PRODUCT DATA SHEET

ProGreen® 14

Herb supplement for meadows and pastures dry

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

Product no. 40355

ProGreen® 15 NEW

Herb supplement for meadows and pastures wet

Composition
35% Red clover
25% Alsike clover
10% White clover
10% Ribwort plantain
10% Forage chicory
10% Small burnet

Product no. 40357

Herb supplements add diversity to grassland swards

The herb supplement **ProGreen® 14 dry** is suitable for classic, dry, sloping, south-facing and more extensive areas. The two drought-tolerant legumes in the mixture, bird's-foot trefoil and alfalfa, are the key components that make the mixture ideal for many dry, more extensive grassland sites in Southern Germany. During planting, it is important to ensure that the field is adequately supplied with lime for the alfalfa.

A brand new grassland product for wetter sites, especially in Northwestern Germany, or for better sites on floodplains or with gley soils and a good water supply: **ProGreen® 15 herb supplement wet**. The three clover species, which are excellently adapted to wet sites – alsike, red and white clover – are supplemented with chicory, ribwort plantain and small burnet, three nutritionally valuable grassland herbs.

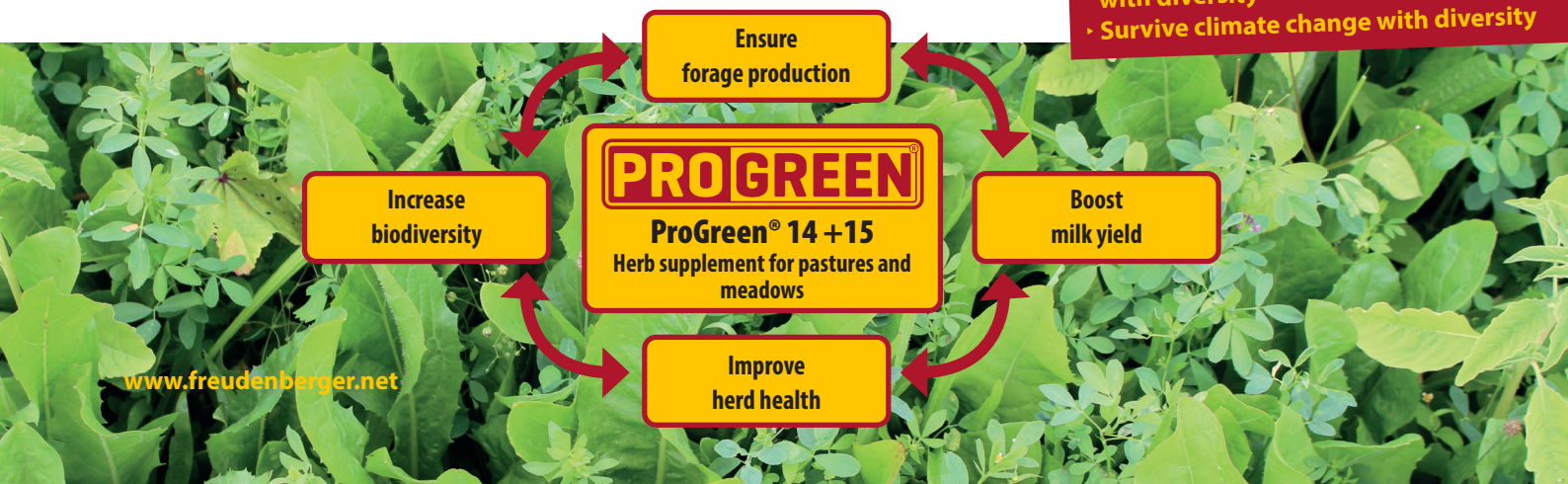
Seeding rates:
New sowing: 5 kg/ha in combination with about 25 kg/ha of a site-appropriate grassland mixture for new sowing
Overseeding: either 3 kg/ha on its own or 2 kg/ha in combination with 10 kg/ha of a site-appropriate overseeding mixture based on the G V standard; MehrGras 500 or 540 might be more appropriate for drier sites in Southeastern Germany, while MehrGras 500 or 520 may be better on wetter areas of Northwestern Germany

Distance between rows:
Row seeding can be done in a manner similar to cereals (if necessary, two passes with half the seed amount each); it is well-suited to narrow row planting using a slice seeder (especially for overseeding)

Sowing time:
New sowing: from late March to late April
Overseeding: possible in spring (mid-March to late April) or late summer (early August to early September) when competition from the old sward decreases

Sowing depth:
Shallow, 1 to 2 cm

- Make grassland fields fit for the future with diversity
- Survive climate change with diversity



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ProGreen® 14 & 15 herb supplements for meadows and pastures

A carefully balanced mixture of herbs and legumes is ideal for upgrading stressed grassland pastures for better nutrition, environment and economy in the face of the increasing occurrence of dry periods. This can be used for new seeding as well as in the overseeding process.

