neutral plants is preferable (see image, p. 97). The roots of bristle oat, for instance, provide no basis for the propagation of the pathogen. By depriving the pest of nutrition, its population can be reduced by over 80% every year. Tagetes (marigold) cultivation in problem locations has resulted in active nematode reduction. Once pierced by the nematodes, marigold roots secrete a poison which kills the pathogen.

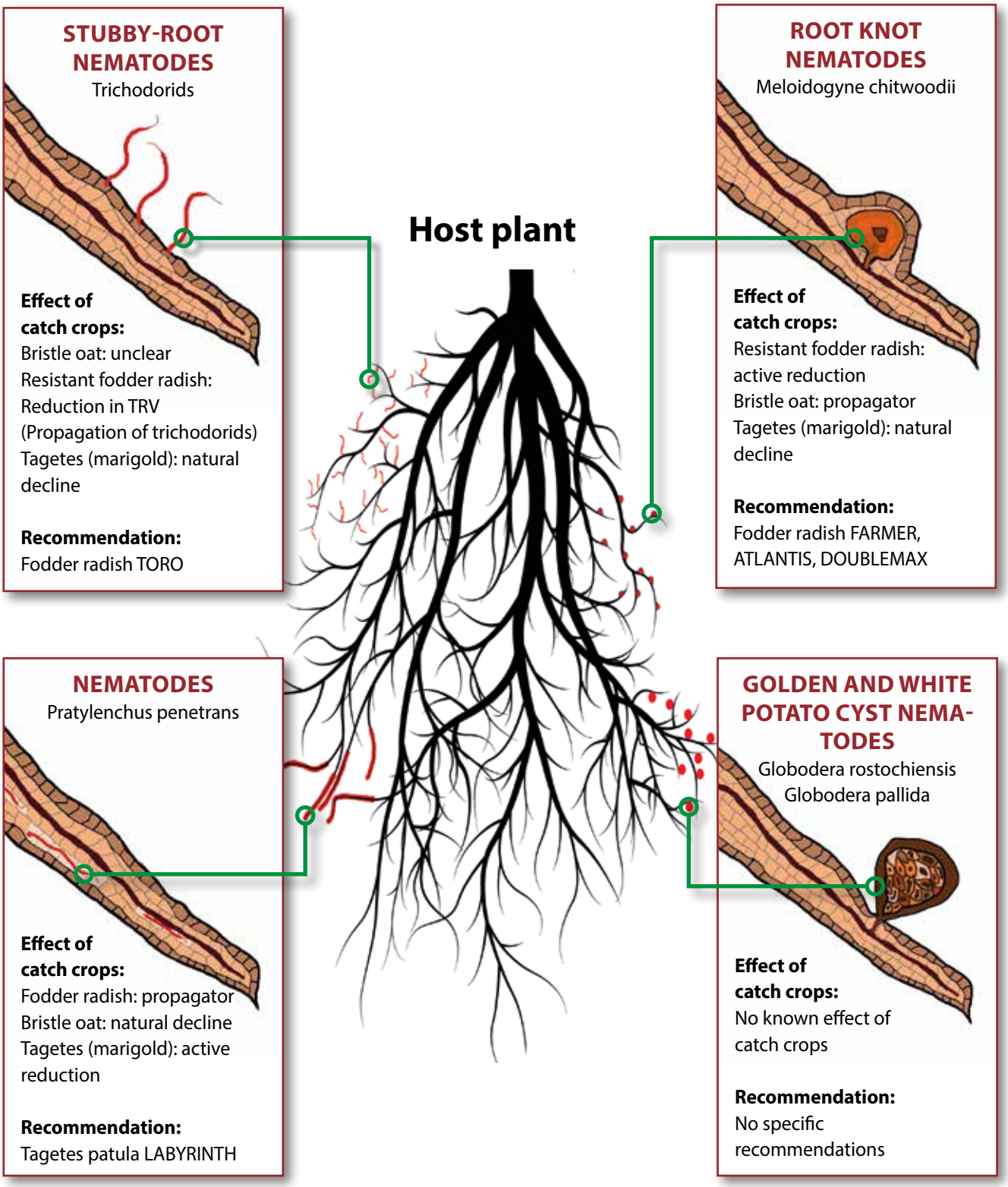
Fallowing is often also recommended as a natural method for reducing the nematode population. But please note: in many cases, problem weeds are among the strongest propagators of problematic nematode species. Experiments show considerable differences between fallowing and cultivation of catch crops, especially in combination with the mild winters in recent years. Use the option of directly impacting a specific pathogen and consistently pushing back the population by selecting the appropriate catch crop species.

Stubby-root nematodes *(Trichodorids)*
As opposed to many other nematodes, stubby-root nematodes rank amongst the most mobile migratory organisms. Even without a host plant their numbers decline only gradually. Under favourable conditions, they produce up to five generations every year. Direct infestation by this nematode can be observed in the form of poor emergence of the potato crop, although in many cases it plays a minor role. Moreover, in advanced stages of growth the potato plants become increasingly resistant to trichodorids. Significantly more problematic is the fact that trichodorids transmit the tobacco rattle virus (TRV). Selecting the right catch crop can have a major effect on the issue. Fodder radish can resist TRV carriers even in cases of nematode infestation, breaking the infection chain.

Root-knot nematodes *(Meloidogyne chitwoodi) (quarantine-requiring pest with mandatory reporting)*
Root-knot nematodes can spread rapidly in a very short period of time. This is because they have a wide spectrum of host plants while also producing up to three propagation cycles per year. The nematode causes damage to the potato tuber quality, which becomes visible only towards the end of the cultivation period. The situation can be directly influenced by selecting the right catch crop. Cultivating resistant fodder radish varieties is particularly recommended. As part of the approval process, the Federal Plant Variety Office checks the varieties for resistance and identifies varieties with incidence rates of under 5%.

Attack strategies

of plant-parasitic nematodes in potato cultivation



Nematode-reducing effect

White mustard – Sinapis alba

Seeding rate: 25–30 kg/ha
Sowing period: July to September
Sowing depth: 2–3 cm
Distance between rows: Similar to cereals
Fertilisation: Max. 60 kg N/ha permitted for catch crops (follow the Fertiliser Ordinance!)

The nematode-resistant white mustard is a natural way of combating the dangerous beet nematode. It dies back in winter, leaving behind a field surface that can be strip-tilled. Varieties with a low inclination to flower are important, as they enable planting to take place as early as the beginning of August. It is not advisable to plant white mustard in rotations involving potatoes, as it can multiply the carriers of the tobacco rattle virus (spraing). In areas where stem nematode or onion bloat has emerged or may be present, fodder radish should be used as an alternative means of controlling beet nematodes. Due to very fast initial development, white mustard can cover the ground very quickly and suppress weeds.

FOX, Grade 1

The top performer

With the white mustard FOX, there is now also a variety rated Grade 1 for reducing unwanted beet nematodes. Reduction rates of over 90% were achieved in the official trials. FOX has good initial development and is therefore also good at suppressing weeds. Its inclination to flower is classified as low and it is thus considered late-flowering. Very good stability is particularly helpful in strip-till systems. Upright stalks dry out very well in frost and are easily shredded.

Container size: 25 kg
Product no. 400098

SYMBOL, Grade 1

Suppresses nematode spread

The highly stable, nematode-resistant variety SYMBOL was awarded a very good Grade 1. It also has a low inclination to flower when sown from early- to mid-August in order to achieve a high reduction rate. Depending on the weather conditions, this may not be possible if it is sown late in September. SYMBOL's rapid ground cover is also effective at suppressing volunteer cereals and other weeds.

Container size: 25 kg
Product no. 400208

ACTION, Grade 2

The ultimate nematode-resistant variety

ACTION can cover the ground very quickly and suppress weeds and volunteer cereals in its early development. It also has good stability, which is a particularly important advantage for strip-tilling. In addition, ACTION has a low inclination to flower.

With this combination of rapid initial development, low inclination to flower and high degree of ground coverage, everything is in place for successful strip-tilling. In beet crop rotations, ACTION really shines through with its outstanding nematode-reduction ability.

Advantages
- Very high mass formation during early development
- Very low inclination to flower
- Excellent stability
- Nematode resistance grade 2

Container size: 25 kg
Product no. 400193

DIRECTOR, Grade 2

Vigorous and stable

DIRECTOR, approved in 2019, is a white mustard variety with very good resistance against beet cyst nematodes. It only missed attaining the highest grade by a hair, with 1% deviance, in the official test of the Federal Plant Variety Office. At the same time, DIRECTOR is characterised by very good stand development following planting and very low susceptibility to lodging.

Container size: 25 kg
Product no. 400239

RUMBA, Grade 2

Effective against nematodes

RUMBA tops the list of nematode-resistant white mustard varieties. It has a low inclination to flower, meaning that it can be used from an early date for nematode control. This variety is characterised by late flowering, rapid emergence, rapid root penetration and excellent resistance properties. RUMBA is not winter hardy: since it dies off completely, it is particularly well suited for zero-till cultivation of sugar beets.

Container size: 25 kg
Product no. 400178

Classic green manuring

Classic green manuring involves species and varieties that are not grown for biological nematode control. The most important species are mustard and fodder radish, though the approach also includes all species that are grown for green manuring in addition to their use as fodder. These are crops that grow very quickly, such as buckwheat, and which contribute to the humus balance of the operation.

White mustard – Sinapis alba

Seeding rate: 25–30 kg/ha
Sowing period: July to September
Sowing depth: 2–3 cm
Distance between rows: Similar to cereals
Fertilisation: Max. 60 kg N/ha permitted for catch crops (follow the Fertiliser Ordinance!)

White mustard is a crucifer that is divided into nematode-resistant and conventional varieties. All white mustard varieties are highly suitable for strip-tilling as they generally die back in winter quite reliably. These properties have led to an increase in the use of strip-tilling. Among white mustard varieties, there are major differences in their tendencies to flower. When the plants emerge in mid-August, the flowering period extends from mid-September to the end of October. As a green manure, white mustard also removes large amounts of nitrogen from the soil. White mustard is completely intolerant of frost, meaning that it is reliably winterkilled. The plant is called white mustard in English because of its white seeds, but is also known as yellow mustard in German because of its bright yellow flowers.

