The slogan "Preparing tomorrow, every day!" expresses our daily commitment to improvement. This is why, after 100 years’ history, the company continues to grow and maintain its focus on products, ideas and services that are constantly more innovative.

The sectors in which Padana Sementi Elette currently works with growing success, as well as forage seeds, are seeds for lawns and technical grassing, forage and grain sorghum, energy crops and cover crops.

**RESEARCH:**
Constant investments are made in the company’s research and in partnerships with Research Institutions, to be able to constantly improve and update the varieties and skills offered in each sector.

**QUALITY CONTROL:**
This is provided on two levels:
- in all production and company processes due to the ISO 9001 certified management system,
- in every individual lot of seeds that comes onto warehouse through the internal laboratory that has CRA-SCS certification. In this way customers are only supplied with products that meet the highest quality standards.

**PARTNERSHIPS:**
Over the years a solid network of partnerships has been built up with Italian and foreign institutions and companies that provides access to the most recent and best genetic materials to be developed and tested in our experimental programs.

**CUSTOMER SERVICE AND ASSISTANCE:**
Customer satisfaction is a key part of the company philosophy. Daily communication with distributors, training through seminars and field days and technical assistance pre- and after-sales, are some of the methods used to guarantee the most complete service.

Padana Sementi is a company with certified quality management system

**UNI EN ISO 9001**

![Certification Logos]
CATALOGUE

This catalogue aims to be a work and consultation tool for the main operators in this sector: growers, distributors and public officials. The aim is not only to list the wide range of products, but particularly to offer farmers and especially zootechnical companies the best solutions for agriculture that is increasingly sustainable.

THIS CATALOGUE COMPRISSES DIFFERENT PARTS:

• The first part describes spring-summer sowing crops and the relative proposals.
• The second part deals with autumn sowing crops with suitable products for all Italian environments.
• The third part describes the forage and grassland mixtures that PSE has developed over many years’ research.
• The new chapter on cover crops opens up to new practices for a sustainable agriculture concept that will be increasingly important.

THE PSE CATALOGUE IS COMPLETED BY SPECIFIC LEAFLETS AND BROCHURES FOR THE DIFFERENT SECTORS:

• TOP CLASS catalogue for green professionals
• TOP GREEN catalogue with the complete range of mixtures and essences for all lawn requirements
• Guide to the choice and use of sorghum, an essential and complete reference for this crop
• The brochure being drawn up on cover crops and technical grassing
Organic farming is born with the objective of creating a highly sustainable development model for the protection of: environment and territory, biodiversity, consumer and animal welfare. The basis on which this method of production is based can be summarized in the following points:

- **Food safety and healthiness**, resulting from the non-use of synthetic chemicals.

- **Reducing the impact of agriculture on soil, air and water**. The biological method aims at minimizing the release of residues into the environment, loss of soil fertility, loss of biodiversity of the agroecosystem and energy consumption.

- **The total exclusion of GMO crops**.

- **Strict control and certification** of the whole production process by independent bodies to ensure maximum traceability to the consumer from the field to the point of sale.

At global level, the trend of growing superficial for organic farming continues: over the past 15 years, this method has quadrupled surfaces, albeit with different trends in the various geographic areas.

As far as Italy is concerned, it should be stressed that it is currently the second country in Europe for biologically managed areas, and that the share of organic farming is over 10%.

Another interesting piece of information on the national scene is that there is a steady increase in this sector: as an example from 2012 to 2013 there has been an increase in dedicated surfaces of 13%!

Padana Sementi Elements works in the field of this sector, aiming to increase the supply of certified organic seeds. The ORGANIC registered trademark marks the products for which Certified seed is available Bio of origin both national and foreign.

In addition to seeds, the company also proposes specific rizobes for various leguminous (useful for optimizing nitrogen fixation in the soil) and seeds already mixed with micorrize and bioactivators for the benefit of greater plant rooting and healthiness.
In addition to these products, the company is able to offer a wide range of solutions for organic farming such as crop protection products (Cover Crop and Sovesci).

The full line of these crops is distinct from the brand:

Seeds marked with the “Organic” brand currently available are:

- Alfalfa: CUORE VERDE, LA BELLA CAMPAGNOLA, FRIGOS
- Berseem clover: LEILA
- Cocksfoot: OTELLO
- Buckwheat: ZITA
- Common vetch: PIETRANERA
- Westervold Italian ryegrass: ANDREA, EXTREM
- Red clover: SPADONE GIGANTE DI SANTA MARTA

“Biodiversity — the extraordinary variety of ecosystems, species and genes that surround us — is our life insurance, giving us food, fresh water and clean air, shelter and medicine, mitigating natural disasters, pests and diseases and contributes to regulating the climate. Biodiversity is also our natural capital, delivering ecosystem services that underpin our economy. Its deterioration and loss jeopardises the provision of these services: we lose species and habitats and the wealth and employment we derive from nature, and endanger our own wellbeing.” (European Commission, 2011)
Visit PSE plots

EGF Symposium, Alghero 2017, sponsored by Padana Sementi. Visit to the demonstration fields of Sulla, which is mixed with our specific rhizobium.

Cereal trial in Montichiari (BS)

Test plot and post control PSE
Vienna demonstration field 2017: Padana Sementi collaborates with important breeders all over Europe

Our field test with 54 different sorghum hybrids, seen from 60 m in height

Triticale Leontino in the province of Cremona

Personalized forage for our distributor from Paestum (SA)
ALFALFA
(Medicago sativa)

FEATURES
It is the quintessential perennial forage species and undoubtedly the most common and well-known in Italy. Alfalfa adapts to all pedoclimatic conditions, but is most productive in deep, clay or medium textured alkaline soils (optimal pH 6.5 - 8). It is not adapted to waterlogging or acidic soils. The different varieties of alfalfa vary due to their dormancy.

DORMANCY
Dormancy is the period of arrested plant growth in the winter, which may last for different amounts of time according to the variety. The National Alfalfa Alliance (USA) has established a scale of dormancy classes ranging from class 1 (dormant varieties) to class 11 (non-dormant varieties). According to the dormancy, the varieties are suitable for different climatic conditions - the most dormant for harsh winter environments and the less dormant for mild winter environments. In Italy the varieties used are comprised between dormancy classes 5 and 8.

USE
The best compromise between yield and quality and the guarantee of the longest lifetime for the grassland is provided by cutting it when it starts to flower. However, often for a more intensive and higher quality use, cutting is performed earlier in the bud stage. Also in this case varieties that regrow quickly and are resistant to frequent cutting must be chosen.

STRENGTHS OF THE SPECIES
✓ Formations of monophyte grasslands that can be managed intensively and with high levels of mechanisation
✓ It combines high yield and production that is well distributed over the vegetative season, with the high quality of forage produced
✓ Hardy and adaptable species, relatively undemanding in terms of agronomic input
✓ Excellent effect of soil fertility in mid-long term rotations. Crop diversification is included in the new CAP and in ecological focus areas (EFAs).

FRIGOS
DORMANCY:
Class 6 (semi-dormant)

CYCLE:
Average

FEATURES:
- Medium-tall plant with thin stalks and a good leaf-stem ratio
- Suitable for early cutting (intensive use).
- Excellent compromise between hardiness and quality: good yield in fertile plain soils and in drier hilly areas or where the winters are colder
- Good fibre digestibility and protein content

SOWING RATE:
30 kg/ha pure.
40 kg/ha (4 doses) if mixed with rhizobium Alosca®.
PICENA GR
DORMANCY: Class 6.5 (semi-dormant)
CYCLE: Average
FEATURES:
- Semi-erect plant with high leaf-stem ratio
- Suitable for hay, green forage and dehydrating
- Also suitable for mid-high hilly areas as it has excellent resistance to winter frost
- Very persistent, it can quickly regrow after cutting.
- High dry matter yield and protein/ha (see table A and B)
SOWING RATE:
30 kg/ha pure. 40 kg/ha (4 doses) if mixed with rhizobium Alosca®.

CUORE VERDE
DORMANCY: Class 6.5
CYCLE: Average
FEATURES:
- Very healthy plant, resistant to the main diseases.
- Chosen in the hilly areas of Central Italy, it therefore withstands high summer temperatures and low winter ones.
- It was particularly selected for organic farming methods, where in the official tests it was the most productive variety in the most suited locations (see table B).
SOWING RATE:
30 kg/ha pure. 40 kg/ha (4 doses) if mixed with rhizobium Alosca®.

DORINE
DORMANCY: Class 6.8
CYCLE: Average
FEATURES:
- French genetic synthesis variety.
- Average sized very leafy plant
- Excellent resistance to lodging, it is suitable for intensive use
- Well distributed production across all cuts.
SOWING RATE:
30 kg/ha pure. 40 kg/ha (4 doses) if mixed with rhizobium Alosca®.

VERDOR
DORMANCY: Class 8 (nondormant)
CYCLE: Early
FEATURES:
- Particularly suitable variety for areas with Mediterranean climates (southern Italy and islands), where it can grow all year round, if supported by irrigation in the summer.
- Healthy and resistant to diseases.
SOWING RATE:
30 kg/ha pure. 40 kg/ha (4 doses) if mixed with rhizobium Alosca®.
**Features**
- Leguminous perennial crop with a 3 year duration (the best yield is in the second year).
- Suitable in fertile and cool soils, but also adaptable to shallow acidic and sub-acidic soil. The best pH for the soil is between 6 and 7.5.
- It is used for producing hay, pasture, or silage, usually in intercropping with other leguminous or graminaceous crops for improving the quality and production of the grassland.

**Optimal forage quality levels:**
Crude protein (% dry matter): 20-23%
MFU: 0.90-0.96

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**Spadone Gigante di S. Marta**
- **Type:** Diploid
- **Cycle:** Average-early
- **Features:**
  - Use: pure or in intercropping in pasture lands for hay production
  - Plant with remarkable vegetative development, very leafy.
  - Very adaptable variety to Italian climates, it offers the best yield in cool plain environments.
- **Sowing rate:** 25-35 kg/ha if sowed pure.

**Nike**
- **Type:** Diploid
- **Cycle:** Average-early
- **Features:**
  - Polish genetics,
  - Great yield in cold winter environments.
  - Excellent shoot capacity, and great protein content.
  - Oidium resistant.
- **Sowing rate:** 25-35 kg/ha.

**Sulla**
- **Type:** Diploid
- **Cycle:** Average-early
- **Features:**
  - Leguminous perennial suitable for Mediterranean climates for the formation of short-lived monophytic lawns (2 years). Very productive in the area, especially in the second year. It is particularly suitable for deep, clayey and calcareous soils. This species performs a great improvement of the soil, even in depth, and is well suited to rotations with grain and graminaceous herbs.

**Bellante**
- **Features:**
  - Medium-sized, semi-sized portable plant.
  - Extremely thin casings and wires, produces an appetizing, full-bodied fodder.
  - Use: grazing, fen, fenced. It is advisable to use it no later than the beginning of flowering to avoid a rapid increase in the spine.
  - Sowing time: spring or, in mild areas, in summer.
- **Sowing rate:** 30-40 kg/ha of shelled seed

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**Spring Sowing Crops**
### WHITE CLOVER
*(Trifolium repens)*

**FEATURES**
- Perennial species that comprises different plant forms, similar in terms of pedoclimatic requirements but with different sizes and uses.
- It generally prefers cool soils with good water availability (due to the superficial nature of its root apparatus). It withstands winter cold very well, but does not withstand high temperatures and drought very well.
- It is also adapted to both acidic and alkaline soils, with soil pH between 5 and 8.
- Its creeping behaviour protects the grassland from more intensive uses and against trampling and allows excellent quality forage to be obtained as it is mainly comprised of leaves (0.96 – 1.00 MFU).

### WHITE DUTCH CLOVER
*(Trifolium repens hollandicum var.)*

- It is distinguished by its average size, its resistance to cold and trampling, and by its long-term persistence.
- Excellent for pasture lands also in mountainous and hilly areas

### HAIFA

**FEATURES:**
- Very hardy and productive variety.
- Tolerates summer temperatures well
- Suitable for average duration grasslands (about 3 years)

**SOWING RATE:**
8-10 kg/ha if sowed pure.

### HUIA

**FEATURES:**
- Average cycle variety, with average sized leaves.
- Vigorous growth forming dense cushions, with excellent competition against weeds.
- Very persistent, it is suitable for long-term grasslands and technical grassing.

**SOWING RATE:**
8-10 kg/ha if sowed pure.

### LADINO WHITE CLOVER
*(Trifolium repens giganteum var.)*

- A plant that stands out due to being very tall (can reach 60 cm).
- This type of clover is used pure in the well-irrigated areas of north Italy, for creating grasslands that can provide up to 8 cuts a year.

### REGALGRAZE

**FEATURES:**
- Tall variety, with large leaves and fast growth.
- Good ability to regrow, which allows it to be used also in mixtures for pasture lands increasing the quality and yield.

**SOWING RATE:**
8-10 kg/ha if sowed pure.

### COMPANION

**FEATURES:**
- Tall variety.
- Compared to other types of Ladino clover it stands out due to its increased resistance to drought.
- Also suitable for light and well-drained soils.

**SOWING RATE:**
8-10 kg/ha if sowed pure.
**Cocksfoot**
 *(Dactylis glomerata)*

**Features**
- Of the graminaceous forage crops, this species is the one that can best combine adaptability and tolerance to stress with the quality of the forage and productivity.
- It has a long-term persistence (7-8 years), hence being suitable as a component of long duration grasslands.
- It is recommended to sow it pure in autumn, by mid-September, to allow establishment before the winter. The plant is slow to become established after sowing.

**Otello**

**Features:**
- Average cycle
- Medium-tall plant, resistant to lodging.
- Selected by Padana Sementi Elette, starting from an ecotype from the Venetian Prealps. A productive variety has been obtained that is adaptable both to cool climates and summer heat and water stress.
- Long persistence and productive stability.

**Sowing Rate:**
25-30 kg/ha

**Amba**

**Features:**
- Average-early cycle

**Sowing Rate:**
25-30 kg/ha

**Tall Fescue**
 *(Festuca arundinacea)*

**Features**
- Perennial species with vigorous growth, it has a deep root apparatus and large leaves that tend to be fibrous, giving it long persistence, marked hardiness and remarkable resistance to summer drought (the most resistant of the microthermal graminaceous forage crops).
- Cutting must not be performed at the start of heading so as not to compromise the quality and palatability of the forage.
- Autumn sowing is recommended for the pure seeds (between end of August and end of September). Spring sowing can be performed when intercropping with leguminous crops and must be performed by the end of March.

**Palma**

**Features:**
- Early cycle
- Tall and fast regrowing variety.
- Selected for its productivity and persistence.

**Sowing Rate:**
30-35 kg/ha

**Kora**

**Features:**
- Average cycle
- This variety stands out due to the maximum quality forage compared to other tall fescue varieties.
- Excellent production levels
- Excellent digestibility
- Resistant to stress and winter frost

**Sowing Rate:**
30-35 kg/ha

**Spring Sowing Crops**
## MEADOW FESCUE
*(Festuca pratensis)*

**FEATURES**
- A plant with average persistence, very resistant to cold, but sensitive to summer drought and high temperatures.
- It produces excellent quality forage that is more digestible than tall fescue.
- Used for mixed pasture lands in cool hilly or mountainous areas.