Benefits at a glance

- Increased palatability of the herb supplement → reduced grazing residue compared to grass-only or clover-grass mixtures
- Herbs and legumes contain, on average, more than twice the Ca, Mg and K of perennial ryegrass (can help replace expensive mineral feed for dairy cattle)
- High-value ingredients (including condensed tannins) that have a positive effect on animal health
- An established herb supplement has the potential to increase milk yield
- The objective: a dynamic balance between grass, herbs and legumes in the grassland pasture
  - Grass portions dominate in the wet phases during spring, with the advantage of rapid mass formation of grasses at the start
  - Herbs ensure dietary value of forage crops
  - Legumes increase the protein content and yield of forage crops
  - The proportion of herbs and legumes increases during dry summer periods; they grow and close bare patches in the fields caused by declining proportions of grass
  - Balanced proportions of grasses, herbs and legumes during autumn precipitation

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Botany of the mixture

Alfalfa (Medicago sativa [x varia]) *in ProGreen® 14 only*

- Family: Legumes (Fabaceae) → small-seed legumes
- Uses: The "queen of forage plants" with high protein and moderate sugar levels, nitrogen fixer and source of nectar
- Well-adapted to a soil pH of between 6.8 and 7.5

Bird's-foot trefoil (Lotus corniculatus) *only in ProGreen® 14*

- Family: Legumes (Fabaceae) → small-seed legumes
- Uses:
  - Serves as a forage plant, nitrogen fixer and source of nectar
  - High tannin content, promotes the increase of rumen-resistant protein
  - Well-adapted to a soil pH of between 6 and 7
  - Strong performance on shallow and stony soils in patchy swards and fringe structures

Ribwort plantain (Plantago lanceolata)

- Family: Plantains (Plantaginaceae)
- Uses:
  - Fodder crop with the highest feed value of 6 (according to Klapp, for farm animals)
  - Good Ca:P ratio of 2:1 (→ meets the high Ca requirement of ruminants)
  - Very good adaptation to both dry and wet periods
  - Very robust and a true all-rounder

Forage chicory (Cichorium intybus)

- Family: Asters (Asteraceae)
- Uses: Bioactive substances (sesquiterpene lactones) reduce intestinal parasites
  - High degree of adaptability to both very dry and waterlogged conditions
  - The strong taproot formation is good insurance against climate stress

Forage chicory forms a strong taproot that can reach a length of up to 60 cm in deep soil, allowing the plant to survive long periods of drought almost unscathed. Disruptive layers or grassland soils that are prone to compaction with soil structure damage are also reliably made usable through the use of the forage chicory. Forage chicory should not be larger or older than the leaf rosette shown in the picture. Older plants tend to become woody and develop stalks (lignification, decreased palatability and energy content) → strive for high frequency of use!

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Small burnet (Sanguisorba minor)
- Family: Rose family (Rosaceae)
- Uses: Supplies minerals and reduces intestinal parasites

Red clover (Lotus corniculatus) *only in ProGreen® 15*
- Family: Legumes (Fabaceae) → small-seed legumes
- Uses:
  - Clover species that tolerates pruning and farmyard manure with a useful life of two to three years
  - A particularly persistent red clover Mattenklee type is also suitable for grazing
  - Serves as a fodder plant, nitrogen fixer and source of nectar
  - Ideally adapted to wet sites on medium or heavy soils

Alsike clover (Lotus corniculatus) *only in ProGreen® 15*
- Family: Legumes (Fabaceae) → small-seed legume, shape and colour of the flower exactly between red and white clover
- Uses:
  - Serves as a fodder plant, nitrogen fixer and rich source of nectar
  - Ideally adapted to wet site conditions (→ strong but short taproots, overall only shallow roots)
  - Grows easily in almost all soils
  - Clover species with a generally low susceptibility to sclerotina stem rot
  - Much more winter-hardy and longer-lived than red clover