ASTA / SEVERKA / ZLATA

The top conventional varieties –
Vetted by the Federal Plant Varieties Office

- Rapid ground cover protects the soil against water and wind erosion
- The high productivity enriches soil with organic matter, improving soil fertility
- Soil-borne nitrogen is stored in the aboveground plant mass. It then becomes available to the plants again in the following year, which keeps it from leaching into areas away from the roots
- Rapid dieback in winter ensures that the ground is ideally prepared for strip-tilling of maize
- Cover for small animals and game birds, which is why hunters often offer the seed to farmers
- Organic fertiliser may be applied to the fields on which catch crops are sown (follow the Fertiliser Ordinance)

Container size: 25 kg
Product no. 400140 (ASTA) **Product no.** 400170 (SEVERKA) **Product no.** 400109 (ZLATA)

PIRAT – Our late-flowering white mustard

Advantages of late flowering

- Can be sown as early as mid-August
- Low tendency to produce seeds, long growing period ➜ more organic matter
- Longer soil cover ➜ less erosion, drying and weeds
- Plants have more time for nitrogen uptake from the soil
- Longer roots are formed, which are necessary for humus formation
- Does not need to be chopped up in October/November

White mustard ASTA (left) and PIRAT (right) compared at the same sowing date

PIRAT

The ideal ingredient for agricultural mixtures

The white mustard PIRAT is a very late-flowering variety from the non-resistant mustard category. In addition, it has very good stability, which makes it ideal for strip-tilling. PIRAT can be grown as a catch crop in any rotation with grain and maize. In water conservation areas, it can naturally extract large amounts of soil nitrogen in the form of nitrates and keep it from leaching. The nitrogen bound in this way is then made available to the subsequent crop. Due to the low inclination to flower, sowing can take place starting in early August.

Container size: 25 kg
Product no. 400199

Nematode-reducing effect

Fodder radish – Raphanus sativus

Seeding rate: 25–30 kg/ha for catch crop cultivation
Sowing period: from July to late August
Sowing depth: 2–3 cm
Distance between rows: Similar to cereals
Fertilisation: Max. 60 kg N/ha permitted for catch crops (follow the Fertiliser Ordinance!)

CASSIUS, Grade 2

KO for nematodes

This variety exhibits outstanding nematode-reducing potential. CASSIUS is a late-blooming variety, making it an ideal candidate for catch crop cultivation. The variety is well-suited for strip-tilling, since it can be winterkilled. CASSIUS is very stable, with impressively rapid early growth.

Container size: 25 kg **Product no.** 400437

REBELLION KWS, Grade 1

Nematodes don't stand a chance

The variety earned a grade of 1 on approval due to its tremendous nematode-reducing characteristics. Apart from this important property, REBELLION KWS is characterised by rapid early development, which quickly produces a dense, weed-suppressing stand. Another advantage is its good stability. Since it blooms late, REBELLION KWS is recommended for catch crop cultivation.

Container size: 25 kg **Product no.** 400295

REVOLVER, Grade 2

The coup de grâce for nematodes

The nematode-resistant REVOLVER is a variety with high stability and late blooming combined with rapid development after sowing. REVOLVER received a grade of 2 in an evaluation of beet nematode reduction.

The earlier a fodder radish can be sown, the better the reduction qualities.

Container size: 25 kg
Product no. 400444

				Resistenz gegenüber				
Ölrettich Sorte	Blühneigung	Massebildung im Anfang	Lagerneigung	Heterodera schachtii	Meloidogyne chitwoodi	Meloido-gyne hapla	Kohlher-nie*	Art.-Nr.
ATLANTIS	3	5	3	2	+	+		400361
BARACUDA	3	6	-	1				400482
CASSIUS	3	7	-	2				400437
DOUBLEMAX	4	7	3	1	+			400354
FARMER	3	4	-	2	+		+	40168
INTERMEZZO	3	6	-	2				400389
MAXIMUS	4	7	2	2				400449
REBELLION KWS	3	7	3	1				400295
REVOLVER	4	6	3	2			+	400444

Quelle: Bundessortenamt, Beschreibende Sortenliste, Stand 2023
* Züchtereinstufung

Fodder radish
Raphanus sativus

DUAL RESISTANCE

3-fold action against | **2-fold action against** (officially confirmed)

Beet cyst nematodes (Heterodera schachtii)
Gall-forming nematodes (Meloidogyne chitwoodi)

+ Nördliche Wurzelgallennematode (Meloidogyne hapla)

ATLANTIS, Grade 2

Triple resistance

Root-knot nematodes can cause serious damage to many crops, particularly potatoes and vegetables. The parasitic nematode test showed no increase in M. chitwoodi (0%!). Therefore, ATLANTIS is like a weapon against this dangerous pest. The variety has also been graded as resistant to beet nematodes. As a third resistance, ATLANTIS combats the harmful nematodes of the species M. hapla, which enables a particularly broad nematode reduction. Furthermore, ATLANTIS is very stable and has low inclination to flower.

Container size: 25 kg
Product no. 400361

FARMER, Grade 2

Double resistance

The fodder radish FARMER is a dually resistant variety that can biologically combat both beet nematodes (Heterodera schachtii) and root-knot nematodes (Meloidogyne chitwoodi and M. hapla). These gall-forming nematodes can cause serious damage in beet, potato and vegetable cultivation.

Healthy potatoes with FARMER

Container size: 25 kg
Product no. 40168

DOUBLEMAX, Grade 1

Double resistance

Not every variety can completely eliminate the propagation of Meloidogyne chitwoodi, but DOUBLEMAX can. It's just the right variety for producers of beets, potatoes and vegetables. Earning a grade of 1 for resistance to beet cyst nematodes, it is a doubly perfect variety – for both the farmer and the land. Furthermore, DOUBLEMAX sprouts quickly after germination; combined with high stability and a low to medium inclination to flower, DOUBLEMAX is a variety like no other.

Container size: 25 kg
Product no. 400354

Classic green manuring

Fodder radish – Raphanus sativus

Seeding rate: 25–30 kg/ha
Sowing period: from July to late August
Sowing depth: 2–3 cm
Distance between rows: Similar to cereals
Fertilisation: Max. 60 kg N/ha permitted for catch crops (follow the Fertiliser Ordinance!)

TORO

For healthy potatoes

Successfully suppressing iron spotting in potatoes
The fodder radish variety TORO is ideal for green manuring. Its deep root system allows it to loosen compacted soil layers and provide the soil with important organic matter. TORO reduces the pathogens that cause spraing (free-living nematodes), making it the ideal catch crop in potato cultivation.

Container size: 25 kg
Product no. 400401

APOLL / IKARUS / MOHIKAN

The fast starter with nitrogen fixation

These fodder radish varieties are ideal for use as green manure and have a very high capacity for absorbing nitrogen. APOLL, IKARUS and MOHIKAN are the quick-starter varieties when it comes to covering the ground with catch crops. These two fodder radish varieties are ideal for targeted greening. They loosen heavily compacted soil thanks to their extremely deep root system, thus allowing important organic matter to reach the soil.

Container size: 25 kg
Product no. 400424 (APOLL)
Product no. 400415 (IKARUS)
Product no. 400345 (MOHIKAN)

Fodder radish TORO – the specialist for potato cultivation

Oriental radish – Raphanus sativus var. longipinnatus L.

Seeding rate: 6–8 kg/ha
Sowing period: Mid-August
Sowing depth: 1–2 cm
Distance between rows: 35–50 cm
Fertilisation: Max. 60 kg N/ha permitted for catch crops (follow the Fertiliser Ordinance!)

In recent years, more and more attention has been given to catch crop cultivation in the USA, which has the most agricultural land of any country in the world. Soil health and soil structure are on everyone's lips these days, and more and more fields are being restored each year using cover crops. By far the most dominant cover crop being used in the USA is the oriental radish, also well-known in Europe. With their rapid autumn growth, oriental radishes take up plenty of nitrogen, which they store over winter. When they decay in the following spring, this nitrogen is released back into the soil, where it can be used by the next crop rather than being leached away over the winter months. The holes that the rotting radishes leave in the soil also help the soil to warm up faster in the spring. Subsequent crops can thus be sown a little earlier and germinate more quickly. These benefits pay dividends when planting plants that prefer warm conditions, like maize.