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## COSMOLIT

**FEATURES:**
- Early cycle
- Average sized variety, very persistent
- Good quality parameters.
- The best yields are obtained at the average altitudes of northern Italy.

**SOWING RATE:**
20-25 kg/ha

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## PERENNIAL RYEGRASS
*(Lolium perenne)*

**FEATURES**
- Graminaceous forage crop suitable for cool and fertile soils.
- Average persistence, quick establishment and regrowth. Ideal plant for pasture.
- Excellent forage quality.
- Like Italian ryegrass it is split into diploid and tetraploid varieties.

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## PASTORAL

**FEATURES:**
- Late cycle
- Tetraploid

**SOWING RATE:**
35-45 kg/ha

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## MATHILDE/TIVOLI

**FEATURES:**
- Average-late cycle
- Tetraploid

**SOWING RATE:**
35-45 kg/ha

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## GRASSLANDS NUI

**FEATURES:**
- Early-average cycle
- Diploid

**SOWING RATE:**
30-35 kg/ha
### HYBRID RYEGRASS
*(Lolium x hybridum)*

**FEATURES**
- Interspecific hybrid (*L. perenne* x *L. multiflorum*) that combines the density and persistence of perennial ryegrass with the productivity of Italian ryegrass.
- It can form grasslands with a 3-4 year duration or even longer in optimal conditions.

### GALA

**FEATURES:**
- Average cycle
- Tall and fast regrowing variety.
- Selected for its productivity and persistence.

**SOWING RATE:**
35-40 kg/ha

### FESTULOLIUM
*(x Festulolium)*

**FEATURES**
Intergeneric hybrid between Ryegrass and Fescue that is essentially used in intercropping in mixed pastures.
- It produces more than perennial ryegrass with similar quality forage.
- Good persistence and tolerance to stress.

### ABERNICHE

**FEATURES:**
- Average cycle
- Good persistence.
- Expresses the production potential and features typical of Italian ryegrass

**SOWING RATE:**
35-40 kg/ha

### TIMOTHY GRASS
*(Phleum pratense)*

**FEATURES**
- Productive species with long-term persistence, typical of the cool and well-irrigated environments of the plain and hilly and mountainous areas.
- Not very tolerant to high temperatures and drought
- Excellent quality forage
- Autumn sowing recommended in the plain, spring in cold mountain environments.

### ALMA/ANJO

**FEATURES:**
- Average cycle

**SOWING RATE:**
10-15 kg/ha, pure
PEARL MILLET
(Pennisetum glaucum)

FEATURES
- Summer cycle species that originates from the hot-dry areas of the subtropical belt.
- Very adaptable to different soils, and very resistant to drought, it is most productive in deep soils.
- If harvested at the right time, it can provide remarkable amounts of very high quality forage in terms of protein content and palatability.
- Especially recommended for sheep, cow and horse grazing.
- Never contains toxic substances for the livestock or antinutritional factors.

NUTRIFEED

TYPE: Pearl millet hybrid
CYCLE: Very late

FEATURES:
- The plant can reach remarkable heights and biomass production levels if left to grow, but to the detriment of the quality level.
- High protein content and digestibility in young plants.
- High resistance to temperatures and drought, not particularly susceptible to diseases.
- Use: Pasture land, green forage, hay. It can be used for the whole reason without the risk of early heading and therefore loss of quality. For the first grazing it is recommended to wait 45-50 days (plants well established and tillered). For maximum forage quality it is recommended to use it before it reaches 1 m in height (see graphs).

SOWING RATE:
15-20 kg/ha to guarantee dense planting and optimal coverage of the soil. Sowing depth: no more than 2-3 cm.
Sowing period: when soil temperature reaches at least 16°C.

DAILY DOUBLE

TYPE: Pearl millet hybrid
CYCLE: Early (heading starts 60 days after emergence)

FEATURES:
- Use: pasture, hay, green forage. Provides excellent pasture before the plant starts heading.
- The plant is very vigorous with fast growth and great tillering ability.

SOWING RATE:
20-30 kg/ha to obtain thinner plants suitable for hay. Sowing depth: no more than 2-3 cm.
Sowing period: when soil temperature reaches at least 16°C.

PAMPA MIJO BMR

TYPE: Hybrid BMR pearl millet
CYCLE: Medium-late

FEATURES:
- Use: hay, green forage. The first BMR pearl millet on the Italian market: top quality for summer pasture. Superior fibre digestibility thanks to its reduced lignin content.

SOWING RATE:
15-20 kg/ha. Sowing depth: not more than 2-3 cm.

FOXTAIL MILLET
(Setaria italica)

FEATURES
- Summer graminaceous crop with fast cycle
- Usually used in second harvest for a single abundant hay cut.
- Withstands summer temperatures well, but needs regular watering to improve the yield.

PANORAMA GIGANTE

CYCLE: Very early (50-60 days)

FEATURES:
Tall and thin plant (quick drying)

SOWING RATE:
45-50 kg/ha

MOHA

CYCLE: Very early (50-60 days)

FEATURES:
Tall, leafy plant (quick drying)

SOWING RATE:
45-50 kg/ha

Graminaceous forage crops
**SORGHUM**

*(Sorghum bicolor)*

**FEATURES**

Although sorghum is a single botanic species, *Sorghum vulgare* (syn. *Sorghum bicolor*), it is marked by very great genetic variability, which has pushed botanists to split it into different sub-species. These sub-species, which can be crossbred, correspond to different morphologies and therefore different uses.

- **S. bicolor ssp. bicolor.** This group includes varieties for *grain*, generally short with strong shoots, well-developed panicles and that do not often lodge.
- **S. bicolor ssp. sudanense.** This groups together the varieties known as “Sudan grass”. They have a thin, elastic stalk, a marked tendency towards tillering, fast regrowth and an early cycle. They are particularly suitable as multi-harvest summer forage crops and for hay production.
- **S. bicolor ssp. saccharatum.** Sweet sorghums stand out as they are tall, have large leaves, a large shoot and juicy, sugary pith, poor tillering and regrowing ability and a cycle that tends to be late.
- **S. bicolor ssp. technicum.** This sub-species, which is known as “broom corn” has long drooping branches, a high fibre content and therefore is not very suitable for use as forage. These plants are traditionally used for making brushes.
- **Crosses and hybrids of the previous types** have allowed plants to be obtained with very varied features, both from a morphological and agronomic point of view, based on the features of the types used as parental plants.

**AGRONOMIC ADVANTAGES**

- Reduced water requirements and greater water use efficiency due to the set of physiological and drought resistance mechanisms.
- Lower or no need for plant protection products
- Reduced need for fertilisers
- Great environmental adaptability: suitable for all soils, pH from 5.5 to 8.5, good salt tolerance.
- Good quality forage, in all conditions
- High plant health: sorghum can be grown in areas affected by Pyralid borers and Diabrotica and does not present any risk of mycotoxins.

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**GRAIN SORGHUM** *(Sorghum bicolor x bicolor)*

**AG 4E44**

**CYCLE:**
Medium (58 to 60 days from emergency to flowering)

**FEATURES:**
- Use: grain production.
- White grain, total absence of tannins.
- Type “food grade” sorghum selected for human nutrition: perfect for “Gluten free” industry.
- Grain with high specific weight and high protein content.
- Medium-low height plant (average height 100-110 cm), very stable.
- Semi-open and well exserted panicle.
- Good banquet excerpt.

**SOWING RATE:** 38-40 plants/m² with precision sowing, 13-15 kg/ha with mechanical seeding machine. Recommended spacing between rows 45-50 cm.

TGW: 28 g

**GIAGUARO**

**CYCLE:**
average - late (65 days from emergence to flowering)

**FEATURES:**
- Use: for grain production
- White grain, no tannin at all
- Plant height 100-110 cm, not susceptible to lodging
- Long and compact panicle.
- Very marked panicle exsertion: 15-17 cm.

**SOWING RATE:** 36-40 plants/m² with precision sowing, equal to 16-18 kg/ha.
Recommended spacing between rows 45-50 cm.

TGW: 30 g
## FRISKET

**TYPE:** Sudanense x sudanense hybrid  
**CYCLE:** average - early (58 days from emergence to flowering).  
**FEATURES:**  
- Use: grain production.  
- Orange grain with very low tannin content, good specific weight.  
- Strong and compact plant (height 110-120 cm), does not lodge.  
- Semi-opened panicle.  
**SOWING RATE:** 34-36 plants/m² (with precision sowing), equal to about 13-16 kg/ha.  
**TGW:** 33 g.

## HERMES

**TYPE:** Sudanense x sudanense hybrid  
**CYCLE:** average - early (62-65 days from emergence to flowering)  
**FEATURES:**  
- HI-Gest® hybrid: expresses both the quality advantages of BMR hybrids and the yields (comparable or better) of traditional Sudan grasses.  
- Plant: 2.5 m tall, thin stalks that facilitate drying, but not susceptible to lodging. Extraordinarily palatable forage.  
- Management: even if it has a low antinutritional factor content, it is recommended to use it after it reaches 50 cm for the best yield and quality ratio. For producing hay the higher investment is recommended and early harvesting at 1.5 m before the boot stage.  
**SOWING RATE:** 20-30 kg/ha, narrow spacing between rows.  
**TGW:** 14 g

## MONARCH V

**TYPE:** Sudanense x sudanense hybrid  
**CYCLE:** average - early (60-62 days from emergence to flowering)  
**FEATURES:**  
- Use: multi-harvest forage for producing hay, banded hay, silage and pasture. Two or three cuts can be obtained per season.  
- Plant: height 2.5 m, leafy and with very thin, elastic stalks, productive in all environments (13% more than Piper). Resistant to lodging.  
- Management: low antinutritional factor content. It is recommended to use it after it reaches 50 cm for the best yield and quality ratio. For producing hay the higher investment is recommended and early harvesting at 1.5 m before the boot stage.  
**SOWING RATE:** 20-30 kg/ha, narrow spacing between rows.  
**TGW:** 13 g
MULTI-HARVEST EARLY SORGHUM X SUDAN

SUGAR GRAZE II
TYPE: Bicolor x sudan x sweet sorghum hybrid
CYCLE: average - early (62-68 days from emergence to flowering)
FEATURES:
- Very leafy, three-way hybrid with great tillering ability and very quick regrowth.
- Tall (2.6-2.8 m) and productive plant: in the official tests it proves to be the most productive of the multi-harvest sorghum varieties. In just a few years it has gained the trust of the best growers.
- Use: multi-harvest forage for producing chopped forage, banded hay, silage and pasture. In favourable conditions, up to three cuts can be obtained.
- Also suitable for producing biomass when an early cycle with high yield is required (late sowing, double harvest)
- Management: not to be used before it reaches 90-100 cm in height. The best quality is obtained during the boot stage (protein 9-10%). The maximum dry matter yield is obtained when the grain is ripe.
SOWING RATE: 35-45 kg/ha
TGW: 24 g

HAY DAY
TYPE: Bicolor x sudan hybrid
CYCLE: average - early (62-65 days from emergence to flowering)
FEATURES:
- Use: multi-harvest forage for producing chopped forage, banded hay, silage and pasture. Three cuts per season obtainable.
- Reliable and rustic hybrid with great tillering ability and very quick to regrow.
- Tall plant (2.5-2.6 m), very elastic, with guaranteed quality: excellent protein content.
- Management: not to be used before it reaches 90-100 cm in height. Maximum quality is obtained by harvesting during the boot stage. The maximum dry matter yield is obtained when the grain is ripe.
SOWING RATE: 40-50 kg/ha
TGW: 33 g

PAMPA TRIUNFO XLT BMR
TYPE: bicolor x sudanense hybrid
CYCLE: average (70-73 days from emergency to flowering)
FEATURES: The highest quality for a multi-harvest sorghum for producing chopped forage: the BMR character gives high fibre digestibility and high sugar content. The plant is 2.5 m high and with leaves, with great tillering ability. The shoots have a mean diameter. Good resistance to lodging.
- Use: production of chopped forage, banded hay, even with multiple cuts. It’s suitable to produce silage with late sowing.
- Management: not to be used before 90-100 cm in height. The maximum quality is obtained during the boot stage (protein over 10%).
SOWING RATE: 10-15 kg/ha (the lowest dose is recommended for production of chopped forage). TGW: 31 g
**BIG DRAGOON BMR**

**TYPE:** bicolor x sudanense hybrid.

**CYCLE:** very late, photoperiod sensitive hybrid, in the North it often does not come to full flowering.

**FEATURES:**
- Use: single harvest silage, biomass.
- Large wide leaves and the good tillering ability.
- Great quality of the fibre: BMR 6 hybrid always produces a forage very appetizing and digestible.
- In the trials it showed a better resistance to lodging than other BMR forage hybrids.
- Guaranteed productive potential: exploiting the whole growing season with early sowing, it can exceed 4 m in height.
- Suitable for producing large quantities of forage as a base for the feed ration.
- Management: optimal harvesting in September or at the beginning of heading.

**SOWING RATE:** 20-22 seeds/m² (with precision sowing), equal to about 6-7 kg/ha. TGW: 15 g

---

**JUMBO STAR**

**TYPE:** Sorghum x Sudan hybrid

**CYCLE:** very late, photoperiod sensitive hybrid, often in the north it does not reach full flowering

**FEATURES:**
- Use: single harvest silage, biomass.
- The plant is very leafy and has good tillering ability.
- Very high production potential: with early sowing it grows constantly for the whole season, reaching heights of over 4.5 m.
- As it is forage sorghum, it still maintains good quality parameters compared to fibre sorghum, particularly:
  - Protein content
  - Fibre digestibility
  - Management: optimal harvest at end September or at heading emergence.

**SOWING RATE:** 20-24 seeds/m² (with precision sowing), equal to about 8 kg/ha. TGW: 28 g

---

**NECTAR**

**TYPE:** Sweet sorghum x sudan hybrid

**CYCLE:** late (88 days from emergence to flowering)

**FEATURES:**
- Use: single harvest silage, biogas. Can be grazed or harvested in various cuts considering its rapid regrowth.
- Plant with a good tillering tendency and with excellent regrowing ability and great production potential
- In the trials it showed a better resistance to lodging than other BMR forage hybrids.
- Guaranteed productive potential: exploiting the whole growing season with early sowing, it can exceed 4 m in height.
- Suitable for producing large quantities of forage as a base for the feed ration.
- Management: optimal harvesting in September or at the beginning of heading.