White clover (Trifolium repens) *only in ProGreen® 15*
- Family: Legumes (Fabaceae) → small-seed legumes
- Uses:
  - Tolerates even intensive grazing, ideal for animal trampling and browsing
  - Tolerant of farmyard manure
  - Longest-lived clover species
  - Very good capacity for establishing in grassland swards thanks to the formation of runners above ground
  - Serves as a fodder plant, nitrogen fixer and source of nectar
  - Ideally adapted to wet soil and site conditions

Climate requirements
- All of the species used in the ProGreen® 14 mixture have low water requirements; alfalfa, bird's-foot trefoil and ribwort plantain in particular have above-average drought tolerance, growing on sites with annual precipitation of less than 550 mm
- All the species used in the ProGreen® 15 mixture do particularly well on wet sites; alsike clover, forage chicory and ribwort plantain even tolerate waterlogging

Soil requirements
- The principle for new sowing or reseeding in combination with grass mixtures: with higher demands, select the grass mixture based on the existing site and soil conditions

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Soil preparation

- Soil preparation depends on the purpose for which the crop is planted:

Objective	New sowing	Overseeding
Measures	**Basic soil preparation (primary tillage)** with a plough for a neat cultivation. **Secondary processing** using a mill or rotary harrow for a fine, well distributed seedbed.	**Towing and/or harrowing** Aeration, loosening, dethatching and levelling of the old turf by towing and/or harrowing. Modern combines can bring together all the advantages of harrowing and towing while also reseeding the field. Successful establishment significantly reduced with reseeding compared to new sowing.

Crop protection

Weed control

- Before preparing the soil for new seeding, consider using a herbicide if there is serious prior weed infestation
- Topping is an effective measure against emerging weeds over 10-15 cm in height
- Prevent seeding and spreading of weeds by second-growth mowing
- Due to their toxic effects, take action against unwanted weeds such as marsh horsetail, ragwort, meadow buttercup, sorrel and thistle species with individual mechanical or chemical plant control
- The overall plant protection strategy must be adapted to the site, taking into account the requirements of dicotyledonous legume and herb species (clover species in particular are very sensitive to many herbicides)

Fertilisation

- Basic fertilisation based on the soil analysis
- Site-adapted nitrogen fertiliser strategy in compliance with all applicable regulations of fertilisation legislation
- N-usage value: 190 kg N/ha for 3-cut cultivation and 310 kg N/ha when used for 5-cut systems (note current fertilisation regulations!)
  - Minimum reductions of between 10 and 50 kg N/ha for soils with a humus content > 4%
  - If legumes account for a major proportion of the field once the stand has become established, N fertilisation must reduced according to the following table:

Yield share (%) legumes in grassland	Minimum deductions (kg/ha) due to legume N fixation
0 to ≤ 5	0
5-10	20
10-20	40
>20	60

  - in red areas, organic farming, low-N-input systems: in order to achieve the highest possible nitrogen fixation performance of the legumes, aim to provide the soil with P and K levels consistent with nutrient content class B and comply with site-appropriate pH values (at pH < 5 the formation of nodules is greatly reduced)
- Nutrient withdrawal for 3-5 cuts per year in kg/ha:

	Total N	P_2O_5	K_2O	CaO	MgO
Total	190-310	89-117	268-364	104-138	33-46

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Cutting, harvesting and treatment

- Form of use: Pasture, fresh feeding or forage silaging
- Utilisation stages: regular, preferably in good time at the sprouting stage
- Suitability of ProGreen® 14 and 15 in different pasture systems: Year-round pastures < Half-day pasture < Short sward grazing
- Regardless of the grazing or cutting method employed, the trick to achieving the desired advantages lies in ensuring new growth is used as fresh and young as possible while still in the vegetative phase
  - Problems occur in older stands, especially due to rapid increases in fibre content and the appearance of lignification in the course of flowering (especially in chicory and ribwort plantain)
  - Regular grazing results in higher energy density and protein content than cutting at a normal frequency for the site
  - Efficient cutting: Use the fields frequently and mow regularly to stimulate new vegetative leaf mass formation from the basal rosettes after each cut, which also prevents the field from excessive ageing and avoids lignification
    - Optimal cut height: 7-8 cm
- Yield of pastures with herb mixture compared to site-appropriate grass or clover-grass mixtures:
  - Dry years: higher yield with greater yield security, especially when using ProGreen® 14 herb supplement dry
  - Average years: similar yield with comparable yield security when using ProGreen® 14 herb supplement dry, higher yields with greater yield security when using ProGreen® 15 herb supplement wet
  - Wet years: lower yields with comparable yield security

Any questions? Please feel free to contact us!
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