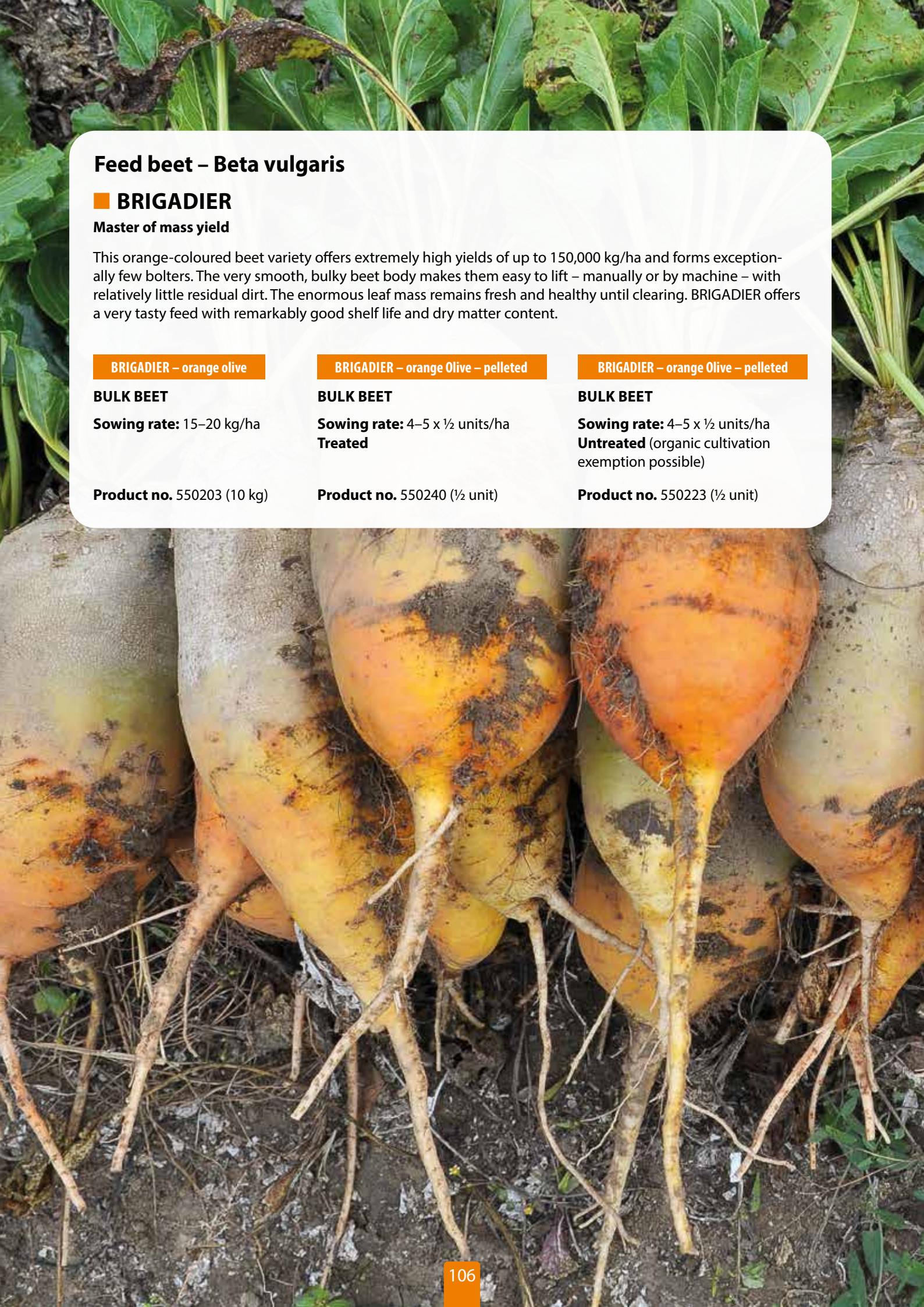
STRUCTURATOR

Powerful taproot to loosen soil

STRUCTURATOR freezes over winter, leaving deep holes in the ground. The radish can reach depths of over 50 cm and loosen compacted soil. It can thus break up even difficult ground sections, such as plough sole, and significantly improve the tilth. Water penetrating the soil can freeze during subsequent frosts and expand over large areas. This frost impact helps to loosen the soil. Flail mowing in autumn encourages this loosening of the soil mechanically.

Container size: 25 kg / **Product no.** 400375

STRUCTURATOR freezes over winter, leaving deep holes in the ground.



Feed beet – Beta vulgaris

BRIGADIER

Master of mass yield

This orange-coloured beet variety offers extremely high yields of up to 150,000 kg/ha and forms exceptionally few bolters. The very smooth, bulky beet body makes them easy to lift – manually or by machine – with relatively little residual dirt. The enormous leaf mass remains fresh and healthy until clearing. BRIGADIER offers a very tasty feed with remarkably good shelf life and dry matter content.

BRIGADIER – orange olive

BULK BEET

Sowing rate: 15–20 kg/ha

Product no. 550203 (10 kg)

BRIGADIER – orange Olive – pelleted

BULK BEET

Sowing rate: 4–5 x ½ units/ha
Treated

Product no. 550240 (½ unit)

BRIGADIER – orange Olive – pelleted

BULK BEET

Sowing rate: 4–5 x ½ units/ha
Untreated (organic cultivation exemption possible)

Product no. 550223 (½ unit)

Turnip – Brassica rapa var. rapa

Seeding rate: 1.5–2 kg/ha
Sowing period: Late July/early August
Sowing depth: 2–3 cm
Distance between rows: 25–40 cm
Fertilisation: Max. 60 kg N/ha permitted for catch crops (follow the Fertiliser Ordinance!)

RONDO

The short and round stubble turnip

RONDO is a round, white turnip with a green top. The healthy leaves are very frost-tolerant and stay green and juicy until winter. RONDO is a very high-yielding variety with a balanced leaf-to-beet ratio.

Container size: 0.5/25 kg
Product no. 550005 (20 x 0.5 kg)
Product no. 550004 (25 kg)

GRACELAND

Lanky and profitable

GRACELAND is a turnip variety that was authorised by the German Federal Plant Varieties Office in 2023. The white, purple-topped beets grow just under the surface of the soil. GRACELAND produces abundant, healthy leaves and is very suitable for mechanical harvesting. In addition to its high fresh and dry matter yields, it also provides staple feed with high digestibility that animals readily consume. It can be used as fresh feed or to produce silage.

Container size: 25 kg
Product no. 550035

Winter forage rapeseed – Brassica napus

Seeding rate: 8–12 kg/ha for use in fodder, 15–20 kg/ha for use in green manure
Sowing period: July to September
Sowing depth: 2–3 cm
Distance between rows: Similar to cereals
Fertilisation: Max. 60 kg N/ha permitted for catch crops (follow the Fertiliser Ordinance!)

AKELA

High-yielding and well-established

AKELA is a forage rapeseed that stands out for its high leaf production, soft and pithy stalk, tastiness and high digestibility. AKELA's high yields allow it to provide top-quality, protein-rich fodder that can be used fresh, for late grazing or as silage. With enormous frost-hardiness, AKELA can tolerate seeding as late as around 20 September, and is certain not to bloom in its sowing year. As a green manure, AKELA is an ideal prior crop thanks to its unusually strong rooting. Its ability to quickly cover the ground following sowing suppresses irritating weeds.

Container size: 25 kg
Product no. 401000

MOSA -00-

The high-yielding double-zero forage rapeseed

MOSA is a double-zero rapeseed cultivar that is ideally suited as forage for milk cattle due to its strong early mass formation. Its high share of leaves allows the variety to provide high-quality, protein-rich forage. MOSA can be used in pasture, silage or fresh forage. MOSA does not bloom in the year it is planted and can be used into the following year as well, with the highest energy yields coming before blooming begins.

Container size: 25 kg **Product no.** 401018

Summer forage rapeseed – Brassica napus

Seeding rate: 8–12 kg/ha for use in fodder, 15–20 kg/ha for use in green manure
Sowing period: Mid-August to late September
Sowing depth: 2–3 cm
Distance between rows: Similar to cereals
Fertilisation: Max. 60 kg N/ha permitted for catch crops (follow the Fertiliser Ordinance!)

HELGA

High-yielding double-zero quality

HELGA is a variety that produces no erucic acid or glucosinolate. It is a leafy, nutritious fodder plant providing large quantities of protein-rich, highly digestible feed. As a further plus point, HELGA exhibits strong early growth, good stability and a very low inclination to flower. It is also extremely well-suited for green manure applications and tolerates late seeding. The variety enriches the soil with organic matter and helps create a stable tilth.

Container size: 25 kg
Product no. 400508

Marrow-stem kale – Brassica oleracea

Seeding rate: 4–5 kg/ha
Sowing period: Before mid-late July; as a main crop by March or April
Sowing depth: 2–3 cm
Distance between rows: 25–40 cm
Fertilisation: Max. 60 kg N/ha permitted for catch crops (follow the Fertiliser Ordinance!)

PAVLA

The leafy forage kale

PAVLA is a low-growing variety and should be classed as belonging to the leafy varieties of forage kale.

Yield: Medium
Leaf-to-plant ratio: High
Protein content: Medium
Winter hardiness: High
Plant height: 88 cm

Container size: 1/25 kg
Product no. 560043 (20 x 1 kg)
Product no. 560041 (25 kg)

Field mustard – Brassica rapa L. silvestris

Seeding rate: 15–20 kg/ha
Sowing period: Mid-July to mid-August; as a winter catch crop: late August to mid-September
Sowing depth: 2–3 cm
Distance between rows: 15–25 cm
Fertilisation: Max. 60 kg N/ha permitted for catch crops (follow the Fertiliser Ordinance!)

FINITO

High-yielding field mustard

FINITO is a new breeding in the field of winter turnip varieties with excellent yield performance as a winter catch crop. FINITO is very good at extracting nitrogen from the topsoil and thus protecting the subsoil from leaching. Very high levels of soil cover are achieved both before and after winter, resulting in good weed suppression throughout the entire cultivation period. FINITO is very hardy and one of the most late-sown catch crops. The growth can be used for feeding.

Container size: 25 kg
Product no. 401203

Wild rye – Secale multicaule

Seeding rate: 120–140 kg/ha
Sowing period: April to October
Sowing depth: 1–2 cm
Distance between rows: Similar to cereals
Fertilisation: Max. 60 kg N/ha permitted for catch crops (follow the Fertiliser Ordinance!)

One of the main advantages of wild rye, an ancient grain, is its undemanding nature. This makes it a perfect component of wildlife food plots and wild plant mixtures. Wild rye is extremely robust and can tolerate temperatures of as low as -25°C. One interesting feature is its use in multi-year cultivation, which allows it to remain available to game animals as a feed reserve during unfavourable conditions. Impressive heights of over 2 m can be reached, especially in the first year. In addition to grazing, the plants also provide cover for numerous wild species. When cultivated, wild rye can thrive on nearly all sites and soil types. As an ancient cereal, the grain yields are considerably lower than cultivated rye. In recent years, wild rye has seen a resurgence in its cultivation for human diets due to its very high nutrient and fibre content.

Container size: 25 kg
Product no. 700150

Camelina – Camelina sativa

Seeding rate: 6–7 kg/ha
Sowing period: July to September
Sowing depth: approx. 1 cm
Distance between rows: Similar to cereals
Fertilisation: Max. 60 kg N/ha permitted for catch crops (follow the Fertiliser Ordinance!)

CAROLINE

The ideal catch crop when you need speed

Camelina is an annual catch crop that belongs to the cruciferous plant family. Its distinguishing feature is its extremely rapid development after sowing, which is why it is particularly well-liked as a short-term cover crop. Camelina is winterkilled and displays intensive root penetration. The catch crop yields leave the soil behind in excellent condition for the subsequent crop. Camelina does well in any type of soil and, for this reason, it can be grown in almost all locations. In addition, it also tolerates drought very well – an increasingly important aspect in recent years to achieve good catch crop yields.

Advantages

- Reliably winterkilled catch crop
- Ideal soil tilth for the following crop
- Rapid early development and stand establishment
- Low soil requirements
- High drought tolerance

Container size: 25 kg
Product no. 400339

Ethiopian mustard – Brassica carinata

Seeding rate: 15 kg/ha
Sowing period: Spring, or until late August as a catch crop
Sowing depth: 1–2 cm
Distance between rows: 12–15 cm
Fertilisation: Max. 60 kg N/ha permitted for catch crops (follow the Fertiliser Ordinance!)