**SOWING RATE:** For chopped forage 25-27 seeds/m² (with precision sowing), equal to about 7 kg/ha. For pasture or harvesting in various cuts 10-15 kg/ha. TGW: 15 g
**PAMPA CENTURION BMR**

**TYPE:** bicolor x bicolor hybrid.

**CYCLE:** Average, (78 days from emergence to flowering)

**FEATURES:**
- Use: single harvest chopped silage.
- Suitable for late sowing, it’s the best solution in difficult areas instead of corn (dry areas or with pyralid borers or Diabrotica, etc.).
- The latest generation hybrid that combines the highest quality with excellent results:
  - Brachytic dwarf plant (short internodes and large leaves), good height (2-2.5 m).
  - BMR fiber (low lignin content).
  - Thick stalks and lodging resistant.
  - Well-developed panicle that produces large amounts of grain.
  - Management: optimal harvest when milky-dough stage (105 days after emergence).

**SOWING RATE:** 22-24 seeds/m² (with precision sowing), equal to about 7-8 kg/ha.

**TGW:** 36 g

**Sorghum**

**SINGLE HARVEST SILAGE SORGHUM**

**LITTLE GIANT BMR**

**TYPE:** Bicolor x bicolor hybrid

**CYCLE:**
- Average - late (85 days from emergence to flowering)

**FEATURES:**
- Use: silage production with direct cut harvest
- Suitable instead of corn in 2nd harvest or in difficult areas (dry areas or with pyralid borers or Diabrotica):
- Brachytic dwarf plant (short internodes and large leaves), plant height (1.8 - 2 m), does not lodge.
- BMR fibre (low lignin content)
- Well developed white panicle without tannin.
- High energy content.
- Management: optimal harvest when milky-dough stage.

**SOWING RATE:** 32-35 seeds/m² (with precision sowing), equal to about 10-13 kg/ha.

**TGW:** 30 g

**SPRING SOWING CROPS**

**SWEET CAROLINE**

**TYPE:** Bicolor x bicolor hybrid

**CYCLE:**
- Average-late (82 days from emergence to flowering)

**FEATURES:**
- Use: silage production with direct cut harvest
- Suitable in difficult areas or to replace corn (dry areas or with pyralid borers or Diabrotica, etc.)
- Size: 1.8 - 2.5 m, with thick stalks and wide leaves for excellent row coverage.
- Well-developed panicle that produces good quantities of red grain.
- Good green matter and grain ratio for digestible silage, with excellent protein content.
- Management: optimal harvest when milky-dough stage, in which there is no tannin.

**SOWING RATE:** 32-35 seeds/m² (with precision sowing), equal to about 10-13 kg/ha.

**TGW:** 30 g
ASOLO TRIS

**TYPE:**
Balanced mixture of three forage sorghum hybrids

**CYCLE:**
Harvest about 110 days after emergence (milky-dough stage of the silage sorghum hybrid).

**FEATURES:**
- Use: single harvest silage both for forage and biogas
- Balanced mixture of three forage sorghum hybrids:
  - Silage sorghum: strong plant that has a support function. gives the chopped forage starch and protein.
  - Sweet sorghum: guarantees productivity and high sugar content.
  - BMR forage sorghum: contributes to lowering the lignin content and increasing fibre digestibility.
- Compared to sowing a single variety, this mixture guarantees:
  - high productivity
  - excellent compromise between yield and quality
  - simplified management (low risk of lodging)

**SOWING RATE:**
20-24 seeds/m² (with precision sowing), equal to about 7-8 kg/ha. Recommended spacing between rows: 50 to 75 cm
TGW: 31 g

ASOLO BIS

**TYPE:**
Mixture of two BMR forage sorghum with very high digestibility, productivity and stability.

**CYCLE:**
late, about 115 days (from emergence to harvesting).

**FEATURES:**
- Use: silage, green forage.
- Suitable in fertile and deep soils, with good water capacity.
- Management: for single-cut silage production the optimal harvest is at milky-dough maturity of the silage hybrid; for green forage production don’t cut before the plants reach 100 cm in height.

**SOWING RATE:**
18-20 seeds/m² (with precision sowing), equal to about 6 kg/ha. An early sowing is recommended to obtain the maximum yields.
TGW: 28 g.

SUMMER FORAGE

**TYPE:**
Intercropping of hybrid pearl millet and cowpea.

**CYCLE:**
Early. It can first be used just 50-60 days after sowing (forage height less than 100 cm).

**FEATURES:**
- Use: Pasture, green forage (in 2 or 3 cuts), banded hay. Important to harvest or graze before it reaches 1 m in height for the best quality.
- High quality: in optimal conditions it is possible to have up to 17% protein in the green forage.
- Total absence of cyanogen compounds.
- Management: When sowing, the seeding machine must be carefully calibrated.
  It is recommended to sow on soil that is as free as possible from weeds.

**SOWING RATE:**
25-30 kg/ha, with soil temperature always greater than or equal to 16°C. Avoid sowing too early.
ITALIAN RYEGRASS
(Lolium multiflorum)

FEATURES
Italian ryegrass is one of the most common and important types of forage in advanced zootechnics. It is a marked microthermal species with reduced temperature requirements for germination and vegetation, used for monophyte pastures and as a component in mixed pastures. Although it is very adaptable to different environmental conditions and soils, it gives the best of its potential in cool environments, with deep soils rich in nutritional elements. In these conditions it shows very rapid and vigorous growth, with a high ability to compete and control weeds. It does not withstand high temperatures or drought.

THERE ARE TWO SUB-SPECIES WITHIN THE SPECIES

*Lolium multiflorum ssp. Italicum:* usually has low alternativity (low ability to produce head in the sowing year), very resistant to winter frost, can form two- or three-year pastures.

*Lolium multiflorum ssp. westwoldicum:* annual plant, with high alternativity and fast establishment speed. Due to these features, in regions with mild winters it can be grazed with optimal yields all winter, during which it maintains constant vegetative activity.

SPECIES SELECTION ACTIVITY HAS ENABLED US TO GENERATE VARIETIES WITH DIFFERENT NUMBERS OF CHROMOSOMES:

Diploid varieties: normal chromosome set. They have an early cycle, smaller seeds, thinner stalks and leaves and lower water content in the forage. They are particularly suitable for hay production.

Tetraploid varieties: double the number of chromosomes as diploids. They have high production potential, larger seeds, are taller, have larger leaves and higher water content in the forage. They are very suitable for ensilage.

STRENGTHS OF THE SPECIES

✓ Simple agronomic management associated with high production potential and high nutritional value of the forage (high fibre digestibility, high sugar content, high metabolizable energy - see table -).

✓ Highly flexible to use during the production cycle: pasture, hay, silage, green forage.

✓ Excellent ability to exploit nitrogen-based fertilizers and reduction in the risk of nutrient leaching and polluting groundwater (“catch crop”).

THE PADANA SEMENTI RANGE

✓ The range of varieties offered by Padana Sementi is the result of many years’ research and experience in the field. The in-depth knowledge of the vegetative behaviour of every single variety allows targeted solutions to be offered for all requirements, geographical areas and for every zootechnical use.

<table>
<thead>
<tr>
<th>Dry matter (%)</th>
<th>MINIMUM</th>
<th>AVERAGE</th>
<th>MAXIMUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein (% dry matter)</td>
<td>9.3</td>
<td>11.4</td>
<td>13.9</td>
</tr>
<tr>
<td>NDF (% dry matter)</td>
<td>52.5</td>
<td>55.8</td>
<td>60.9</td>
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<tr>
<td>ADF (% dry matter)</td>
<td>32.8</td>
<td>35.1</td>
<td>38.2</td>
</tr>
<tr>
<td>ADL (% dry matter)</td>
<td>2.8</td>
<td>3.3</td>
<td>4.3</td>
</tr>
<tr>
<td>Sugar (% dry matter)</td>
<td>8.3</td>
<td>10.5</td>
<td>12.7</td>
</tr>
<tr>
<td>digNDF (% NDF)</td>
<td>62.1</td>
<td>72.1</td>
<td>78.1</td>
</tr>
<tr>
<td>MFU</td>
<td>0.70</td>
<td>0.76</td>
<td>0.80</td>
</tr>
</tbody>
</table>

Average analyses on green plants in the heading stage (source: P.S.E. tests)
### JAKO
**Type:** Diploid, Italian  
**Cycle:** Early, heading 8 days before Excellent  
**Features:**  
- Only autumn sowing period  
- Use: Hay, with very high yields in the first spring cut. In favourable conditions it provides various cuts.  
- Tall and erect plant with longer leaves than the test varieties  
- Quick drying to produce high quality hay  
**Sowing rate:** 35-40 kg/ha

### GIPSYL
**Type:** Diploid, Westervold (alternative)  
**Cycle:** Average-early, heading 5 days before Excellent  
**Features:**  
- Autumn and spring sowing period  
- Use: Hay, silage, potentially winter pasture  
- Dutch genetics, very flexible to use due to its production potential and fast regrowth, particularly suitable for pastures in central-southern areas.  
**Sowing rate:** 35-40 kg/ha

### ANDREA
**Type:** Diploid, Westervold (alternative)  
**Cycle:** Average-early, heading 4 days before Excellent  
**Features:**  
- Autumn and spring sowing period  
- Use: Mainly hay in various cuts, but also silage and pasture.  
- This variety with Dutch genetics is now well known in the fertile areas of central-northern Italy as a production guarantee, thanks to its abundant leaves and tall height.  
- Excellent ability to regrow.  
**Sowing rate:** 35-40 kg/ha

### MAGNUM
**Type:** Tetraploid, Westervold (alternative)  
**Cycle:** Average - early, heading 4 days before Excellent  
**Features:**  
- Autumn and spring sowing period  
- Use: Silage, hay (in drier areas), winter pasture  
- Very leafy plant with a good size  
- Multi-purpose variety particularly suitable in central-southern Italy where the autumn-winter pasture offers an abundant cut. It has excellent quality parameters such as the sugar content and palatability.  
**Sowing rate:** 45-50 kg/ha

### LINOS
**Type:** Tetraploid, Westervold (alternative)  
**Cycle:** Average, heading 2 days before Excellent  
**Features:**  
- Autumn and spring sowing period.  
- Use: Silage, winter pasture, hay only in the drier areas.  
- Plant that establishes quickly, with an excellent leaf-stem ratio.  
- Excellent regrowing ability, allows various spring cuts to be provided in good conditions.  
**Sowing rate:** 45-50 kg/ha
<table>
<thead>
<tr>
<th>TYPE</th>
<th>CYCLE</th>
<th>FEATURES</th>
<th>SOWING RATE</th>
</tr>
</thead>
</table>
| **BIG BANG** | Tetraploid, Westervold (alternative) | Average, heading 1 days before Excellent | - Autumn and spring sowing period  
- Use: silage, winter pasture.  
- Very recent genetics, selected in Holland.  
- Tall, great production potential, very healthy plant. | 45-50 kg/ha |
| **EXCELLENT** | Tetraploid, Italian (not alternative) | Average | - Only autumn sowing period.  
- Use: silage, but also hay in favourable conditions.  
- Erect plant not susceptible to lodging, tall.  
- Thin stem and leafy, compared to other tetraploids it allows fast drying for good quality hay.  
- Variety developed in our breeding program, which guarantees good adaptability and very high yields in the various areas. | 45-50 kg/ha |
| **AUBADE** | Tetraploid, Westervold (alternative) | Average - late, heading 2 days after Excellent | - Autumn and spring sowing period.  
- Use: silage, and winter pasture.  
- The plant stands out due to its very wide leaves and good resistance to lodging.  
- From a quality point of view the high digestibility of the fibre is underlined and the protein content that leads to a high MFU content. | 45-50 kg/ha |
| **EXTREM** | Tetraploid, Westervold (alternative) | Average - late, heading 3 days after Excellent | - Autumn and spring sowing period.  
- Use: silage, winter pasture. With early sowing, a good autumn cut can be obtained.  
- Vigorous plant and productive with quick establishment.  
- It has obtained excellent results in central-southern areas of Italy susceptible to spring drought and adapts very well to the cooler northern areas.  
- PSE genetics: it highlights good digestibility and a low lignin content compared to average. | 45-50 kg/ha |
| **DUKAT** | Tetraploid, Italian (not alternative). | Average - late, heading 4 days after Excellent. | - Only autumn sowing period. - Use: silage or banded hay. Hay only in optimal conditions.  
- Tall, semi-erect plant. - It has highlighted high production potential and a great tillering ability. For this reason it maintains high yields even in multiple cuts management. - Variety of Polish genetics recently constituted. | 45-50 kg/ha |
<table>
<thead>
<tr>
<th><strong>BORMITRA</strong></th>
<th><strong>BARTURB0</strong></th>
<th><strong>BARTIGRA</strong></th>
<th><strong>BARSUTRA</strong></th>
<th><strong>BARTIMUM</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TYPE:</strong> Tetraploid, Westervold (alternative)</td>
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</tr>
<tr>
<td><strong>CYCLE:</strong> Average - late, heading 4 days after Excellent</td>
<td><strong>CYCLE:</strong> Late, heading 4 days after Excellent</td>
<td><strong>CYCLE:</strong> Late, heading 5 days after Excellent</td>
<td><strong>CYCLE:</strong> Late, heading 5 days after Excellent</td>
<td><strong>CYCLE:</strong> Late, heading 6 days after Excellent</td>
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<td><strong>FEATURES:</strong></td>
<td><strong>FEATURES:</strong></td>
<td><strong>FEATURES:</strong></td>
<td><strong>FEATURES:</strong></td>
<td><strong>FEATURES:</strong></td>
</tr>
<tr>
<td>- Autumn and spring sowing period. - Use: silage, winter pasture, green forage. - Plant with balanced leaf-stem ratio, good tolerance to rust. - Recently developed variety, suitable for management in various cuts. Great palatability observed in pasture and green forage due to the high sugar content.</td>
<td>- Autumn and spring sowing period. - Use: silage, winter pasture. - Very healthy plant with erect habit and good resistance to lodging. - Dutch variety, distinguished by high yields at the first cut, it guarantees a fast tillering.</td>
<td>- Autumn and spring sowing period. - Use: silage, winter pasture. - Dutch variety, with very high production performance levels. High protein content of the forage and high yield in MFU. - Suitable for all Italian growing areas.</td>
<td>- Autumn and spring sowing period. - Use: silage, winter pasture. - Very healthy plant with erect habit and good resistance to lodging. - Very high production potential. - Fast spring growth, even after intense grazing.</td>
<td></td>
</tr>
<tr>
<td><strong>SOWING RATE:</strong> 45-50 kg/ha</td>
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</tr>
</tbody>
</table>
WHEAT FORAGE

*(Triticum aestivum)*

**STRENGTHS OF THE SPECIES**

✓ High green matter production levels in more favourable conditions.
✓ High protein content, good fibre digestibility and high MFU content.
✓ Lignin content lower than rye and triticale.

---

**EMILIO**

**CYCLE:**
Late, not alternative (see tab. on page 35).

**FEATURES:**
- Autumn sowing period.
- Double use: silage and grain, with great production potential.
- Variety with aristate spike, high (120 cm), with excellent lodging resistance.
- Good plant health: good yellow rust resistance and oidium-tolerant.
- High quality grain (strength grain): high protein content and specific weight.