URANUS / UNDERCOVER

Animals go wild for it

Ethiopian mustard is a well-known species that likely resulted from a spontaneous cross between black mustard and wild cabbage in the highlands of Ethiopia. It has long been used as an oilseed crop. Breeding or simple selection has resulted in the development of leafy varieties for a number of nutritional uses (as greens or a fodder crop).

URANUS has been specially bred for use as a leafy crop. Its high glucosinolate content makes URANUS an ideal partner in biofumigation mixtures. In addition, the variety performs very well when used in wildlife feed mixtures. The huge leaves provide protection and ground cover, while also serving as valuable forage. In catch crop cultivation, URANUS can be used in mixtures as a fast-growing cruciferous plant or on its own. Planting the variety places restrictions on rotations that include rapeseed, sugar beets, potato and vegetables, since Ethiopian mustard is a cruciferous plant and therefore fosters and propagates clubroot and other parasitic nematodes. URANUS is ideally suited for crop rotations involving pure cereals and maize.

UNDERCOVER is extremely undemanding and tolerates dry periods very well. Its tendency to cover land quickly prevents groundwater evaporation, which in turn suppresses the growth of unwanted weeds.

Container size: 25 kg / **Product no.** 605808 (URANUS) **Product no.** 400206 (UNDERCOVER)

Brown mustard – Brassica juncea

Seeding rate: 5–8 kg/ha
Sowing period: July to August
Sowing depth: 2 cm
Distance between rows: Similar to cereals
Fertilisation: Max. 60 kg N/ha permitted for catch crops (follow the Fertiliser Ordinance!)

TERMINATOR

For rapid ground cover

TERMINATOR is a fast-growing catch crop with high stability, medium to low inclination to flower, and effective suppression of weed and volunteer crops. Its high vulnerability to frost means it is reliably winter-killed. In addition, TERMINATOR has a deep-reaching root system for an improved soil structure. It also provides effective erosion control thanks to fast land cover.

Container size: 25 kg
Product no. 400226

Niger – Guizotia abyssinica

Seeding rate: 8–10 kg/ha
Sowing period: May to September
Sowing depth: 2–3 cm
Distance between rows: Similar to cereals
Fertilisation: Max. 60 kg N/ha permitted for catch crops (follow the Fertiliser Ordinance!)

RAMBA ZAMBA

Guaranteed silk-free

A guarantee of greater quality

RAMBA ZAMBA is our top-quality niger variety, which we have developed specifically for use as a catch crop. RAMBA ZAMBA stands out for its quick establishment and high biomass formation. Under favourable conditions, it can reach heights of over 1.5 m and can be sown on its own or in mixtures without any problems. When sown as a pure stand, RAMBA ZAMBA can display its very high potential for rapid ground coverage and shading. Neutral effect on crop rotations with cruciferous plants.

Container size: 10 kg
Product no. 400084

Bristle oat – Avena strigosa

Seeding rate: 60–80 kg/ha
Sowing period: April to September
Sowing depth: 1–2 cm
Distance between rows: Similar to cereals
Fertilisation: Max. 60 kg N/ha permitted for catch crops (follow the Fertiliser Ordinance!)

RHINO

Reduces a wide array of parasitic nematodes

Bristle oats are a catch crop which do well on almost all soils. They are drought-resistant and can also be used as feed. Their nematicidic effects on free-living nematodes such as Pratylenchus and others are particularly noteworthy. These effects are comparable with a long-lasting bare fallow.

Container size: 25 kg
Product no. 102117

Garden cress – Lepidium sativum

Seeding rate: 10 kg/ha
Sowing period: Before September
Sowing depth: approx. 1 cm
Distance between rows: Similar to cereals
Fertilisation: Max. 60 kg N/ha permitted for catch crops (follow the Fertiliser Ordinance!)

In the last decade, garden cress has become widely used in Germany as a catch crop. Garden cress has a good potential for weed suppression and germinates quickly, which provides very good ground cover. Because of its good ground cover without particularly high biomass formation, garden cress is an ideal candidate for use as a catch crop prior to spring strip-tilling of crops such as maize. It is reliably winterkilled. Since garden cress is a cruciferous plant, it should be avoided in crop rotations with intensive sugar beet and/or rapeseed cultivation.

Container size: 10 kg
Product no. 633700

Lacy phacelia – Phacelia tanacetifolia

Seeding rate: 10–12 kg/ha and up to 16 kg/ha when sown later in the season
Sowing period: June to September
Sowing depth: 2 cm in a well-prepared, finely crumbled seedbed (make sure to maintain the seed depth; germinates in the dark)
Distance between rows: Similar to cereals
Fertilisation: Max. 60 kg N/ha permitted for catch crops (follow the Fertiliser Ordinance!)

BALO / JULIA / NECTAR

The nematode-neutral cover crop stars

- They are nematode-neutral, meaning that they can be used in rotations with sugar beets
- Their intense blue colour attracts many insects; can be used in bee pastures

Container size: 10 kg
Product no. 153500 (BALO)
Product no. 153502 (JULIA)
Product no. 153551 (NECTAR)

Common buckwheat – Fagopyrum esculentum

Seeding rate: 75–90 kg/ha for catch crop cultivation
Sowing period: May (if grown for seed) to August as a catch crop
Sowing depth: 2 cm
Distance between rows: Similar to cereals
Fertilisation: Max. 60 kg N/ha permitted for catch crops (follow the Fertiliser Ordinance!)

LILEJA / DARJA

The way to fast cover crops

LILEJA and DARJA are fast-growing, undemanding varieties that are also extremely robust and versatile. They are characterised by exceptional purity and high germination capacity. Both varieties absorb large amounts of nitrate and are reliably winterkilled. LILEJA and DARJA can be integrated into nearly any crop rotation, and can suppress weeds by providing rapid ground cover. As a catch crop, LILEJA can also deliver high grain yields. Its high thousand grain weight ensures excellent flour yields.

Container size: 25 kg
Product no. 700250 (LILEJA)
Product no. 700254 (DARJA)

Blue (narrow-leaved) lupin – Lupinus angustifolius

Seeding rate: 180 kg/ha
Sowing period: June to end of July
Sowing depth: 4–6 cm
Distance between rows: Similar to cereals
Fertilisation: Basic fertilisation (P/K)

ESKUBLUE

The pioneer plant

ESKUBLUE was specially bred as a catch crop variety with very high biomass formation. Like all legumes, it fixes atmospheric nitrogen. ESKUBLUE is less sensitive to calcareous soils than blue and white sweet lupins, and is adapted to light to medium soils with a pH of 5.0 to 6.5. Due to its exceptionally deep root penetration, this pioneer plant variety is ideally suited for use as a catch crop to cover bare soil and biologically break up compacted soil horizons. Its good early development and stability are also worth mentioning.

Container size: 25 kg
Product no. 151564

AZURO

Soil improvement with deep-rooted lupins

Blue (narrow-leaved) lupins are classic catch crops. Like all legumes, blue lupins fix atmospheric nitrogen and convert it into a form that can be used by plants. AZURO is suitable for light to medium soils with pH values between 5.0 and 6.5 (it is not highly sensitive to lime). AZURO develops long roots, enabling it to loosen compacted soils organically. Its bitter taste means that AZURO is avoided by birds.

Container size: 25 kg
Product no. 151507

PROGREEN®

Cover crops

ProGreen® Cover crops are ideal for all gardeners who wish to produce their own livestock and small animal feed, or do some good for their soil using cover crops and green manure. The product line consists of 11 different products for a range of uses.

ProGreen®

- Classical cover crops
- Individual seeds and mixtures
- Small package sizes
- Resealable
- Solid quality

Product name	Description	Contents	SU	Product no.	SU/pallet
Small animal feed (Kleintiereinsaat)	This small animal seed mix is suitable for all soil types. It consists of high-quality fodder crops with a balanced ratio of clover and forage grasses that is ideal for fodder production.	0.5 kg	10	40780	63
Lucerne (alfalfa) Medicago sativa	Alfalfa is particularly suitable for calcareous and loose soils. The "queen of fodder plants" is a perennial plant whose roots penetrate deep into the ground and provide humus for the following crop. It also serves as a fodder plant and is readily consumed.	0.5 kg	10	40756	100
White clover Trifolium repens	White clover is particularly well-suited for good, moist soils. This perennial clover species is an excellent source of fodder when sown pure or in mixtures with grasses. It converts atmospheric nitrogen into plant-available forms through a symbiosis with nodule-forming bacteria.	0.5 kg	10	40753	100
Red clover Trifolium pratense	Red clover is very well-suited to moist, humus-rich soils, but also to cohesive and calcareous soils. This perennial clover species is an excellent provider of feed for fresh forage and clover hay production.	0.5 kg	10	40750	100
Bird's-foot trefoil Lotus corniculatus	ProGreen® bird's-foot trefoil is very stable and resistant to diseases. It is an excellent source of protein, and is also persistent and winter-hardy and prefers relatively dry, calcareous soils.	0.5 kg	10	40771	100
Serradella Ornithopus sativus	Serradella, or common bird's foot, is particularly well-suited to light soils with a low lime content. It is an annual, single-cut plant and a legume. Since the degree of lignification in the plant is low, it can also be used later on for fodder.	0.3 kg	10	40765	100
Blue lupin Lupinus angustifolius	Blue lupin is suitable for all soil types. Its roots penetrate deep into the ground, while its rapid early development helps effectively suppress weeds. It is ideal for improving compacted soils.	0.5 kg	10	40768	100
White mustard Sinapis alba	White mustard is a classic green manure plant. It germinates very quickly, covers the ground, suppresses weeds, improves soil tilth and soil fertility, and dies back in winter. White mustard is well-suited to mulch seeding.	0.5 kg	10	40762	100
Lacy phacelia Phacelia tanacetifolia	Lacy phacelia, also known as bee pasture, is a green manure plant. It is a fast-growing plant with a rich root network. Lacy phacelia provides humus-rich, evenly distributed soil for the subsequent crop. It dies back in winter.	0.4 kg	10	40759	100
Feed beet Beta vulgaris	Feed beets provide highly palatable fodder known for its good shelf life and dry matter content. The beets can be provided as fodder whole or shredded.	0.2 kg	10	40777	100
Marrow-stem kale Brassica oleracea	Marrow-stem kale is a very frost-hardy, biennial fodder crop, which tolerates both high and low temperatures. Marrow-stem kale yields large amounts of crude protein and is also readily consumed by wild game.	0.5 kg	10	40774	100

Please contact us for a precise breakdown of the mixtures!