**SOWING RATE:** 160-180 kg/ha.

---

**ALBERTUS**

**CYCLE:**
Late, not alternative (see tab. on page 35).

**FEATURES:**
- Autumn sowing time.
- Use: high quality grain, however, given the height, it’s also good for silage.
- High protein content (> 15%) and high specific weight.
- Medium-high plant with aristate spike. Good tillering ability.
- Good resistance of the spikes to fusariosis.

**SOWING RATE:** 160-180 kg/ha.

---

**AUGUSTUS**

**CYCLE:**
Late, not alternative (see tab. on page 35).

**FEATURES:**
- Autumn sowing period.
- Use: forage (silage and hay).
- Tall variety (110-120 cm), short awned spike, erect leaves and great resistance to lodging.
- Very healthy leaves: good resistance to Fusarium and tolerant to rust.
- The plant remains leafy until harvest and guarantees excellent fibre digestibility.

**SOWING RATE:** 160-180 kg/ha.

---

**FEATURES**

- Over recent years soft wheat has become increasingly common as a forage plant both for producing silage and for producing hay, thanks to the excellent quality features of the green plant.
- To use wheat successfully as forage, the variety must be chosen carefully, especially so as to maximise yields.
- The desired features are above average height, excellent tillering ability, very leafy, very healthy plant, short awned spikes.
- Wheat forage is harvested from the start of heading (hay) to the milky-dough stage (chopped forage).

---

**FORAGE CEREALS**

| Dry matter (%) | 20.1 | 20.7 | 21.4 |
| Protein (% dry matter) | 11.6 | 13.0 | 14.4 |
| Lipids (% dry matter) | 2.2 | 2.3 | 2.5 |
| NDF (% dry matter) | 57.0 | 61.0 | 64.3 |
| ADF (% dry matter) | 34.5 | 37.3 | 39.7 |
| ADL (% dry matter) | 2.9 | 3.4 | 4.0 |
| Sugar (% dry matter) | 4.7 | 8.5 | 10.9 |
| digNDF (% NDF) | 57.7 | 62.8 | 68.3 |
| MFU | 0.64 | 0.69 | 0.75 |

Average analyses on green plants in the heading stage (source: P.S.E. tests)

---

**AUGUSTUS**

**CYCLE:**
Late, not alternative (see tab. on page 35).

**FEATURES:**
- Autumn sowing period.
- Use: forage (silage and hay).
- Tall variety (110-120 cm), short awned spike, erect leaves and great resistance to lodging.
- Very healthy leaves: good resistance to Fusarium and tolerant to rust.
- The plant remains leafy until harvest and guarantees excellent fibre digestibility.

**SOWING RATE:** 160-180 kg/ha.

---

**AUTUMN SOWING CROPS**
KWS FERRUM

**CYCLE:** Medium, not alternative (see page 35).

**FEATURES:**
- Autumn sowing period.
- Use: silage for zootechnical and bioenergetic use.
- Medium-high plant, short awned spike and high tillering ability.
- Healthy plant and spike health.
- Excellent resistance to lodging.
- Stable and high yields in the most suitable soils, with good green colour retention.

**SOWING RATE:** 170-180 kg/ha.

KWS SCIROCCO

**CYCLE:** Average-early, alternative (see page 35).

**FEATURES:**
- Autumn and spring sowing period.
- Use: forage and grain.
- Plant of good size, short awned spike and good tillering ability.
- Good tolerance to Oidium, Fusariosis and brown rust.
- Excellent resistance to lodging.
- High production potential in both forage and grain.
- It produces good quality grain.
- Its precocity makes it suitable also for many areas of the Center-South.

**SOWING RATE:** 170-180 kg/ha.

CH CAMPALA

**CYCLE:** Early (heading 10 days before Augustus), (see tab. on page 35), alternative.

**FEATURES:**
- Autumn and spring sowing period.
- Use: forage and grain.
- Short awned spike variety, medium-high plant with excellent lodging resistance.
- Very healthy leaves: good yellow rust resistance and its tolerance to Oidium.
- Good quality grain and high specific weight.

**SOWING RATE:** 180 kg/ha.
HEIDI

CYCLE: Average-early, not alternative.

FEATURES:
- Use: forage (silage and pasture), grain.
- Polistic barley that is much taller than average, high resistance to lodging.
- Excellent quality grain and specific weight
- Good resistance to leaf rust.
- Excellent harvest for forage from pre-heading up to the milky stage.

SOWING RATE: 150-160 kg/ha.

KWS TONIC

CYCLE: Average (see page 35).

FEATURES:
- Autumn sowing period. - Use: forage and grain. - Po- listic barley, average-tall size, vigorous growth. - Great productivity: in the official tests it competes with the best hybrid rice. - Excellent resistance to lodging. - High specific weight and good caliber grain, suitable for zoo-technical use.

SOWING RATE: 140-150 kg/ha.

RENI

CYCLE: Average-late, not alternative.

FEATURES:
- Use: forage (silage and pasture), grain.
- Distic barley, tall, does not lodge easily.
- Excellent quality grain, particularly the size and weight of 1000 seeds
- Excellent harvest for forage from pre-heading up to the milky stage.

SOWING RATE: 150-160 kg/ha.

ORZO

(Hordeum vulgare)

FEATURES
- A cereal traditionally used for forage crops, it is especially suited to pasture, green forage or silage.
- The harvesting stage is extremely important as it must be harvested before the heading stage so that the quality is not lost.

STRENGTHS OF THE SPECIES
✓ Barley produces high quality forage, with a high energy content (see table).
✓ Compared to wheat and oats, it is earlier
✓ Excellent adaptability to lean or loose soils and to those that tend to be salty.

Average analyses on green plants in the heading stage (source: P.S.E. tests)

<table>
<thead>
<tr>
<th></th>
<th>Minimum</th>
<th>Average</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter (%)</td>
<td>22.8</td>
<td>24.3</td>
<td>25.8</td>
</tr>
<tr>
<td>Protein (% dry matter)</td>
<td>12.1</td>
<td>12.4</td>
<td>12.8</td>
</tr>
<tr>
<td>Lipids (% dry matter)</td>
<td>1.5</td>
<td>1.6</td>
<td>1.6</td>
</tr>
<tr>
<td>NDF (% dry matter)</td>
<td>56.2</td>
<td>57.3</td>
<td>58.5</td>
</tr>
<tr>
<td>ADF (% dry matter)</td>
<td>32.7</td>
<td>33.7</td>
<td>34.8</td>
</tr>
<tr>
<td>ADL (% dry matter)</td>
<td>3.4</td>
<td>3.4</td>
<td>3.5</td>
</tr>
<tr>
<td>Sugar (% dry matter)</td>
<td>8.7</td>
<td>9.2</td>
<td>9.6</td>
</tr>
<tr>
<td>digNDF (% NDF)</td>
<td>63.7</td>
<td>65.0</td>
<td>66.3</td>
</tr>
<tr>
<td>MFU</td>
<td>0.75</td>
<td>0.74</td>
<td>0.76</td>
</tr>
</tbody>
</table>
Forage Cereals

TRITICALE

(x Triticosecale)

FEATURES
- Cereal that originates from a cross between wheat and rye, initially selected as a grain cereal.
- This cereal is becoming increasingly important for the production of green matter and for zootechnics and bioenergy.
- Padana Sementi Elette has been promoting this species for a long time and it is among the first Italian companies to focus on its potential for pure forage and in forage crop intercropping.
- The company is also making investments for the selection in Italy of new varieties, to extend its already wide range of varieties.

NAGANO

CYCLE:
Average-early, alternative. (-12 days compared to Talentro)

FEATURES:
- Autumn and spring sowing period
- Use: silage, biomass, hay. - High plant, high leafiness. - It is distinguished by its excellent health and resistance to Septoria and brown rust, even in tough years.

SOWING RATE:
160-180 kg/ha.

AMARILLO 105

CYCLE:
Average-early, alternative. (-10 days compared to Talentro)

FEATURES:
- Autumn and spring sowing period
- Use: silage, biomass, grain.
- Tall plant, good tillering ability and leafy.
- Recently developed variety, high production levels and good compromise between yield and quality.

SOWING RATE:
160-180 kg/ha. With early or spring sowing, increase to 190-200 kg/Ha.

STRENGTHS OF THE SPECIES
✓ More hardy, adaptable and productive species than wheat and higher quality compared to rye (see table).
✓ Crop that is suited to being managed sustainably, with low agronomic input (fertilizers, plant protection products)
✓ Very healthy plant, which is naturally less susceptible to fungal diseases compared to the other cereals. In unfavourable years (damp, mild winters), any fungal attacks can be easily contained with a targeted treatment if extensive symptoms present.

<table>
<thead>
<tr>
<th>MINIMUM</th>
<th>AVERAGE</th>
<th>MAXIMUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter (%)</td>
<td>18.3</td>
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<tr>
<td>Protein (% dry matter)</td>
<td>9.9</td>
<td>10.9</td>
</tr>
<tr>
<td>Lipids (% dry matter)</td>
<td>1.6</td>
<td>2.1</td>
</tr>
<tr>
<td>NDF (% dry matter)</td>
<td>65.5</td>
<td>67.7</td>
</tr>
<tr>
<td>ADF (% dry matter)</td>
<td>38.5</td>
<td>40.6</td>
</tr>
<tr>
<td>ADL (% dry matter)</td>
<td>3.2</td>
<td>4.1</td>
</tr>
<tr>
<td>Sugar (% dry matter)</td>
<td>2.3</td>
<td>5.1</td>
</tr>
<tr>
<td>digNDF (% NDF)</td>
<td>53.9</td>
<td>59.6</td>
</tr>
<tr>
<td>MFU</td>
<td>0.59</td>
<td>0.64</td>
</tr>
</tbody>
</table>

Forage Cereals

Average analyses on green plants in the heading stage (source: P.S.E. tests)
VARIETY AS IS t/ha Dry matter % Dry matter t/ha
MAXIMAL 54.42 31.99 17.06
EXAGON 52 29.87 14.99
COSINUS 51.22 31.46 15.32
CICLONE 50.96 31.16 15.58
QUIRINALE 50.39 31.09 15.60
TARZAN 49.93 31.87 15.57
KWS FIDO 49.81 33.42 16.27
AGOSTINO 49.42 31.59 14.86
Test Average 48.63 30.97 14.61

Data taken from Beta 2014 tests. Average of the data from 2 locations, first 8 varieties of the 21 being tested.

CLAUDIUS CYCLE: Average, not alternative. (-5 days compared to Talentro)
FEATURES:
- Autumn sowing period.
- Use: silage, biomass, grain.
- Tall plant, not very susceptible to diseases.
- Completely new in 2015: all the potential of this variety has emerged from the official Austrian tests (see table)

SOWING RATE: 160-180 kg/ha.

KWS FIDO CYCLE: Average-early, semi-alternative

SOWING RATE: 170 kg/ha.

Data taken from the official Austrian tests 2014. (average of 8 locations)
### TRIAMANT

**Cycle:** Average-late, not alternative. (-5 days compared to Talentro)

**Features:**
- Tall, very healthy plant
- Recommended in the formulation of forage mixtures due to being very leafy.

**Sowing Rate:** 170-180 kg/ha.

---

### COSINUS

**Cycle:** Average, not alternative (-4 days compared to Leontino).

**Features:**
- Autumn sowing period.
- Use: silage for zootchnical and bioenergetic use.
- Impressive size plant with great lodging resistance.
- High and stable production in all areas, with good green colour retention.
- Good health of the plant.

**Sowing Rate:** 150-160 kg/ha.

---

### LEONTINO

**Cycle:** Late, not alternative (see tab. on page 35).

**Features:**
- Autumn sowing period.
- Use: silage, biomass, grain.
- Medium-tall plant, leafy, rare lodging, with great tillering ability.
- Moderately resistant to the most common diseases.
- Very high production potential.

**Sowing Rate:** 170-180 kg/ha.
OATS

(Avena sativa)

FEATURES

- Among the cereals it is probably the one that lends itself best to forage production and the one that is most often used for this purpose.
- The different types of oats are traditionally distinguished by the colour of the grain: white oats, mainly used for producing grain, black oats that are more leafy and suitable for forage, red oats particularly suitable for the hot and dry climates of central-southern Italy.
- The careful choice has led to the resolution of some limiting factors of this plant; resistance to lodging, and resistance to winter cold also in northern Italy.
- Confirming the attention that goes into the selection of our range of varieties, some have been at the top of the official tests for a number of years now.

STRENGTHS OF THE SPECIES

✓ Multi-functional forage cereal: pasture, hay, green forage, grain
✓ Suited to all Italian environments, it expresses its potential best in the central-southern areas with a mild winter.
✓ Compared to other cereals, oats allow a distinctly wider harvesting window, with a very slow deterioration of the forage quality as it ripens further.
✓ The quality of the forage produced is very high: low lignin content, high fibre digestibility (similar to ryegrass), and MFU yield higher than any other cereal (see table).

FORRIDENA

CYCLE:
Late, alternative. (same cycle as Aveny)

FEATURES:
- Autumn and spring sowing period.
- Use: forage (silage, bonded hay), pure or in intercropping.
- White grain variety.
- The plant can be clearly distinguished by its imposing size (up to 170 cm) and abundant leaves. Therefore intercropping guarantees the lowest risk of lodging and the best performance levels in the field.
- Allows very high quantities of top quality green matter to be produced (above average digestibility for oats).

SOWING RATE:
110-130 kg/ha.

Average analyses on green plants in the heading stage (source: P.S.E. tests)

<table>
<thead>
<tr>
<th></th>
<th>MINIMUM</th>
<th>AVERAGE</th>
<th>MAXIMUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter (%)</td>
<td>16.0</td>
<td>18.3</td>
<td>20.2</td>
</tr>
<tr>
<td>Protein (% dry matter)</td>
<td>10.1</td>
<td>11.6</td>
<td>12.8</td>
</tr>
<tr>
<td>Lipids (% dry matter)</td>
<td>1.8</td>
<td>2.2</td>
<td>2.5</td>
</tr>
<tr>
<td>NDF (% dry matter)</td>
<td>48.6</td>
<td>55.7</td>
<td>66.2</td>
</tr>
<tr>
<td>ADF (% dry matter)</td>
<td>32.4</td>
<td>36.5</td>
<td>41.9</td>
</tr>
<tr>
<td>ADL (% dry matter)</td>
<td>2.1</td>
<td>2.7</td>
<td>3.8</td>
</tr>
<tr>
<td>Sugar (% dry matter)</td>
<td>4.3</td>
<td>8.8</td>
<td>13.1</td>
</tr>
<tr>
<td>digNDF (% NDF)</td>
<td>61.9</td>
<td>71.4</td>
<td>77.2</td>
</tr>
<tr>
<td>MFU</td>
<td>0.68</td>
<td>0.77</td>
<td>0.82</td>
</tr>
</tbody>
</table>

AUTUMN SOWING CROPS
<table>
<thead>
<tr>
<th><strong>Forage Cereals</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AVENY</strong></td>
</tr>
<tr>
<td><strong>CYCLE:</strong> Late, alternative.</td>
</tr>
<tr>
<td><strong>FEATURES:</strong></td>
</tr>
<tr>
<td>- Autumn and spring sowing period.</td>
</tr>
<tr>
<td>- Use: dual use for grain and forage (in intercropping and pure).</td>
</tr>
<tr>
<td>- White grain variety, tall.</td>
</tr>
<tr>
<td>- Very resistant to lodging compared to all other oat varieties.</td>
</tr>
<tr>
<td>- Resistant to winter frost</td>
</tr>
<tr>
<td>- Stands out due to its very high production potential as shown and every year confirmed by the results of the tests coordinated by CRA.</td>
</tr>
<tr>
<td>- Very high performance levels in central-northern Italy</td>
</tr>
<tr>
<td>- Very healthy plant even in difficult years.</td>
</tr>
<tr>
<td><strong>SOWING RATE:</strong> 130-150 kg/ha.</td>
</tr>
</tbody>
</table>

| **GNIADY** |
| **CYCLE:** Late, alternative. (-2 compared to Aveny) |
| **FEATURES:** |
| - Autumn and spring sowing period. |
| - Use: dual use for grain and forage (in intercropping and pure). |
| - Black grain variety, medium-tall and with wide and healthy leaves. |
| - High resistance to lodging. |
| - Resistant to winter frost. |
| - Still in the official tests, it is currently the most productive black oat variety in Italy, particularly in the central-northern areas. |
| **SOWING RATE:** 130-150 kg/ha. |

| **BERDYSZ** |
| **CYCLE:** Average-late, alternative (-4 compared to Aveny) |
| **FEATURES:** |
| - Autumn and spring sowing period. |
| - Use: grain and forage (silage, bonded hay). |
| - Yellow grain variety. |
| - Average size plant, not susceptible to lodging, optimal leaf/stem ratio. |
| - Resistant to Oidium and Septoria. |
| **SOWING RATE:** 140-150 kg/ha. |

| **PROKOP** |
| **CYCLE:** Average-early, alternative (-6 compared to Aveny). |
| **FEATURES:** |
| - Autumn and spring sowing period. |
| - Usage: forage (silage, banded hay) and grain. |
| - New white-grain variety, with medium-high size and good resistance to lodging. |
| - Good tolerance to rust and Oidium. |
| - It produces grain of good specific weight. |
| **SOWING RATE:** 130-150 kg/ha. |
**STRENGTHS OF THE SPECIES**

- Very hardy, adaptable and productive species, more resistant to fungal diseases compared to other oat varieties.
- Plant with much thinner shoots and leaves than other oat varieties.
- Particularly suitable for pasture (excellent regrowing and tillering ability) and for haymaking.
- Excellent resistance to environmental stress.
- Excellent green manure species with nematocide activity against Pratylenchus, and ability to reduce nutrient losses (catch crop).

---

**SAIA 6**

**CYCLE:** Early, alternative.

**FEATURES:**
- Use: Hay and pasture. However, it is recommended to use it in intercropping to reduce the risk of lodging and improve yields.
- Tall plant, very healthy and not susceptible to particular diseases.
- Excellent adaptability throughout Italy, it also adapts well to less fertile soils and the difficult central-southern areas with the risk of spring drought.

**SOWING RATE:** 70-80 kg/ha.
**RYE**
*(Secale cereale)*

**STRENGTHS OF THE SPECIES**
- ✓ Cereal with an early cycle, adaptable and not demanding in terms of agronomic input.
- ✓ Suitable for marginal soils, also in cold or mountainous areas.
- ✓ Allows good grain or forage yields, with low production costs.

---

**BORFURO**

**CYCLE:**
Average, not alternative.

**FEATURES:**
- Autumn sowing period.
- Use: grain or biomass (also in intercropping).
- Tall variety with good quality grain for bread flours.

**SOWING RATE:**
160-170 kg/ha.

---

**DUKATO**

**CYCLE:**
Average, not alternative.

**FEATURES:**
- Autumn sowing period.
- Use: forage (silage) and grain.
- Medium-sized plant with discrete lodging resistance.
- Affordable in all environments.
- Good tolerance to major cereal diseases.
- Produces grain to make into bread.

**SOWING RATE:**
150-160 kg/ha.

---

**Heading period of the different varieties**

<table>
<thead>
<tr>
<th>RYE</th>
<th>BORFURO</th>
<th>DUKATO</th>
<th>CLAUDUS</th>
<th>COSINUS</th>
<th>GNIADYPREVISION</th>
<th>EMILIO</th>
<th>ALBERTUS</th>
<th>AUGUSTUS</th>
<th>BERDYSZ</th>
<th>FORRIDENA</th>
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<tbody>
<tr>
<td>TRITICALE</td>
<td>DUBLET</td>
<td>NAGANO</td>
<td>MAXIMAL</td>
<td>TRIAMANT</td>
<td>TRIMER</td>
<td>LEONTINOTRIMMER</td>
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</tr>
<tr>
<td>OATS</td>
<td>KWS FIDO</td>
<td></td>
<td></td>
<td></td>
<td>PREVISION</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>AVENA STRIGOSA</td>
<td></td>
<td></td>
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<td>PROKOP</td>
<td></td>
<td>GNIADYZ</td>
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<td>WHEAT</td>
<td>KWS FERRUM</td>
<td></td>
<td></td>
<td></td>
<td>TYPHON</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BARLEY</td>
<td>HEIDI</td>
<td>TONIC</td>
<td></td>
<td></td>
<td>SAIA 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

25/4 30/4 05/5 10/5 15/5 20/5 25/5

**NORTHERN ITALY AVERAGE INTERVALS**
CRIMSON CLOVER
(Trifolium incarnatum)

FEATURES
- Annual clover that can be used both in areas with mild climates and in more northern areas, considering its good resistance to cold (up to -20°C).
- Can be used both pure and in mixtures for pasture meadows, hay and green manure.
- In spring it provides a single cut and if sowed early in autumn it provides an excellent pasture for the whole winter.
- The green forage does not cause meteorism.
- Suitable for loose to clay soils, with pH between 5.5 and 7.5.

ALBEROBELLO

CYCLE:
Early cycle.

FEATURES:
- Excellent for abundant hay harvest, can be grazed in winter.
- Great production potential, both for formation of forage mixtures and for early production of green manure for nitrogen soil enrichment.

SOWING RATE:
30-35 kg/ha.

PIER

CYCLE:
Early cycle.

FEATURES:
- Very leafy and resistant leaves after cutting.
- Use: hay, forage, pasture.

SOWING RATE:
30-35 kg/ha.

OPOLSKA

CYCLE:
Average-late cycle.

FEATURES:
- Use: silage and pasture.

SOWING RATE:
30-35 kg/ha.

HYKNUSA

CYCLE:
Very late cycle.

FEATURES:
- Obtained by Padana Sementi Elette starting from Sardinian ecotypes.
- Great regrowing ability, extended period of use which allows yields to be maximised.
- Use: particularly suitable for good quality pasture, followed by the spring cut.

SOWING RATE:
30-35 kg/ha.

AUTUMN SOWING CROPS
## FEATURES

- Annual clover suitable for producing hay or for grazing, pure, or in a mixture with graminaceous crops.
- It prefers clay or medium textured soils with pH between 5.5 and 8. Not suitable for sandy and very acidic soils.
- Produces very palatable and high quality forage: the stalk is thick, but hollow inside and very soft.
- It is sowed in the autumn in the central-southern areas and in the spring in the north.

**Sowing rate:** 8-10 kg/ha.

### LAURA

**CYCLE:** average-late.

**FEATURES:**
- Variety with good tillering and regrowing ability.
- Average tolerance to the cold, it is more productive in central-southern areas.

### MARIO

**CYCLE:** average-late.

**FEATURES:**
- Two-colour seed variety, with decent tolerance to the cold.
- Good resistance of the leaf after cutting and high leaf/stem ratio.
- Use: hay, forage, pasture.

### LEILA

**CYCLE:** Average.

**FEATURES:**
- Selected variety in Central Italy, with good resistance to water stress.
- Medium-sized plant with vigorous growth.
- Use: hay, pasture.

### PERSIAN CLOVER

**TRIFOLIUM RESUPINATUM**

**CYCLE:** late.

**FEATURES:**
- Annual clover suitable for producing hay or for grazing, pure, or in a mixture with graminaceous crops.
- It prefers clay or medium textured soils with pH between 5.5 and 8. Not suitable for sandy and very acidic soils.
- Produces very palatable and high quality forage: the stalk is thick, but hollow inside and very soft.
- It is sowed in the autumn in the central-southern areas and in the spring in the north.

**Sowing rate:** 8-10 kg/ha.

### LIGHTNING

**CYCLE:** average-late.

**FEATURES:**
- Variety suitable for strong and alkaline soils.
- Semi-erect plant, suitable for cutting and intercropping with graminaceous plants.

### LOGUDORO

**CYCLE:** average.

**FEATURES:**
- Erect plant, with vigorous and hollow stalks.
- Produces excellent, palatable and digestible forage (16-24% crude protein)
- Use: pasture, hay and silage
- Quick establishment that makes it suitable for spring sowing with excellent production levels.

### LASER

**CYCLE:** late.

**FEATURES:**
- Very flexible use: good winter growing and extended season of use for pasture, rapid regrowth for green forage or hay.
- Stalk has good tolerance to rust and Phytophthora.
### Annual Leguminous Crops

#### COMMON VETCH
*(Vicia sativa)*

**FEATURES**
- Annual climbing species, mainly used in intercropping for the formation of autumn-spring forage crops along with other leguminous or graminaceous plants, to increase the protein content.
- Very hardy and adaptable plant: grows in light and clay soils, not very susceptible to waterlogging with pH comprised between 5.5 and 8.0.
- Excellent green manure species due to its great nitrogen fixing ability and its great ability to cover and suppress weeds.
- Sowing rate: 90-120 kg/ha

### NIKIAN

**CYCLE:** Average.
**FEATURES:** Vigorous growth, high productivity.

### CUMBRE

**CYCLE:** Average cycle.
**FEATURES:** Very adaptable.

### BUZA

**CYCLE:** Average-late cycle.
**FEATURES:** Very vigorous and productive.

#### HAIRY VETCH
*(Vicia villosa)*

**FEATURES**
- Climbing species which, compared to the common vetch, is very hardy and resistant to cold, even in mountainous areas.
- It can regrow if it is cut before flowering, whereas if it is harvested later it quickly loses its quality as the fibres get harder.
- It withstands saline soils and drought, adapting to acidic and sandy soils as well as heavy soils susceptible to waterlogging.
- Excellent for green manure, thanks to its aggressive spring growth. It is recommended always to bury it before the seeds ripen.
- Sowing rate: 75-100 kg/ha

### VILLANNA

**CYCLE:** Average cycle.
**FEATURES:** Tolerates autumn grazing, and is very quick to regrow. Great production potential, with vigorous spring growth.

### HAYMAKER PLUS

**CYCLE:** Average cycle.
**FEATURES:** It tolerates grazing also during autumn and shows fast tillering ability. Great production potential, with vigorous spring growth.

### PURPLE VETCH
*(Vicia benghalensis)*

**FEATURES**
- Species with a late cycle, suitable for central-southern Italian environments.
- Does not withstand winter frost
- Excellent quality forage both for hay and for silage.
- Sowing rate: 50-70 kg/ha

### POPANY

**CYCLE:** Late cycle.
**FEATURES:** Semi-erect plant. Hardy and tolerant to drought, suitable for pasture.

#### AUTUMN SOWING CROPS
HUNGARIAN VETCH
(Vicia pannonica)

FEATURES
- Species with good resistance to cold, suitable for damp/humid environments with heavy and clay soils.
- Compared to the hairy vetch it is less aggressive in intercropping, allowing balanced mixtures to be formulated.

DETENICKA

CYCLE: Average cycle.

FEATURES:
Particularly suitable for the formation of forage for central-northern areas, where it does not create excessive competition with other species, compromising their stability.

FABA BEAN
(Vicia faba minor)

FEATURES
- This species is suitable for sandy to clay soils with sub-alkaline reaction, and it does not withstand drought or prolonged waterlogging.
- Used pure to produce grain or, less frequently intercropped, for forage crops. The excellent quality grain (25-30% protein) is used in the formulation of feed.
- Excellent for improving soil due to its high nitrogen fixing ability, therefore it is suitable for green manure.

PROTHABON 101

CYCLE: Average-early.

FEATURES:
- Autumn sowing period (centre-south) or early spring in the north.
- Use: grain, green manure.
- Average-tall plant (110-120 cm), with a light grain, insertion of the first pod high off the ground (15 cm), to facilitate harvesting and prevent losses.
- Not very susceptible to lodging.
- High protein content of the grain (up to 31-33%), suitable for producing flour with high protein content.
- Constantly high production levels.

SOWING RATE:
With precision sowing: 50-60 seeds/m², corresponding to 200-240 kg/ha
- Average TGW: 480 g.

SOLOM

CYCLE: Average - early.

FEATURES:
- Autumn sowing period (Center-South) or early spring in the North of Italy.
- Use: grain, green manure.
- Medium size plant (100-120 cm), not very susceptible to lodging.
- Light colour grain variety.
- Good resistance to Sclerotinia and low temperatures.
- High protein content of grain (up to 31-32%), suitable for the production of protein flours and livestock feeding.

SOWING RATE:
Con semina di precisione: 40 seeds/m², corrispondenti a 200-240 kg/ha
- Peso medio 1000 semi: 580 g.
### PEA

**(Pisum sativum ssp. hortense)**

**Features**
- Sub-species mainly used for producing grain for human food or zootechnics. It is often added to forage mixtures to increase the protein content of the forage.
- Quite resistant to winter cold (maximum resistance stage at 4-5 leaves).
- Does not tolerate spring heat and drought, or waterlogging.
- Average recommended seed investment: 120 seeds/m².

### PROTEAL

**Cycle:** Average-early cycle.

**Features:**
- Afila variety, with yellow grain, erect and tall (80-90 cm).
- Suitable for both grain and forage. Excellent for intercropping in forage crops.
- High protein content of the grain.

**Sowing Rate:** 250-260 kg/ha

### ANGELA

**Cycle:** Early.

**Features:**
- Use: grain and forage.
- Afila variety with yellow grain, erect habitus and medium size, that makes threshing easier.
- Great productive potential and quality grain, that allows high protein yields per hectare.

**Sowing Rate:** 240-250 kg/ha

### HARDY

**Cycle:** Early cycle.

**Features:**
- Afila variety, with light cream grain. Excellent grain production potential.

**Sowing Rate:** 250-280 kg/ha

### FORAGE PEA

**(Pisum sativum ssp.)**

**Features**
- Climbing plant with real leaves and greater vegetative development than the pea.
- It is exclusively used in intercropping with graminaceous and leguminous crops for producing green forage or silage.
- In areas with mild climates it can be used instead of vetch, providing forage with more sugar and less fibre.