ReNatura® *Organic* Cover crops

The ReNatura® Organic Cover crops product line includes 9 quality organic products.

Please contact us for a precise breakdown of the mixtures!

Product name	Description	Contents	Area	SU	Product no.	SU/pallet
ORGANIC **Small animal feed** (Kleintiereinsaat)	The ReNatura® Small animal feed is a mixture that is suitable for all soils and contains valuable fodder plants for rabbits, hamsters, etc.	1.0 kg	50 m²	10	68126	40
ORGANIC **Lucerne** Medicago sativa	The "queen of fodder plants" is a beloved source of perennial fodder for many species of livestock, including cattle and sheep.	0.5 kg	100 m²	10	68142	96
ORGANIC **White clover** Trifolium repens	This perennial clover species is an excellent source of fodder when sown pure or in mixtures with grasses.	0.5 kg	100 m²	10	68166	96
ORGANIC **Red clover** Trifolium pratense	This perennial clover species is an excellent provider of feed for fresh forage and clover hay production.	0.5 kg	100 m²	10	68152	96
ORGANIC **Blue lupin** Lupinus angustifolius	Blue lupin is suitable for all soils, efficiently suppresses weeds and forms soil-loosening taproots.	0.5 kg	15 m²	12	68112	63
ORGANIC **Common buckwheat** Fagopyrum esculentum	Buckwheat can be a part of many crop rotations and used in a variety of applications. Its white flowers are visited by numerous beneficial insect species.	0.5 kg	50 m²	12	68156	63
ORGANIC **White mustard** Sinapis alba	ReNatura® White mustard is a classic green manure plant. It germinates very quickly, covers the ground and dies back in winter.	0.5 kg	100 m²	12	68116	63
ORGANIC **Lacy phacelia** Phacelia tanacetifolia	Lacy phacelia, also called bee pasture, is a green manure plant that is particularly suitable for vegetable gardeners.	0.5 kg	100 m²	10	68146	96
ORGANIC **Soil fit** (BodenFit®)	Organic Soil fit is a mixture of various green manure plants, which was primarily designed for use in catch crop cultivation.	0.5 kg	50 m²	12	68122	63

ReNatura®

Seed mixtures for vibrant flower fields

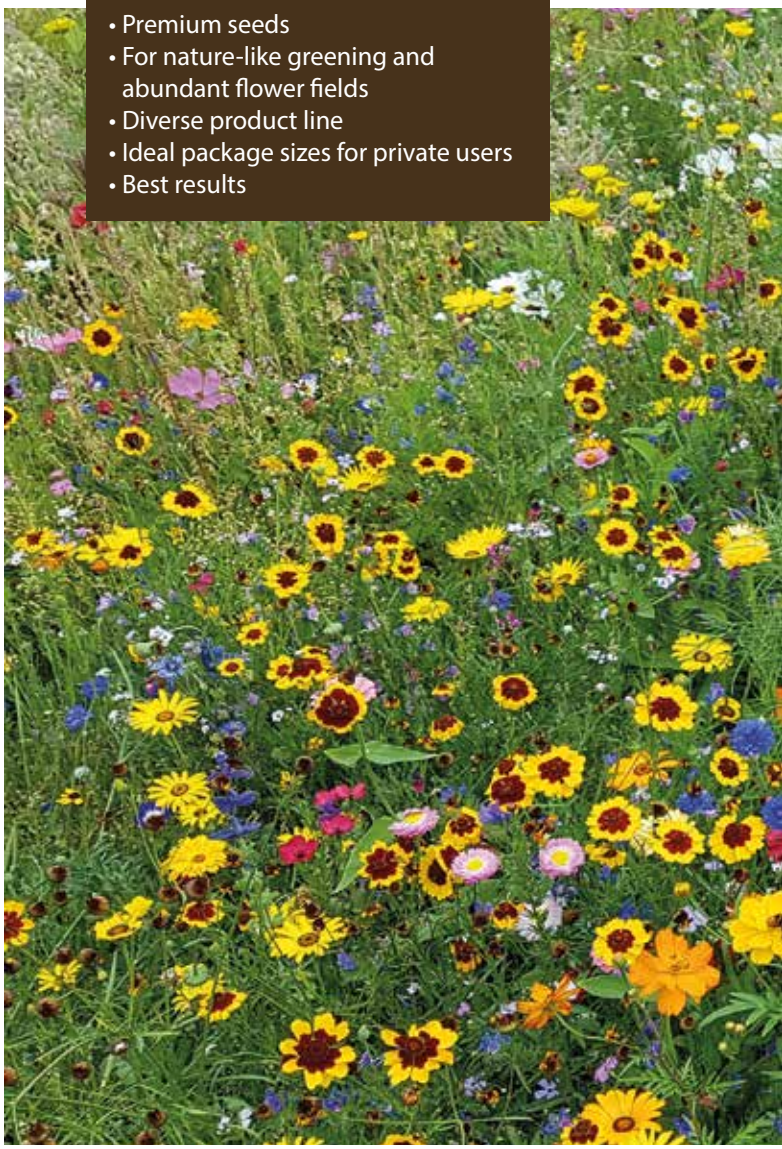
ReNatura
FLOWER SPLENDOUR

Beneficial insects have been the subject of much public interest in recent years, with discussions taking place across various channels. One of the most important issues in these discussions was the lack of suitable habitat for many insects, or its total absence. Nectar-rich flowering plants are a particularly important source of sustenance for many insects. These have become scarce in the agricultural landscape, reducing the habitat available for nectar-collecting insects. The design of many gardens has also changed in comparison to previous decades, offering less habitat for insects than they used to.

Feldsaaten Freudenberger created the ReNatura® product line, which offers numerous flower mixtures for different purposes on the market. The goal of the product line is to provide the right seed mixtures for a variety of nature-like habitats. Flower mixtures are the main focus of this offering, and they are supplemented by other mixtures that are suited to the creation of valuable habitats. ReNatura® gives everyone the ability to do something for the insects and to create valuable biotopes.

ReNatura®

- Premium seeds
- For nature-like greening and abundant flower fields
- Diverse product line
- Ideal package sizes for private users
- Best results



Bienenweide (Bee pasture)

Nourishing nectar for honeybees and bumblebees

ReNatura® Bee pasture (Bienenweide) mixture is a magnet for honeybee and bumblebee species. From the red-tailed bumblebee to the small garden bumblebee, the bee pasture mixture offers the right flowers and food for all. In addition to the well-known pollen collectors, the flowers are also visited by other nectar-collecting insects, such as the hummingbird hawk-moth that resembles its namesake, and acrobatic hoverflies. This diverse and colourful flower mixture also offers the observer an attractive and varied picture, which changes constantly over the course of the growing season.

Ideal sowing period: Spring, soil temperature >12°C
Germination time: 2–3 weeks
Flowering period: 8–24 weeks after sowing
Flower colour: multi-coloured
Growth height: up to approx. 80 cm
Growing period: annual and perennial

ReNatura® Bee pasture contains over 20 species of nectar-rich flowering plants.

Package size	Area	GTIN SU	SU	Product no. SU	SU/pallet
275 g pouch	25 m²	4011239008831	12	68232	100

Schmetterlingsoase (Butterfly oasis)

Habitat for butterflies

The ReNatura® Butterfly oasis (Schmetterlingsoase) flowering plants mixture serves as a food source for a large variety of butterflies and moths, as well as providing a natural nursery for their caterpillars. Many of the flowers are visited by a diverse array of butterflies and other beneficial insects, which enjoy the energy-rich nectar and pollen. Due to the abundance of nectar, the butterfly oasis flowering plants mixture also creates a popular visiting spot for bees, bumblebees and other insects.

Ideal sowing period: Spring, soil temperature >12°C
Germination time: 2–3 weeks
Flowering period: 8–24 weeks after sowing
Flower colour: multi-coloured
Growth height: up to approx. 80 cm
Growing period: annual and perennial

ReNatura® Butterfly oasis contains over 20 species of nectar-rich flowering plants, which serve as a source of sustenance and a nursery for butterflies.

Package size	Area	GTIN SU	SU	Product no. SU	SU/pallet
275 g pouch	25 m²	4011239008916	12	68222	100

All these and more ReNatura® flower mixtures are also available in larger package sizes.

Contact us for more information!

Blumenwiese (Flower Meadow)

Mixture of colourful flowers for all locations

Flower meadows are an important habitat for insects, birds and small mammals, playing a crucial role in preserving natural biodiversity. The ReNatura® Flower Meadow (Blumenwiese) mixture contains various grasses and the flowers typically found in a flower meadow. The flowers are a source of food for insects, which are attracted to them. The nectar and pollen they produce are consumed by a wide variety of insects, such as bumblebees and butterflies. Songbirds such as robins find cover and a diverse source of food among the seeds and insects in these flower meadows.

Ideal sowing period: Spring, soil temperature >12°C
Germination time: 2–3 weeks
Flowering period: 8–24 weeks after sowing
Flower colour: multi-coloured
Growth height: up to approx. 60 cm
Growing period: annual and perennial

The ReNatura® Flower Meadow contains over 35 species of flowers and grasses, which provide habitat to a wide array of animals.

Package size	Area	GTIN SU	SU	Product no. SU	SU/pallet
275 g pouch	40 m²	4011239008824	12	68212	100
500 g pouch	70 m²	4011239009012	10	68215	63

ReNatura®

Seed mixtures for vibrant flower fields

The ReNatura® product line includes 10 products sold in practical, resealable, plastic packaging.

Product name	Description	Contents	Area	SU	Product no.	SU/pallet
Bee pasture Bienenweide	ReNatura® Bee pasture mixture is a magnet for honeybee and bumblebee species.	275 g	25 m²	12	68232	100
Butterfly oasis Schmetterlingsoase	The ReNatura® Butterfly oasis flowering mixture serves as a food source for a large variety of butterflies, as well as providing a natural nursery for their caterpillars	275 g	25 m²	12	68222	100
Wildflowers Wildblumen	The ReNatura® Wildflowers mixture offers gardens a piece of colourful wilderness.	275 g	25 m²	12	68255	100
Songbird oasis Singvogeloase	The Songbird oasis flowering plants mixture from ReNatura® offers an ideal habitat and an abundant source of food for a wide variety of songbirds.	275 g	25 m²	12	68266	100
Cut flowers Schnittblumen	The Cut flowers seed mix from ReNatura® helps create a flower patch in your own garden from which you can cut and assemble colourful bouquets.	275 g	25 m²	12	68240	100
Balcony & Patio Mix Balkon- & Terrassenmix	The balcony and patio mix from ReNatura® is the perfect seed mix for creating elegant flower patches in window boxes and flowerpots.	275 g	5 m²	12	68268	100
Flower Reseeding Blumennachsaat	The flower reseeding mix from ReNatura® is the ideal way to replenish all flower patches and fields that are a year or more old.	275 g	50 m²	12	68219	100
Flower Meadow Blumenwiese	Flower meadows are an important habitat for insects, birds and small mammals, playing a crucial role in preserving natural biodiversity.	275 g 500 g	40 m² 70 m²	12 10	68212 68215	100 63
Extensive Green Roof Extensive Dachbegrünung	This very low-growing, drought-tolerant mixture is ideal for planting roof areas with low vegetation layers.	275 g	20 m²	10	68136	100
Sunflowers Helianthus debilis/annuus	ReNatura® sunflowers bloom bright yellow and orange. The use of multiple varieties results in a mixture of flowers of various colours and sizes.	300 g	60 m²	10	68286	80

Organic seeds

Available organic components

Alsike clover
Annual ryegrass
Barley
Bird's-foot trefoil
Black cumin
Black medick
Blue fenugreek
Borage
Bristle oat
Buckwheat
Camelina
Caraway
Chervil
Chinese mallow
Cocksfoot
Common marigold
Common vetch
Coriander
Corncockle
Cornflower
Crimson clover
Dill
Egyptian clover
Fennel
Fenugreek
Festulolium
Field bean
Fodder radish
Garden cress
Hairy vetch
Hard fescue
Hemp
Hungarian vetch
Hybrid ryegrass
Italian ryegrass
Lacy phacelia
Lemon balm
Lucerne (alfalfa)
Lupins
Maize
Meadow fescue
Meadow foxtail
Oat
Oilseed flax
Parsley
Parsnip
Perennial Ryegrass
Persian clover
Proso millet
Quinoa
Red clover
Red fescue
Reed canary grass
Ribwort plantain
Rye
Safflower
Sainfoin
Serradella (common bird's foot)
Soybean
Spelt
Squarrose clover
Sudan grass
Summer feed pea
Summer forage rapeseed
Summer rye
Sunflower
Sweet clover
Tall fescue
Tall oatgrass
Timothy grass
Triticale
Wheat
White clover
White mustard
Wild rye
Winter feed pea
Winter forage rapeseed
Winter rye
Yarrow

Additional organic components on request!

Organic Permanent pasture 1

New planting

For fresh and moist sites under extensive cultivation, primarily used for cutting

3% Perennial ryegrass, early
3% Perennial ryegrass, intermediate
4% Perennial ryegrass, late
17% Timothy grass
47% Meadow fescue
10% Red fescue
10% Smooth-stalked meadow grass
6% White clover

Sowing rate: 30–40 kg/ha
Container size: 10 kg
Product no. 44010

Organic Permanent pasture 2

New planting with clover

A grass mixture with white clover for new planting, can be used on all sites

13% Perennial ryegrass, early
17% Perennial ryegrass, intermediate
17% Perennial ryegrass, late
20% Meadow fescue
17% Timothy grass
10% Smooth-stalked meadow grass
6% White clover

Sowing rate: 30–40 kg/ha
Container size: 10 kg
Product no. 44020

Organic Permanent pasture 2

New planting without clover

The composition as on the left, with the white clover portion added to perennial ryegrass

13% Perennial ryegrass, early
20% Perennial ryegrass, intermediate
20% Perennial ryegrass, late
20% Meadow fescue
17% Timothy grass
10% Smooth-stalked meadow grass

Sowing rate: 30–40 kg/ha
Container size: 10 kg
Product no. 44025

Organic Permanent pasture 5

Reseeding without clover

A pure ryegrass mixture for reseeding damaged grassland swards. Thick grassland swards ensure high yields

25% Perennial ryegrass, early
25% Perennial ryegrass, intermediate
50% Perennial ryegrass, late

Sowing rate: 20 kg/ha or 3 x 8 kg/ha per year
Container size: 10 kg
Product no. 44050

Organic Permanent pasture 5

Reseeding with clover

Reseeding mixture with white clover for reseeding damaged grassland swards. White clover serves to provide grasses with nitrogen.

20% Perennial ryegrass, early
20% Perennial ryegrass, intermediate
50% Perennial ryegrass, late
10% White clover

Sowing rate: 20 kg/ha or 3 x 8 kg/ha per year
Container size: 10 kg
Product no. 44060

Organic Meadow seeding dry sites

with clover

A clover-containing grassland mixture for dry sites or sites prone to summer droughts, with a tall fescue variety with soft leaves, which is consumed more readily than coarse-leaf varieties

35% Tall fescue
15% Festulolium
12% Cocksfoot
6% Timothy grass
6% Red fescue
6% Smooth-stalked meadow grass
8% Bird's-foot trefoil
8% Alfalfa
4% Black medick

Sowing rate: 40 kg/ha
Container size: 10 kg
Product no. 44080

Organic Süd 1

Permanent meadow intensive

A mixture for new plantings with high cutting intensity, prolific white clover with diploid and tetraploid varieties

5% White clover
10% Smooth-stalked meadow grass
20% Timothy grass
3% Meadow foxtail
10% Perennial ryegrass, early t.
25% Perennial ryegrass, middle t.
14% Perennial ryegrass, late d.
13% Perennial ryegrass, late t.

Sowing rate: 36 kg/ha
Container size: 10 kg
Product no. 44311

Organic Süd 2

Meadow reseeding Intensive (sites suitable for ryegrasses)

A reseeding mixture that uses late-maturing perennial ryegrass with high harvest flexibility

8% White clover
15% Perennial ryegrass, early d.
30% Perennial ryegrass, middle t.
22% Perennial ryegrass, late d.
25% Perennial ryegrass, late t.

Sowing rate: 25 kg/ha
Container size: 10 kg
Product no. 44320

Organic Arable feed crop cultivation 1

This mixture is made up entirely of Italian ryegrass varieties with a high yield in the first and second main harvest year

100% Italian ryegrass

Sowing rate: 40 kg/ha
Container size: 10 kg
Product no. 44110

Organic Arable feed crop cultivation 3

Use over 2–3 years (for 2 main harvest years)

42% Perennial ryegrass
29% Italian ryegrass
29% Hybrid ryegrass

Sowing rate: 35 kg/ha
Container size: 10 kg
Product no. 44130

Organic Arable feed crop production 3 Plus S

Produces over 2–3 years (two main harvest years), primarily harvested by cutting, contains red clover

29% Perennial ryegrass
21% Italian ryegrass
21% Hybrid ryegrass
29% Red clover

Sowing rate: 35 kg/ha
Container size: 10 kg
Product no. 44132

Organic Clover-grass Annual

An annual clover-grass mixture for producing clover-rich fodder in autumn. This mixture makes it possible to quickly close gaps in forage production. A subsequent cut in the spring is possible depending on weather conditions

40% Annual ryegrass
20% Italian ryegrass
30% Egyptian clover
10% Persian clover

Sowing rate: 30 kg/ha
Container size: 10 kg
Product no. 44210

Organic Alfalfa-grass

A mixture for perennial arable feed crop production with a strong alfalfa component. Suitable for silaging and hay production

70% Alfalfa (2 varieties)
20% Meadow fescue
10% Timothy grass

Sowing rate: 30–40 kg/ha
Container size: 10 kg
Product no. 44260

Organic Alfalfa-Clover-grass perennial

Energy-rich perennial alfalfa-clover-grass mixture for silage production and fresh forage. Losses due to crumbling should be avoided during harvest

10% Perennial ryegrass, early
10% Perennial ryegrass, intermediate
12% Perennial ryegrass, late
17% Timothy grass
25% Alfalfa
18% Red clover
8% White clover

Sowing rate: 35 kg/ha
Container size: 10 kg
Product no. 44265

Clover and alfalfa are nearly indispensable for building humus in organic crop rotations, not to mention weed control and nitrogen balance.

Herb mixture for pastures and meadows
The health of ruminants can be demonstrably improved by using certain legumes and herbaceous plants. Research by the Grassland Research Group and Fodder Cultivation/Ecological Agriculture at CAU Kiel show that legumes such as bird's-foot trefoil and sainfoin, as well as herbs like salad burnet, ribwort plantain and fodder chicory contain substances with a positive effect on animal health. Condensed tannins, considered a secondary compound, play a particularly important role here: due to their dietetic effect, they delay the rapid breakdown of various proteins, helping to reduce gas and air in the digestive tract.

Fodder chicory has also exhibited potential to reduce intestinal parasites, which in vitro trials have supported. Furthermore, the addition of herbs contributes to animals' mineral intake. Among herbaceous plants, ribwort plantain is one of the richest in calcium, which is essential for proper nutrition in cattle feed. Ribwort plantain is ideal for cattle, which require the essential minerals calcium and phosphorus in a 2:1 ratio, since it can provide for their high calcium needs.

Info: Increase the health status of your dairy herd by increasing the value of your standard grass mixture on parts of the land. To do this, sow 5 kg/ha of the herb mixture. This procedure can be used for grazing as well as cutting.