### OLYMPOS

**Cycle:** Average.

**Features:**
- Climbing plant, with a shifting flower maturation, it’s especially suited to the combination of grassings with graminaceaes.
- Late spring or late autumn in the North (November).

**Sowing Rate:** 200-210 kg/ha.

### ARVIKA

**Cycle:** Average-late cycle.

**Sowing Rate:** 200-220 kg/ha.
PINK SERRADELLA  
(Ornithopus sativus)

FEATURES:
- Annual leguminous crop for pasture, with spindly, prostrate, upward and very branched stems and composite leaves.
- Flowers in pale pink heads.
- Suitable for adding to autumn-spring pasture forage crops or pure.
- Provides very palatable, high quality forage (protein 19%, digestibility of dry matter 70-80%), does not cause any problems for livestock.
- Suitable for acidic soils (pH between 4 and 7), lean from sandy to silty. Not suitable for alkaline soils with pH >7.5.
- Fundamental inoculation with specific rhizobium Alosca group S.

Sowing rate: 25-30 kg/ha with coated seed.

EMENA

CYCLE: Average-early cycle.

FEATURES:
- Very branched, prostrate plant.
- Green forage and pasture yield comparable to crimson clover.
- Good resistance to cold.

BLUE LUPIN  
(Lupinus angustifolius)

BOREGINE

FEATURES:
- Species suitable for the poorest and acidic soils.

SOWING:
From October to December or spring.

SOWING RATE:
60 kg/ha

COWPEA  
(Vigna unguiculata, sin. sinensis)

FEATURES:
- Annual leguminous crop with a summer cycle of tropical origin, marked by its fast growth and great hardiness.
- Within this species, specific varieties for grain (black-eyed pea) or for forage have been chosen, with significant development of the green mass.
- Optimal development takes place between 20 and 30°C, with excellent resistance to high temperatures and temporary water stress.

RED CALOONA

FEATURES:
- Use: forage (pure or in mixture), summer green manure.
- Variety specifically selected for forage use.
- Erect plant, average-tall, very leafy.
- Excellent soil coverage ability, with vigorous growth.
- Excellent forage properties, particularly due to the protein and metabolizable energy content.
- Great soil improvement effect, with low agronomic input.

SOWING RATE: 25-30 kg/ha, pure
SOWING PERIOD: minimum soil temperature of 18°C

OTHER VARIETIES AVAILABLE: IT 18
SUBTERRANEAN CLOVER
(Trifolium subterraneum)

FEATURES
- This leguminous species, that has an autumn-spring life cycle, the best self-reseeding species thanks to the plant’s peculiar feature of actively reburying the seeds and the high proportion of hard seeds (40-50%).
- It forms long-lasting pastures withstanding the dry summers of Mediterranean areas due to the substantial deposits of seeds in the soil, which germinate in the autumn in favourable conditions.
- Prostrate plant, particularly suitable for grazing.
- This species is the most suitable for the grassing of tree crops in Mediterranean areas, where it is reasonably tolerant to semi-shading and above all does not create any water competition with the crops in the summer period.
- The genetic improvement has created many varieties that stand out due to their minimum water requirements (AAP= Average Annual Precipitation) and cycle length. The precocity is classified in classes 1 to 9: Class 1 with 80 days from sowing to flowering; class 9 with 145 days.
- Sowing: recommended in the autumn at the rate of 25-35 kg/ha

IT CAN BE SPLIT INTO THREE SUB-SPECIES:
1. SUBTERRANEAN (ssp. subterraneum): the least sensitive to cold, suitable for acidic and loose soils, it is the most active at burying seeds. Black seeds.
2. BRACHYCALYCINUM (ssp. brachycalicinum): the most suitable for sub-alkaline and clay soils, not very good at burying seeds. Black or black-reddish seeds.
3. YANNINICUM (ssp. yanninicum): suitable for wet areas with neutral to sub-acidic soils. Light coloured seeds.

<table>
<thead>
<tr>
<th>VARIETY</th>
<th>FEATURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOSA</td>
<td>- Very early cycle (class 2).&lt;br&gt; - AAP: 450 mm&lt;br&gt; - soil pH 5-7</td>
</tr>
<tr>
<td>SEATON PARK</td>
<td>- Early cycle (class 3).&lt;br&gt; - AAP: 590 mm&lt;br&gt; - soil pH 5-7</td>
</tr>
<tr>
<td>WOOGENELLUP</td>
<td>- Average cycle (class 5)&lt;br&gt; - AAP: 550 mm&lt;br&gt; - soil pH 5-7</td>
</tr>
<tr>
<td>CAMPEDA</td>
<td>- Average cycle (class 5)&lt;br&gt; - AAP: 550 mm&lt;br&gt; - soil pH 5-7</td>
</tr>
<tr>
<td>DENMARK</td>
<td>- Late cycle (class 7)&lt;br&gt; - AAP: 600 mm&lt;br&gt; - soil pH 4.5-7</td>
</tr>
<tr>
<td>SF ROSABROOK</td>
<td>- Late cycle (class 7)&lt;br&gt; - AAP: 650 mm&lt;br&gt; - soil pH 5-7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VARIETY</th>
<th>FEATURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>MINTARO</td>
<td>- Average cycle (class 5).&lt;br&gt; - AAP: 460 mm&lt;br&gt; - soil pH 5-8</td>
</tr>
<tr>
<td>CLARE</td>
<td>- Average-late cycle (class 6)&lt;br&gt; - AAP: 550 mm&lt;br&gt; - soil pH 5-8</td>
</tr>
<tr>
<td>ANTAS</td>
<td>- Average-late cycle (class 8.5)&lt;br&gt; - AAP: 450 mm&lt;br&gt; - soil pH 5-8</td>
</tr>
</tbody>
</table>
**YANNINICUM SUB-SPECIES**

<table>
<thead>
<tr>
<th>VARIETY</th>
<th>FEATURES</th>
</tr>
</thead>
</table>
| MONTI   | - Average-early cycle (class 4): the earliest of the Yanninicum types.  
- AAP: 500 mm  
- soil pH 5.5-7 |
| TRIKKALA | - Average cycle (class 5)  
- AAP: 620 mm  
- soil pH 5.5-7 |
| NAPIER | - Late cycle (class 7)  
- AAP: 600 mm  
- soil pH 5.5-7 |

**ARROWLEAF CLOVER**

*(Trifolium vesiculosum)*

**FEATURES**

- Annual clover suitable for the Mediterranean climate, where it reaches significant heights (over 1 m), with high yields.  
- Erect plant with good quality forage which make it suitable for intercropping with graminaceous species.  
- It spreads easily and lasts a long time in pasture lands.  
- It is suitable for loose and not too calcareous soils, whereas it is not suitable for heavy soils or waterlogging. Optimal pH between 5.0 and 7.5.

**CEFALU’**

**CYCLE:** Early cycle.

**FEATURES:**

- Use: hay and green forage. Does not cause meteorism.  
- Deep taproot that allows growth where there is a shortage of rain.  
- Excellent self-reseeding ability.  
- AAP: 400 mm.

**SOWING RATE:** 10-12 kg/ha.

**ZULU II**

**CYCLE:** Average-late cycle.

**FEATURES:**

- Erect plant, not very suitable for pasture, but excellent for hay production also in intercropping.  
- Suitable for loose and deep soils.  
- AAP: 450 mm.

**SOWING RATE:** 8-10 kg/ha.
| **BALANSA CLOVER**  
*Trifolium michelianum* |
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FEATURES</strong></td>
</tr>
<tr>
<td>- Annual clover with autumn-spring cycle, suitable for regions with a Mediterranean climate.</td>
</tr>
<tr>
<td>- It is a good self-reseeding species, thanks to its high proportion of hard seeds and the formation of substantial deposits in the soil.</td>
</tr>
<tr>
<td>- It prefers clay soils, also tolerating waterlogging. It adapts to a wide range of pH from acid to distinctly alkaline with values between 5 and 9.</td>
</tr>
<tr>
<td>- Sowing rate pure: 8-10 kg/ha.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>PARADANA</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CYCLE:</strong> Average cycle.</td>
</tr>
<tr>
<td><strong>FEATURES:</strong></td>
</tr>
<tr>
<td>- Vigorous growth for an abundant winter pasture in milder climates.</td>
</tr>
<tr>
<td>- Prostrate plant for grazing, semi-erect in intercropping with gramineous crops.</td>
</tr>
<tr>
<td>- AAP: 450-650 mm.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>BOLTA</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CYCLE:</strong> Late cycle.</td>
</tr>
<tr>
<td><strong>FEATURES:</strong></td>
</tr>
<tr>
<td>- Prolonged spring growth with possibility of exploiting the pasture compared to Paradana but lower self-reseeding ability.</td>
</tr>
<tr>
<td>- AAP: 550 mm.</td>
</tr>
</tbody>
</table>

| **BURR MEDIC**  
*Medicago polymorpha* |
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FEATURES</strong></td>
</tr>
<tr>
<td>- Annual leguminous crop common in Mediterranean pastures. Very hardy and productive, resistant to intensive grazing, then providing a good spring cut.</td>
</tr>
<tr>
<td>- Excellent self-reseeding ability, respecting the plant during flowering and seed ripening.</td>
</tr>
<tr>
<td>- Particularly suitable species for technical grassing in Mediterranean areas.</td>
</tr>
<tr>
<td>- Suitable for clay soils from sub-acidic to alkaline with pH between 6 and 8.5. Tolerates slight salinity.</td>
</tr>
<tr>
<td>- It is the annual medic with the best tolerance to waterlogging.</td>
</tr>
<tr>
<td>- Sowing rate pure: 10-15 kg/ha</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>SCIMITAR</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CYCLE:</strong> Average cycle.</td>
</tr>
<tr>
<td><strong>FEATURES:</strong></td>
</tr>
<tr>
<td>- Semi-erect plant.</td>
</tr>
<tr>
<td>- Variety with low proportion of hard seeds which allows good regeneration of the pasture already in the season after scattering.</td>
</tr>
<tr>
<td>- Suitable for both pasture and hay.</td>
</tr>
<tr>
<td>- AAP: 350-500 mm.</td>
</tr>
</tbody>
</table>
SNAIL MEDIC
(Medicago scutellata)

FEATURES
- Annual cycle medic, tall and erect, large seeds and vigorous, fast growing seedlings. Suitable for central-southern areas.
- Excellent and productive for making hay, but does not tolerate intensive grazing.
- Good self-reseeding ability.
- Excellent soil improving effect, with benefits for crop rotation.
- Suitable for medium textured or moderately clay soils with optimal soil pH between 6 and 8.5.
- Sowing rate pure: 15-20 kg/ha

KELSON

CYCLE: Average-early cycle.

FEATURES:
- Good resistance to leaf and stalk diseases.
- Produces a high proportion of hard seeds with poor regeneration over the first year after sowing, but shows good persistence in long term pastures.
- AAP: 400 mm.

SAVA

CYCLE: Early cycle.

FEATURES:
- Variety with high proportion of hard seeds
- AAP: 300-500 mm.

BARREL MEDIC
(Medicago truncatula)

FEATURES
- Medic for Mediterranean climates with semi-prostrate growth, very adaptable to a wide range of soils from loose to medium texture and even clay, also in areas with not much rain in spring.
- Suitable for pastures even intensive winter and spring. Can be used for technical grassing mixed with other species.
- Does not tolerate waterlogging.
- Good self-reseeding ability, for long rotations (high percentage of hard seeds and consequent poor regeneration in the first year, but abundant from the second year). Can be used in rotations for soil improvement.
- Optimal soil pH between 6 and 8.5.
- Sowing rate pure: 10-15 kg/ha

JESTER

CYCLE: Average cycle.

FEATURES:
- Selected due to its improved resistance to medic aphids and due to the absence of leaf fungal diseases.
- Produces a high proportion of hard seeds.
- AAP: 350-500 mm.

PARAGGIO

CYCLE: Average cycle.

FEATURES:
- Lower proportion of hard seeds compared to Jester, with good regeneration already the season after scattering.
- AAP: 350-500 mm.
The long-standing experience of Padana Sementi in formulating and proposing forage mixtures allows customised solutions to be offered for all requirements. The mixtures can be distinguished by:

- The formulas, which are as balanced as possible by considering not only the percentages of the different species, but also through in-depth knowledge of the individual varieties used.
- The complete range for achieving the best result both in terms of quality and quantity in each area.
- The possibility to provide customised mixtures according to the customer’s indications.

STRENGTHS OF FORAGE MIXTURES

✓ High environmental adaptability and production potential (higher than species cultivated pure).
✓ Lower risk of lodging.
✓ Extended harvest window without risk of product quality loss.
✓ Balanced forage with different sources of fibre and better digestibility.
✓ Healthier plants with less spread of diseases.
✓ Mixtures with leguminous crops allow the agronomic input to be reduced and contribute to an improvement in the structure and fertility of the soil.