Organic TERRA GOLD® 1 Humus

A well-balanced mixture for crop rotations rich in cereals, maize and rapeseed; excellent root penetration

20% Field pea
7.5% Egyptian clover
7.5% Persian clover
10% Common bird's foot
10% Coated Seed lacy phacelia
25% Sudan grass
20% Common vetch

Sowing rate: 30–40 kg/ha
Sowing: Mid-August
Container size: 10 kg
Product no. 44402

Organic TERRA GOLD® 3 Solara

A mixture designed for potato rotations with blue lupins and other species

40% Blue lupin
20% Bristle oat
20% Fodder radish FARMER
10% Field pea
5% Coated Seed lacy phacelia
2.5% Egyptian clover
2.5% Persian clover

Sowing rate: 30–40 kg/ha
Sowing: March to July
Container size: 10 kg
Product no. 44405

Organic TERRA GOLD® 7 Aqua

For water conservation areas

A balanced catch crop mixture without legumes which can absorb nitrogen

20% Sudan grass
20% Fodder radish
20% Yellow mustard, white mustard
10% Lacy phacelia
25% Sunflower
5% Niger

Sowing rate: 20 kg/ha
Sowing: Before mid-August
Container size: 10 kg
Product no. 44404

Organic TERRA GOLD® 11 Spread Fix

Covers quickly, protects against erosion, provides valuable organic matter for the soil

15% Niger
25% Coated Seed lacy phacelia
17% Egyptian clover
8% Persian clover
35% Bristle oat

Sowing rate: 15 kg/ha
Sowing: Early August to early September
Container size: 10 kg
Product no. 44406

Organic TERRA GOLD® 17 Feedstar

A protein-rich winter cover crop mixture that can provide one to several silage cuts in the following spring

30% Italian ryegrass, sensitive
30% Italian ryegrass
25% Crimson clover
15% Red clover

Sowing rate: 30 kg/ha
Sowing: Early August to late September
Container size: 10 kg
Product no. 44410

Organic TERRA GOLD® 24 BlitzStart

Reliably winterkilled mixture meant for crop rotations without cruciferous plants, e.g. cereal and maize rotations

80% White mustard
10% Brown mustard
10% Camelina

Sowing rate: 15 kg/ha
Sowing: March to July
Container size: 10 kg
Product no. 44411

Organic flower and herb mixtures

Organic TERRA GOLD® 25 Allround

A flower-rich mixture with Egyptian clover for nitrogen fixation

40% Coated Seed lacy phacelia
30% Niger
30% Egyptian clover

Sowing rate: 15 kg/ha
Sowing: Mid-August
Container size: 10 kg
Product no. 44412

Organic ProGreen® WB 245

Winter cover crop with herbs

Perennial vineyard cover crop

Analysis: see ProGreen® WB 240 p. 36

Sowing rate: 50 kg/ha
Container size: 10 kg
Product no. 44370

Organic Mulch mixture

Adaptable, resilient mixture with a dense root system; effectively prevents erosion

40% Red fescue
30% Perennial ryegrass, lawn type
5% White clover
25% Smooth-stalked meadow grass

Sowing rate: 50 kg/ha
Container size: 10 kg
Product no. 44496

Organic ProGreen® WB 215 WOLF without alfalfa

Organic quality without alfalfa

This versatile, species-rich mixture can provide ground cover for a two- to three-year period. The plants it contains ensure a lengthy flowering period, which helps to feed insect populations. The different rooting depths ensure ideal root penetration of the soil.

Sowing rate: 40 kg/ha
Container size: 10 kg
Product no. 44360

20% Hairy vetch
15% Sainfoin
10% Crimson clover
7.5% Egyptian clover
7.5% Sweet clover
7.5% Black medick
5% Persian clover
5% Alsike clover
2.5% Lacy phacelia

10% Aromatic herb mixture:
Fennel, fodder chicory, bird's-foot trefoil, salad burnet, caraway, parsnip, parsley, yarrow, ribwort plantain, wild carrot

10% Bee pasture mixture:
Borage, buckwheat, dill, coriander, cornflower, mallow, common marigold, black cumin, sunflower, fodder radish, lacy phacelia

ANNIVERSARY

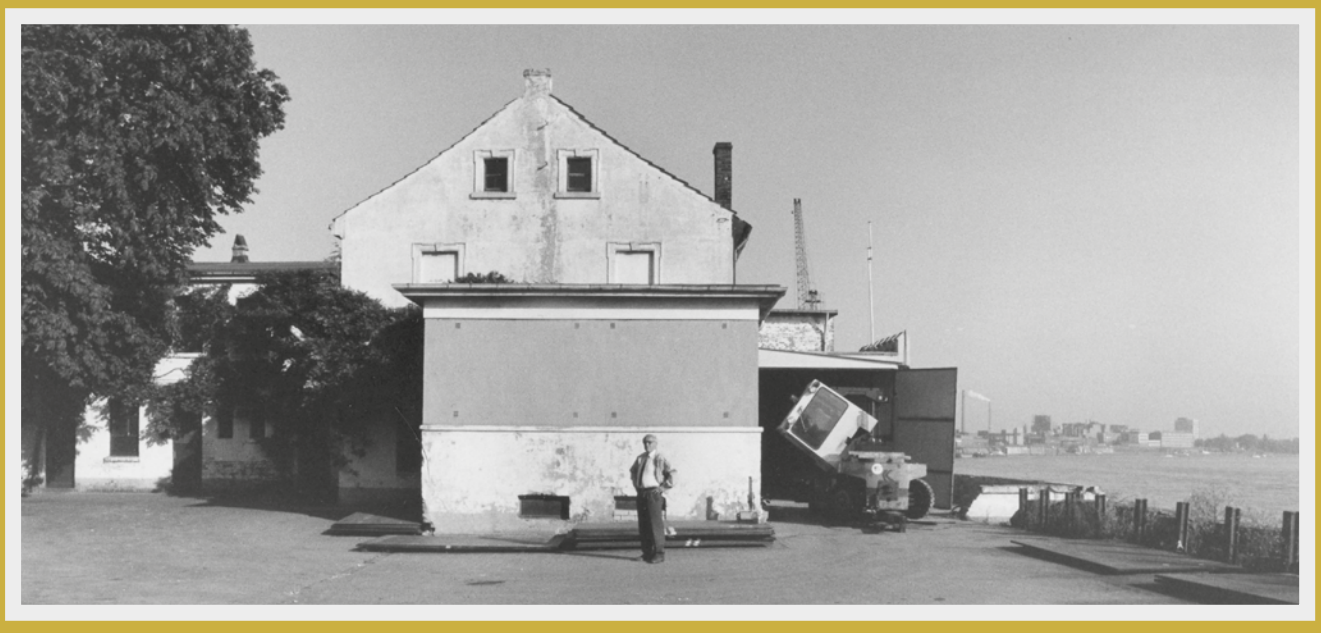
Feldsaaten Freudenberger celebrates its 75-year anniversary!

How it all began:
Siegfried Freudenberger (father of the current Managing Director, Manfred Freudenberger) founded the company S. Freudenberger – Samen und Saaten on 15 December 1948 with seed capital of just 7,000 DM. His bedroom at home became his first office, equipped with an old typewriter and two wobbly desks.

A short time later, he was able to rent out the first true company headquarters. A pair of offices were set up at the old Rheinlust, a former country pub in Krefeld-Uerdingen, with the old restaurant serving as the first warehouse.

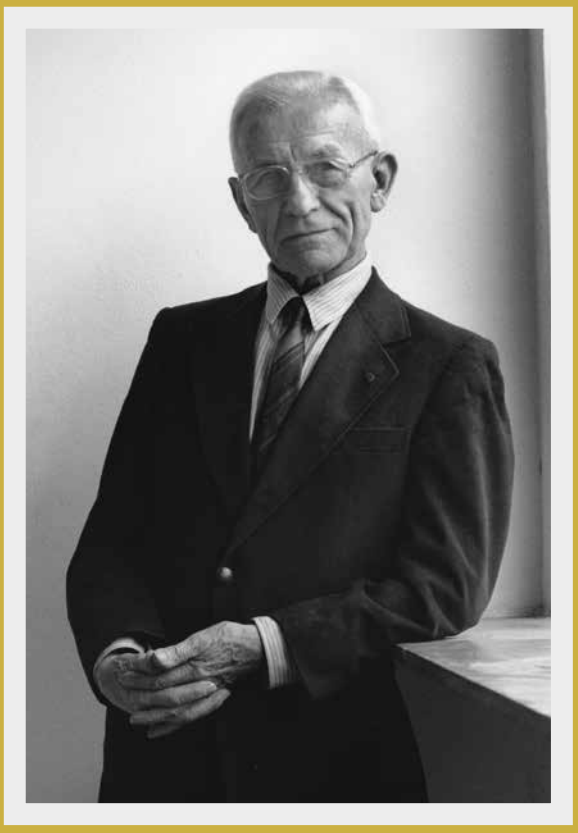
Siegfried Freudenberger managed to get his first agricultural loan from the bank and the first batches of seeds were purchased by the military government of the British army, which governed at the time. The first seed mixtures were still made with dustpans. Little by little, the first employees were recruited. In the first year of business, 1949, the company was able to generate about 1.1 million DM in sales – a major success for the conditions of the time.

The business became a partnership in 1952 with the entry of Fred Kafarnik as a shareholder. Wilhelm Kutschera and Rolf Schüten then came on board as additional shareholders in 1958, after which the company was turned into a limited partnership in 1968. In 1961, following his education in Canada and France, Manfred Freudenberger came to the company founded by his father, Siegfried. By 1972, he joined the company as a general partner.



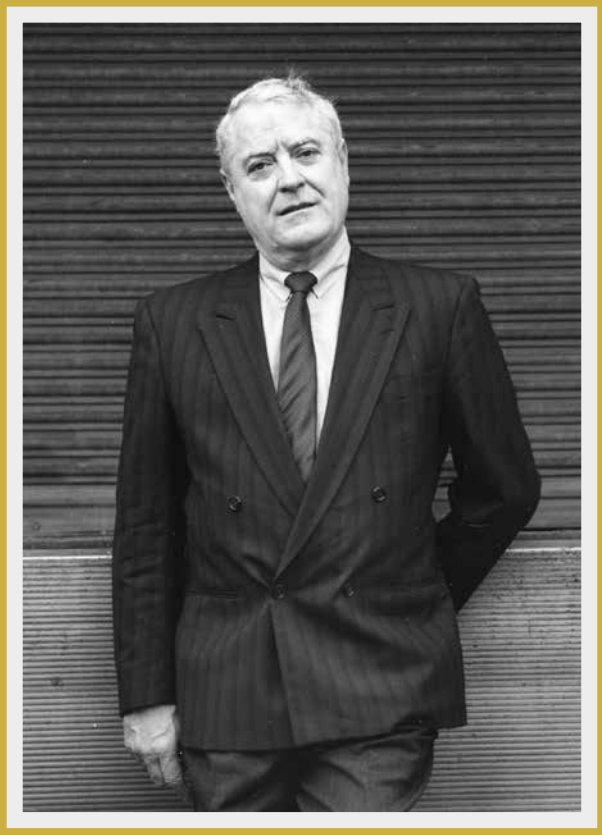
The first warehouse: the Rheinlust in Krefeld-Uerdingen, 1949

Management board of the 1960s, consisting of Siegfried Freudenberger, Fred Kafarnik, Wilhelm Kutschera and Rolf Schüten.