PERCENTAGE COMPOSITION OF DIFFERENT FORAGE MIXTURES

<table>
<thead>
<tr>
<th>MIXTURE</th>
<th>Graminaceae</th>
<th></th>
<th>Leguminous</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MARTE</td>
<td>50</td>
<td></td>
<td></td>
<td>25</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRITICHELLO</td>
<td></td>
<td>40</td>
<td></td>
<td>30</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPECIAL FIERNO</td>
<td>41</td>
<td>20</td>
<td></td>
<td>35</td>
<td></td>
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<td></td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUPER FIVE</td>
<td>20</td>
<td>10</td>
<td>10</td>
<td>29</td>
<td></td>
<td></td>
<td>15</td>
<td>6</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GENIUS DEL SUD</td>
<td>25</td>
<td>10</td>
<td>10</td>
<td>30</td>
<td></td>
<td></td>
<td>20</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PONTINO</td>
<td>20</td>
<td>45</td>
<td>15</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPONGEBOB</td>
<td>15</td>
<td></td>
<td>40</td>
<td>27</td>
<td></td>
<td></td>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GREEN METHAN</td>
<td>15</td>
<td>32</td>
<td>53</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEREAL SILO</td>
<td>30</td>
<td></td>
<td>40</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEREAL RAPIDO</td>
<td>30</td>
<td></td>
<td>40</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NUTRI FIBRA</td>
<td>45</td>
<td>15</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PADANA SEMENTI reserves the right to make variations to the compositions of the mixtures, whenever it deems appropriate for improvement purposes or variety innovation.
<table>
<thead>
<tr>
<th>Mixture</th>
<th>Cycle</th>
<th>Use</th>
<th>Growing Area</th>
<th>Distinctive Features</th>
<th>Sowing Period</th>
<th>Sowing Rate (kg/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MARTE</td>
<td>Early</td>
<td>Hay, green forage, green manure</td>
<td>Throughout Italy</td>
<td>- High forage quality (14-15% protein)</td>
<td>Autumn/Spring</td>
<td>140-160</td>
</tr>
<tr>
<td>TRITICHELLO</td>
<td>Average</td>
<td>Silage, green forage</td>
<td>Throughout Italy</td>
<td>- Adaptable and productive.</td>
<td>Autumn/Spring</td>
<td>215-225</td>
</tr>
<tr>
<td>SPECIAL FIENO</td>
<td>Average</td>
<td>Hay, green forage</td>
<td>Centre-south, north only in spring</td>
<td>- High yields and quick drying</td>
<td>Autumn/Spring</td>
<td>80-90</td>
</tr>
<tr>
<td>SUPER FIVE</td>
<td>Early</td>
<td>Silage, hay</td>
<td>Centre-south</td>
<td>- Forage with good balance between protein and sugar</td>
<td>Autumn</td>
<td>90-100</td>
</tr>
<tr>
<td>GENIUS DEL SUD</td>
<td>Early</td>
<td>Pasture, green forage, hay</td>
<td>Centre-south</td>
<td>- Multi-functional mix with quick regrowth.</td>
<td>Autumn</td>
<td>100-110</td>
</tr>
<tr>
<td>PONTINO</td>
<td>Average</td>
<td>Hay, silage</td>
<td>Throughout Italy</td>
<td>- Mix of graminaceous crops only, very productive and resistant to lodging</td>
<td>Autumn</td>
<td>70-80</td>
</tr>
<tr>
<td>SPONGEBOB</td>
<td>Average-late</td>
<td>Silage</td>
<td>Throughout Italy</td>
<td>- Maximum yields in fertile soils</td>
<td>Autumn</td>
<td>145-150</td>
</tr>
<tr>
<td>GREEN METHAN</td>
<td>Average-early</td>
<td>Silage</td>
<td>Throughout Italy</td>
<td>- Maximises biomass yields in all conditions</td>
<td>Autumn</td>
<td>145-150</td>
</tr>
<tr>
<td>CEREAL SILO</td>
<td>Average-late</td>
<td>Silage</td>
<td>Central-north</td>
<td>- Formula with special and productive varieties (particularly Wheat forage, tall oat varieties) - Harvest: direct chopping when triticale and wheat milky-waxy ripe, with pre-wilting when heading.</td>
<td>Autumn</td>
<td>170</td>
</tr>
<tr>
<td>CEREAL RAPIDO</td>
<td>Early</td>
<td>Silage</td>
<td>Throughout Italy</td>
<td>- Formula with very early and productive varieties (particularly Wheat forage, tall oat varieties) - Harvest: direct chopping when triticale and wheat milky-waxy ripe, with pre-wilting when heading.</td>
<td>Autumn/Spring</td>
<td>170</td>
</tr>
<tr>
<td>NUTRI FIBRA</td>
<td>Average</td>
<td>Hay, pasture, Silage, green forage</td>
<td>Throughout Italy</td>
<td>- Mix of different var. of OAT and ryegrass.</td>
<td>Autumn/Spring</td>
<td>75-80</td>
</tr>
</tbody>
</table>
- Multifunctional mixtures suitable for winter pasture and spring harvest.
- Formulations rich in leguminous species specifically designed to maximise the quantity and quality of forage in southern environments.
- This range of products offers solutions for all zootechnical uses and for all soils, from calcareous soils rich in texture to acidic soils.

**ALL THE MIXTURES ARE ALREADY MIXED WITH RHIZOBIUM ALOSCA®, FOR A MAXIMUM NITROGEN FIXING EFFECT AND AN INCREASE IN SOIL FERTILITY.**

<table>
<thead>
<tr>
<th>MIXTURE</th>
<th>CYCLE</th>
<th>USE</th>
<th>GROWING AREA</th>
<th>DISTINCTIVE FEATURES</th>
<th>SOWING PERIOD</th>
<th>SOWING RATE (KG/HA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALTUFEN Acid</td>
<td>Early</td>
<td>Winter pasture and hay</td>
<td>South and mild central areas.</td>
<td>- Suitable for light and not very fertile soils, optimal pH 5.0-7.5. - Guarantees different spring cuts.</td>
<td>Autumn</td>
<td>40-50</td>
</tr>
<tr>
<td>ALTUFEN Basic</td>
<td>Early</td>
<td>Winter pasture and hay</td>
<td>South and mild central areas.</td>
<td>- Calcareous and clay or heavy soils, optimal pH 6.5-8.5. - Guarantees different spring cuts.</td>
<td>Autumn</td>
<td>50-60</td>
</tr>
<tr>
<td>EXTRABIADA</td>
<td>Early</td>
<td>Silage, pasture, hay</td>
<td>South and mild central areas.</td>
<td>- Deep soils from loose to clay. Optimal pH 5.0-7.5. - High production potential in spring cut</td>
<td>Autumn</td>
<td>100-110</td>
</tr>
<tr>
<td>LESTRUMIX</td>
<td>Early</td>
<td>Pasture, hay, bonded hay</td>
<td>South and mild central areas. North with spring sowing.</td>
<td>- Even light and not very fertile soils, optimal pH 5.0-7.5. - Guarantees different spring cuts. - Very high quality (digestibility, sugar, protein)</td>
<td>Autumn/Spring</td>
<td>40-50</td>
</tr>
<tr>
<td>WINTER EXPRESS</td>
<td>Average-early</td>
<td>Pasture, hay, green forage</td>
<td>South and mild central areas. North with spring sowing.</td>
<td>- Even not very fertile soils, optimal pH 6.5-8.0. - Quick establishment, excellent productivity and quality. - Guarantees different spring cuts.</td>
<td>Autumn/Spring</td>
<td>40-45</td>
</tr>
<tr>
<td>BASIC PASTURE</td>
<td>Early</td>
<td>Pasture and spring hay cut</td>
<td>South and mild central areas.</td>
<td>- Light and lean as well as heavy soils, optimal pH 7-8.5. - Suitable for intensive grazing (annual medic) - High protein content.</td>
<td>Autumn/Spring</td>
<td>35-40</td>
</tr>
</tbody>
</table>
### Percentage Composition of Different Forage Crop Mixtures

<table>
<thead>
<tr>
<th>MIXTURE</th>
<th>GRAMINACEOUS</th>
<th>LEGUMINOUS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>White oats</td>
<td>Black oats</td>
</tr>
<tr>
<td>ALTUFEN ACID</td>
<td>60</td>
<td>5</td>
</tr>
<tr>
<td>ALTUFEN BASIC</td>
<td>40</td>
<td>25</td>
</tr>
<tr>
<td>EXTRA BIADA</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>LESTRUMIX</td>
<td>70</td>
<td>5</td>
</tr>
<tr>
<td>WINTER EXPRESS</td>
<td>60</td>
<td>20</td>
</tr>
<tr>
<td>BASIC PASTURE</td>
<td>30</td>
<td>5</td>
</tr>
</tbody>
</table>

**PADDANA SEMENTI** reserves the right to make variations to the compositions of the mixtures, whenever it deems appropriate for improvement purposes or variety innovation.

### Some of Our Forage Crops in the Field:

- **ALTUFEN ACID** in the Province of Viterbo
- **GREEN METHAN** in the Province of Rome
- **SPECIAL FIENO** in the Province of Salerno
- **PONTINO** in the Province of Mantua
PERMANENT GRASSLAND MIXTURES

THE PADANA SEMENTI RANGE

- Permanent grassland is a complex system that must last a number of years. Therefore it must be chosen carefully based on the environmental conditions of the site in which it will be sowed and used, to guarantee the best result and maximum duration.
- The choice must be made with careful consideration for the plant composition and proportions between the different species.
- Padana Sementi places great attention on the choice of varieties used and their proportions, so as to obtain very productive and efficient grasslands in the various environmental conditions.
- Possibility to provide customised mixtures according to the customer’s indications.

PERMANENT GRASSLANDS ARE INCLUDED IN THE DIRECTIVES OF THE NEW CAP FOR CROP DIVERSIFICATION.

<table>
<thead>
<tr>
<th>★ GRAMINACEOUS ★</th>
<th>LEGUMINOUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>★ MIXTURE ★</td>
<td>★ ASPRUTTO PADANA ★</td>
</tr>
<tr>
<td></td>
<td>ASPRUTTO BS</td>
</tr>
<tr>
<td></td>
<td>IRRIGUO PADANA</td>
</tr>
<tr>
<td></td>
<td>IRRIGUO BS</td>
</tr>
<tr>
<td></td>
<td>PRATO PASCOLO TUSCIA</td>
</tr>
<tr>
<td></td>
<td>IRRIGUO SARDEGNA</td>
</tr>
<tr>
<td></td>
<td>PRATO NUOVO</td>
</tr>
<tr>
<td></td>
<td>BASCENTO</td>
</tr>
<tr>
<td></td>
<td>GALLURA SUPER</td>
</tr>
<tr>
<td></td>
<td>PRATO COLLINA</td>
</tr>
<tr>
<td></td>
<td>GRAMINACEE ELETTE</td>
</tr>
<tr>
<td></td>
<td>SPECIALE PASCOLI</td>
</tr>
<tr>
<td></td>
<td>PASCALO CAVALLI</td>
</tr>
<tr>
<td></td>
<td>PERCORSO GARA CAVALLI</td>
</tr>
</tbody>
</table>

PADANA SEMENTI reserves the right to make variations to the compositions of the mixtures, whenever it deems appropriate for improvement purposes or variety innovation.
<table>
<thead>
<tr>
<th>MIXTURE</th>
<th>USE</th>
<th>GROWING AREA</th>
<th>PRODUCTIVITY</th>
<th>PERSISTENCE</th>
<th>PROTEIN CONTENT</th>
<th>ENVIRONMENTAL STRESS RESISTANCE</th>
<th>DISTINCTIVE FEATURES</th>
<th>SOWING PERIOD</th>
<th>SOWING RATE (KG/HA)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ASCIUTTO PADANA</strong></td>
<td>Hay/pasture</td>
<td>North and centre (dry); South (irrigated)</td>
<td>Average/High</td>
<td>High</td>
<td>Average/High</td>
<td>- Selected and productive varieties - Balanced forage</td>
<td>Early autumn/Spring</td>
<td>55-60</td>
<td></td>
</tr>
<tr>
<td><strong>ASCIUTTO BS</strong></td>
<td>Hay</td>
<td>North and centre (dry); South (irrigated)</td>
<td>Average</td>
<td>High</td>
<td>Average/low</td>
<td>- Great adaptability and hardiness</td>
<td>Early autumn/Spring</td>
<td>55-60</td>
<td></td>
</tr>
<tr>
<td><strong>IRRIGUO PADANA</strong></td>
<td>Hay, green forage</td>
<td>North, centre (only irrigated)</td>
<td>High</td>
<td>Average</td>
<td>Average/High</td>
<td>- Selected and productive varieties</td>
<td>Early autumn/Spring</td>
<td>55-60</td>
<td></td>
</tr>
<tr>
<td><strong>IRRIGUO BS</strong></td>
<td>Hay/green forage/overseeding</td>
<td>North, centre (only irrigated)</td>
<td>High</td>
<td>Average/low</td>
<td>Average/High</td>
<td>- Quick establishment - Balanced forage</td>
<td>Early autumn/Spring</td>
<td>55-60</td>
<td></td>
</tr>
<tr>
<td><strong>PRATO PASCOLO TUSCIA</strong></td>
<td>Hay/pasture</td>
<td>North and centre (dry); South and islands (irrigated)</td>
<td>Average/low</td>
<td>Average/High</td>
<td>Average/High</td>
<td>- Slow establishment, but long duration - Suitable for acidic soils</td>
<td>Early autumn/Spring</td>
<td>50-55</td>
<td></td>
</tr>
<tr>
<td><strong>IRRIGUO SARDEGNA</strong></td>
<td>Hay/pasture</td>
<td>Islands, centre-south (only irrigated)</td>
<td>Average/High</td>
<td>Average/low</td>
<td>Average/High</td>
<td>- Excellent quality and production potential</td>
<td>Autumn</td>
<td>30-35</td>
<td></td>
</tr>
<tr>
<td><strong>PRATO NUOVO</strong></td>
<td>Hay/pasture</td>
<td>North and centre (dry); South (irrigated)</td>
<td>Average/High</td>
<td>Average/High</td>
<td>Average/High</td>
<td>- Universal grassland.</td>
<td>Early autumn/Spring</td>
<td>60-65</td>
<td></td>
</tr>
<tr>
<td><strong>PRATO PASCOLO BASENTO</strong></td>
<td>Sheep/cow pasture</td>
<td>South (irrigated), Centre</td>
<td>Average</td>
<td>Average</td>
<td>Average/High</td>
<td>- Selected varieties</td>
<td>Autumn</td>
<td>50-60</td>
<td></td>
</tr>
<tr>
<td><strong>GALLURA SUPER</strong></td>
<td>Sheep/pasture</td>
<td>South and islands</td>
<td>Average</td>
<td>High</td>
<td>High</td>
<td>- Leguminous Self-reseeding</td>
<td>Autumn</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td><strong>PRATO COLLINA</strong></td>
<td>Hay, green forage</td>
<td>North and centre (dry); South (irrigated)</td>
<td>Average/High</td>
<td>High</td>
<td>Average/High</td>
<td>- High quality hay</td>
<td>Early autumn/Spring</td>
<td>45-50</td>
<td></td>
</tr>
<tr>
<td><strong>GRAMINACEE ELETTE</strong></td>
<td>Hay/pasture</td>
<td>North and centre (dry); South (irrigated)</td>
<td>Average/High</td>
<td>Average/High</td>
<td>Average/low</td>
<td>- Great nitrogen use efficiency - Also excellent for horses</td>
<td>Early autumn/Spring</td>
<td>30-40</td>
<td></td>
</tr>
<tr>
<td><strong>SPECIALE PASCOLI</strong></td>
<td>Hay/pasture/overseeding</td>
<td>North (irrigated), Alpine range</td>
<td>Average</td>
<td>Average</td>
<td>Average/High</td>
<td>- Great resistance to cold - Quick establishment</td>
<td>Early autumn/Spring</td>
<td>50-55</td>
<td></td>
</tr>
<tr>
<td><strong>PASCOLO CAVALLI</strong></td>
<td>Hay/pasture</td>
<td>North and centre (dry); South (irrigated)</td>
<td>Average/High</td>
<td>Average/High</td>
<td>Average/low</td>
<td>- Withstands trampling and bare pasture - Balance of structured and digestible fibres</td>
<td>Early autumn/Spring</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td><strong>PERCORSO GARA CAVALLI</strong></td>
<td>Grassing</td>
<td>North and centre (dry); South (irrigated)</td>
<td>Low</td>
<td>Average/High</td>
<td>-</td>
<td>- Low growth variety - Excellent aesthetic effect - Not suitable for pasture</td>
<td>Autumn/Spring</td>
<td>90-100</td>
<td></td>
</tr>
</tbody>
</table>
The definition “Technical grassing” indicates perennial herbaceous plant coverage, not only for productive purposes, but particularly for functional and practical environmental, agronomic, aesthetic and ornamental purposes.