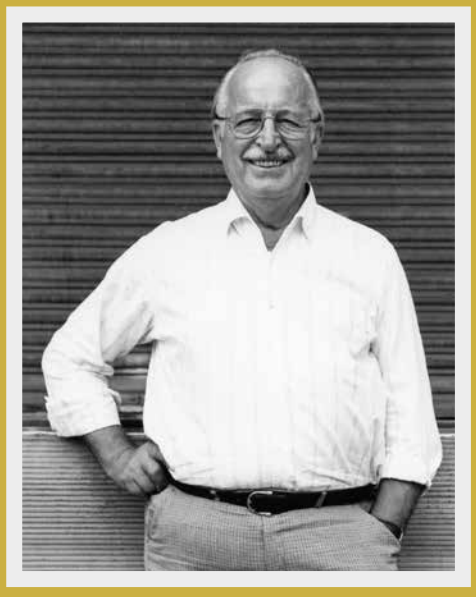


Siegfried Freudenberger

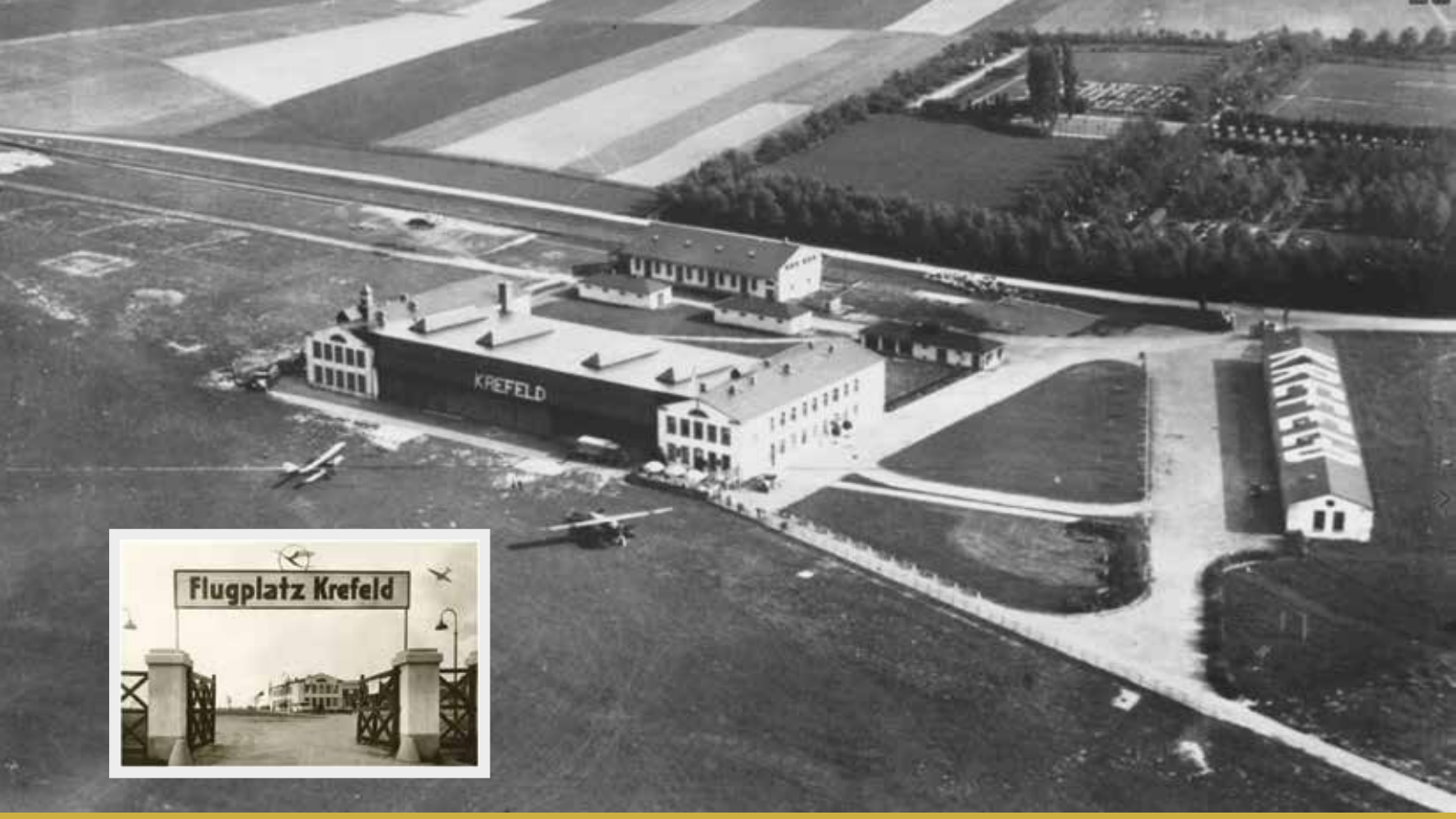
Fred Kafarnik



Rolf Schüten



Wilhelm Kutschera



At the beginning of the 1950s, a completely new operation was built on the premises of a shipping company, with a warehouse and office area. First, cleaning and mixing facilities were installed, as well as a partially automated filling machine. Production could now finally keep pace with sales, enabling new customers to be served. The customer base was finally able to grow beyond the borders of the region, and requests for seeds came from all over Germany.

It quickly became clear that space was going to become an issue again. In 1971, following negotiations with the city, the company was able to find a new property on the site of the former airport in Krefeld-Gartenstadt, where some of the warehouses and production facilities that are currently in service were built. These were continually expanded over the years, until the company purchased an additional large property in 1996 near its headquarters, where it built additional warehouses.

Since 1998, Stefan te Neues – the grandson of shareholder William Kutschera – has been part of the Management Board. In late 2014, Manfred Freudenberger's son René Freudenberger also joined the Management Board.

Growth has continued since then, with additional land, hangars and buildings rented, purchased or built. Today, Feldsaaten Freudenberger has a warehouse and production footprint of 80,000 m^2. And that includes the same headquarters we moved into in 1971.

Current Management Board, consisting of René Freudenberger, Manfred Freudenberger and Stefan te Neues

THEN AND NOW

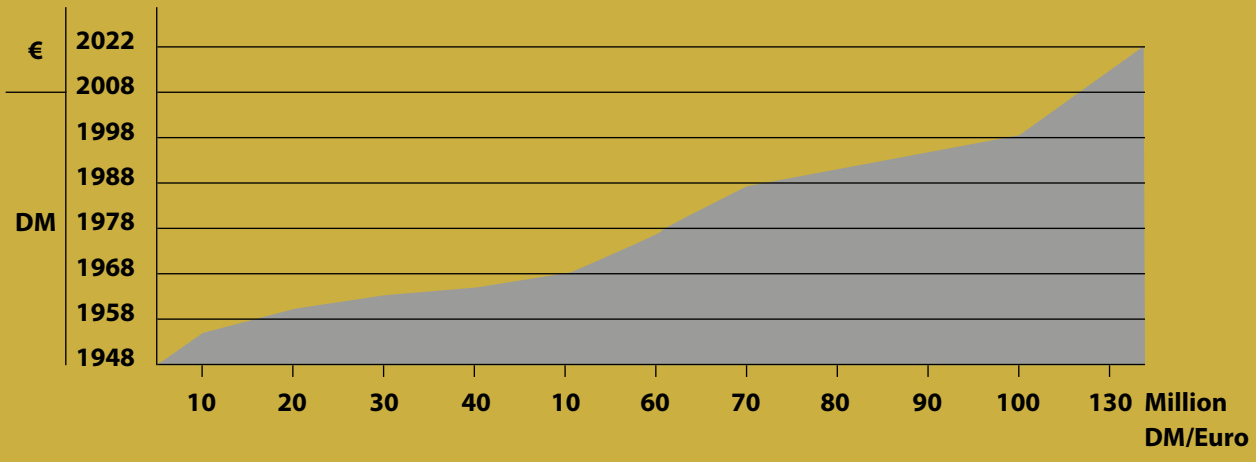
Company warehouse and production footprint

Krefeld-Gartenstadt headquarters: 1971 and today

1949 300 m²
1968 2,000 m²
1971 6,000 m²
1984 12,000 m²
1997 24,000 m²

2022
80,000 m²

Annual turnover



1949: 1.1 million DM
1970: 14.4 million DM, with 10,000 tonnes of seed
Today: over €150 million with 60,000 tonnes of seed

Much more

Information on our seeds is available at:

The varietal descriptions in this catalogue are given to the best of our knowledge and belief; however, we assume no legal liability for their correctness. The descriptions are based on findings that have generally been verified by regional variety trials, VCU testing and in-house experiments. As seeds are natural products and their performance always depends on specific environmental conditions and other factors, we cannot guarantee that these findings can be repeated under all conditions, despite having taken the utmost care to establish them.

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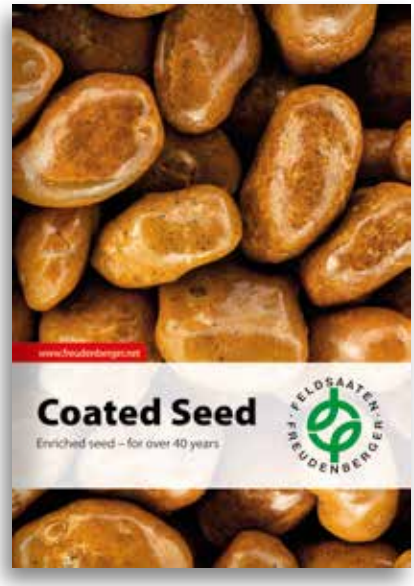

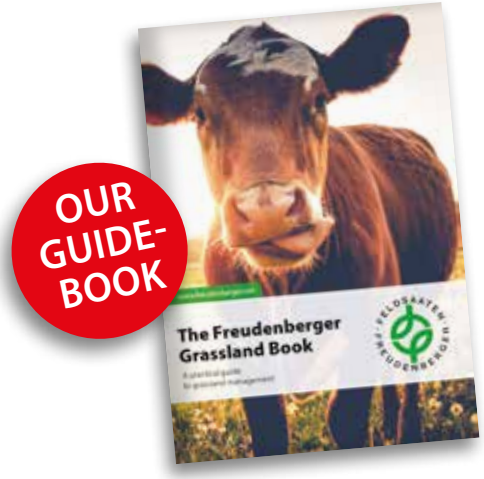

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