1. GRASSING FOR TREE CROPS

- Sowing appropriate species in the space between rows of tree crops (vines, fruit trees, olive trees, etc.) is becoming an increasingly common choice with widely demonstrated agronomic and environmental advantages.
- Padana Sementi has designed a grassing program to fulfil the most common agronomic requirements in the different climatic areas: continental and Mediterranean.
- The company is also available for consultancy on the formulation of customised solutions.

<table>
<thead>
<tr>
<th>BENEFITS OF GRASSING BETWEEN ROWS OF TREE CROPS:</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Reduction of soil erosion caused by water and wind.</td>
</tr>
<tr>
<td>✓ Improvement in soil structure (better water permeability, better root aeration).</td>
</tr>
<tr>
<td>✓ Better soil supporting ability (facilitates human and vehicle transit in adverse conditions).</td>
</tr>
<tr>
<td>✓ Increase in soil fertility (better organic substance, increase in soil organisms, better root development).</td>
</tr>
<tr>
<td>✓ More biodiversity (activity of useful organisms for crops: pollinators, parasite predators, etc.).</td>
</tr>
<tr>
<td>✓ Buffer effect against chemical products used (fertilisers, plant protection products).</td>
</tr>
<tr>
<td>✓ Reduced use of pesticides (according to the National Action Plan).</td>
</tr>
<tr>
<td>✓ Improvement in the aesthetic effect and landscape.</td>
</tr>
</tbody>
</table>

Many leading companies have successfully used our grassing mixtures. Among these:
**SOTTOFRUTTETO**

**FEATURES:**  
*Use:* Grassing for orchards and vineyards.  

*Growing area:* Centre-north. In the south, only in places where there are no excessive summer competition problems.

- **Establishment speed:** average  
- **Persistence:** average-high  
- **Stress resistance:** average-high  
- **Summer competition:** average-high

**Distinctive features:**  
- Special varieties with reduced plant development with good coverage and weed control.  
- Competes less with orchard compared to spontaneous grasses.  
- Excellent supporting ability and resistance to trampling and shading.

**PERIOD:** autumn or early spring  

**SOWING RATE:** 80-100 kg/ha

**SOTTOVIGNETO**

**FEATURES:**  
*Use:* Grassing for orchards and vineyards.  

*Growing area:* North, central in cooler areas.

- **Establishment speed:** fast  
- **Persistence:** average  
- **Stress resistance:** average  
- **Summer competition:** average-low

**Distinctive features:**  
- Variety with reduced plant development and reduced competition.  
- Good resistance to vehicle traffic.  
- Limits the development of weeds and requires few cuts

**PERIOD:** autumn or early spring  

**SOWING RATE:** 80-100 kg/ha

**AUTORISeminanti**

**FEATURES:**  
*Use:* Grassing for orchards and vineyards in Mediterranean areas.  

*Growing area:* Southern regions and islands.

- **Establishment speed:** average  
- **Persistence:** average  
- **Stress resistance:** average-high  
- **Summer competition:** none

**Distinctive features:**  
- Also suitable for lean soils from sub-acidic to alkaline (pH 6-8)  
- Mixture of self-reseeding leguminous crops, very adaptable.  
- Respects the grassland during flowering to allow reseeding and autumn regeneration.  
- No summer competition and formation of a layer of mulch that stops weeds in hot months.  
- Improves soil fertility and attracts useful insects.

**PERIOD:** autumn  

**SOWING RATE:** 30-35 kg/ha

Mixed with Rhizobium Alosca®
2. GRASSING FOR SKI SLOPES AND MOUNTAIN ENVIRONMENTS

The compositions are specifically designed for grassing ski slopes, with a balanced ratio between graminaceous and leguminous species that promotes the evolution of the grassing and the renaturalisation of the grassy area. Graminaceous crops give the mixture quick establishment properties and a fast erosion containment effect, whereas the presence of leguminous crops is fundamental to balance the grassland and promote the improvement of soil with poor nutritional elements. Padana Sementi is also able to customise the mixtures according to customer indications, also adding some spontaneous species with high natural value.

Some important steps must be taken when using these mixtures:
- Sowing period: preferably straight after the snow has melted. For autumn sowing, especially at higher altitudes, the risk factors are higher: therefore it is recommended to sow in late autumn (dormant seeding) so as to promote the germination of the seeds after thawing.
- Preparing the soil: it is recommended to use organic fertilizers, which can be available for plants long term due to their slow release.
- At the end of the season, grazing or chopping is recommended to keep the grassland compact and strong.

### SKI 1000

**Features:**
- **Use:** Grassing ski slopes and environmental clean-ups at not high altitudes.
- **Growing area:** hilly/mountainous areas in the centre/north. South only at higher and cooler altitudes.
- **Establishment speed:** average
- **Persistence:** average-high
- **Stress resistance:** average-high
- **Adaptability:** high

**Distinctive features:**
- Mixture for grassing up to over 1000 m a.s.l. (within the trees limit altitude)
- Not aggressive species, but persistent and with very developed roots.
- Good soil resistance.

**Period:** autumn or early spring.

**Sowing rate:** 200-250 kg/ha (recommended rate for hydroseeding).

Many leading companies have successfully used our grassing mixtures. Among these:

### SKI 2000

**Features:**
- **Use:** Grassing ski slopes and environmental clean-ups at high altitudes (beyond the trees limit altitude).
- **Growing area:** High altitudes or cold north facing slopes.
- **Establishment speed:** average
- **Persistence:** average-high
- **Stress resistance:** high
- **Adaptability:** average

**Distinctive features:**
- Mixture suitable for use in difficult and limiting conditions from a pedological, climatic and altimetric point of view.

**Period:** autumn or early spring.

**Sowing rate:** 200-250 kg/ha (recommended rate for hydroseeding).
3. ENVIRONMENTAL RENATURALIZATION

- The composition should be personalised for each area: Padana Sementi is also able to offer consultancy and customised solutions in this area.
- The formulations must guarantee quick establishment and coverage in difficult conditions, without blocking the growth of local species (this is obtained with the careful choice of species and percentages).
- Possibility to add spontaneous species with high ecological value in low percentages.

SCARPATE QUOTA 1000

FEATURES:
Use: Grassing slopes and environmental renaturalization.

Growing area: Centre-north. South only in mountainous areas at higher altitudes.

- Establishment speed: average-fast
- Persistence: average
- Stress resistance: average
- Adaptability: average-high

Distinctive features:
- Mixture for grassing banks from the plain to over 1000 m a.s.l.
- Balanced and sufficiently complex formula. Good establishment ability in lean soils.
- Over time allows natural floristic evolution with the entry of spontaneous species.
- It is multifunctional as, where possible, it provides various cuts of good quality forage in one year.
- Quick establishment and good protection against soil erosion.

PERIOD: autumn or early spring.

SOWING RATE: 200-250 kg/ha (recommended rate for hydroseeding).

Percentage composition of the different technical grassing mixtures

<table>
<thead>
<tr>
<th>GRASSLAND</th>
<th>GRAMINACEOUS</th>
<th>LEGUMINOUS</th>
<th>OTHERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brome</td>
<td>55</td>
<td>35</td>
<td>10</td>
</tr>
<tr>
<td>Cocksfoot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tall fescue</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red fescue</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meadow fescue</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ryegrass</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perennial ryegrass</td>
<td>45</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Timothy grass</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Common meadowgrass</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hybrid clover</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red clover</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White clover</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subterranean clover</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Common vetch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burr medic</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SOTTOFRUTTO 80 20
SOTTOVIGNETO 5 5 20 15 15 4.7 5 5.2 5 5 10
LEG. AUTORISMINANTI 80 20
SKI 1000 5 5 20 15 4.7 5 5.2 5 5 10 5.1
SKI 2000 5 5 20 15 4.7 5 5.2 5 5 10 5.1
SCARPATE QUOTA 1000 8 10 13 5 11 15 18 4 5 4 2 5

* Achillea millefolium, Buphthalmum salicifolium, Centaurea jacea, Cichorium intybus, Daucus carota, Dianthus barbatus, Galium verum, Leucanthemum vulgare, Salvia pratensis, Sanguisorba minor, Securigera varia, Silene flos-cuculi, Silene vulgaris.

The spontaneous species content is calculated to provide a final investment of 500 seeds/m².
4. MIXTURES FOR BIODIVERSITY

Mixtures that are characterized by the high presence of spontaneous species, with the aim of having different and lasting flowering throughout the seasons. The great added value of wild species in these mixtures lies in their extreme rusticity and very low maintenance demand and natural propagation capacity over the years, making the process of renaturalization of a site more rapid.

USES:
- Buffer strips in agricultural areas at the edges of the main crops.
- Ecological corridors in the agricultural field for sheltering useful insects and beekeeping.
- Grassing for natural areas.
- Recovery of marginal and degraded areas, with minimal maintenance.
- Grassing of tourist/landscaping interest (farmhouses, educational farms, golf courses, gardens).

MANAGEMENT:
- The optimal sowing is done in late summer on a well-prepared soil, followed by rolling. Spring sowing is also possible.
- Important starting from a clean and weed-free seedbed (recommended the practice of false-sowing).
- The fastest growing species accompany and protect the slowest wild species to develop. Perennial plants flowering can be fully appreciated starting from the second year after sowing.
- The correct mowing management, to be carried out in spring and autumn after the main flowerings, allows to keep the meadow cleaned from aggressive weeds.
- The lawn does not need fertilization (wild species are disadvantaged in an overly fertile soil).
- Irrigation can be useful during establishment, especially with spring sowing, after that it is not more necessary.

FLOWERED BUFFER STRIPS

FEATURES:
- Mixture containing 19 spontaneous perennial flowering species and 3 annual species.
- It is indicated for the establishment of ecological corridors at the edge of the crops (herbaceous, horticultural, orchards): the purpose is to accommodate useful insects and pollinators that assure the productivity of crops both in traditional and in organic farming.

USE: Apiculture, increased biodiversity in agricultural environments, environmental recovery in natural areas.

GROWING AREA: Center-North. South in cooler or irrigated areas. It can be sow up to the altitude of 1400-1500 meters.

SOWING PERIOD: Autumn or early spring.

SOWING RATE: 40-45 kg/ha, equal to 4-4.5 g/m².

NEW FORMULA

<table>
<thead>
<tr>
<th>SPECIE</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>F. rubra</td>
<td>39</td>
</tr>
<tr>
<td>L. perenne</td>
<td>8</td>
</tr>
<tr>
<td>Poa pratense</td>
<td>4</td>
</tr>
<tr>
<td>F. ovina</td>
<td>9</td>
</tr>
<tr>
<td>F. arundinacea</td>
<td>7</td>
</tr>
<tr>
<td>T. pratense</td>
<td>5</td>
</tr>
<tr>
<td>Lupinella</td>
<td>19,8</td>
</tr>
<tr>
<td>Ginestrino</td>
<td>3</td>
</tr>
</tbody>
</table>

MIX DI FIORI SPONTANEI*: 5,4
- Achillea millefolium, Anthemis arvensis, Betonica officinalis, Buphthalmum salicifolium, Campanula glomerata, Centaurea cyanus, Centaurea jacea, Centaurium erythraea, Cichorium intybus, Daucus carota, Galium verum, Holcus lanatus, Hypericum perforatum, Hypochaeris radicata, Leucanthemum vulgare, Papaver rhoeas, Linaria vulgaris, Sanguisorba minor, Scabiosa triandra, Securigera varia, Silene flos-cuculi, Silene vulgaris

* The spontaneous species content is calculated to provide a final investment of 1000 seeds/m².

PADANA SEMENTI reserves the right to make variations to the composition of the mixtures, whenever it deems appropriate for improvement purposes or variety innovation.
FLOWERED BUFFER STRIPS

FEATURES:
- Mixture containing 25 spontaneous perennial flowering species and 3 annuals species.
- Formula designed to enhance marginal areas with very low maintenance for ornamental and landscaping purposes.
- Indicated to obtain the most natural lawn effect from the rich and varied flowering.
- Unbeatable rusticity and ecological value, coupled with an attractive aesthetic result.
- Important to follow the above-mentioned management tips.

USE: Areas of tourist/landscaping interest: farms, educational farms, urban areas, golf courses, beekeeping.

GROWING AREA: Center-North. South in cooler or irrigated areas. It can be sow up to the altitude of 1400-1500 meters.

SOWING PERIOD: Autumn or early spring.

SOWING RATE: 40-45 kg/ha, equivalent to 4-4.5 g/m².

<table>
<thead>
<tr>
<th>SPECIE</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>F. rubra</td>
<td>29</td>
</tr>
<tr>
<td>L. perenne</td>
<td>8</td>
</tr>
<tr>
<td>Poa pratense</td>
<td>4</td>
</tr>
<tr>
<td>F. ovina</td>
<td>15</td>
</tr>
<tr>
<td>T. pratense</td>
<td>5</td>
</tr>
<tr>
<td>Lupinella</td>
<td>18</td>
</tr>
<tr>
<td>Ginestrino</td>
<td>3</td>
</tr>
</tbody>
</table>

MIX DI FIORI SPONTANEI*:
- Achillea millefolium
- Anthemis arvensis
- Anthoxantum odoratum
- Anthyllis vulneraria
- Betonica officinalis
- Brachypodium rupestre
- Briza media
- Bromopsis erecta
- Buphthalmum salicifolium
- Campanula glomerata
- Centaurea cyanus
- Centaurea jacea
- Centaurea erythraea
- Cichorium intybus
- Daucus carota
- Filipendula vulgaris
- Galium verum
- Holcus lanatus
- Hypericum perforatum
- Hypochaeris radicata
- Leucanthemum vulgare
- Papaver rhoeas
- Sanguisorba minor
- Scabiosa triandra
- Securigera varia
- Silene flos-cuculi
- Thymus pulegioides
- Trifolium rubens

* The spontaneous species content is calculated to provide a final investment of 2000 seeds/m².

PADANA SEMIENTI reserves the right to make variations to the composition of the mixtures, whenever it deems appropriate for improvement purposes or variety innovation.
In modern agriculture, which is attentive to environmental issues, the term Cover Crop means the planting of a herbaceous crop with the main aim of protecting the soil. The practice aims to:

- FIGHT EROSION
- LIMIT COMPACTING AND LOSS OF STRUCTURE OF THE SOIL
- STOP NUTRIENT LEACHING
- INCREASE NUTRIENTS (NITROGEN FIXING)
- LIMIT THE DEVELOPMENT OF WEEDS
- INCREASE ORGANIC SUBSTANCE
- INCREASE THE BIOLOGICAL ACTIVITY OF THE SOIL

- The Cover Crop is generally left on the soil or buried (green manure). Green manure, in particular, based on the species used, enriches the soil with nitrogen and organic substance (humus), or enables an allelopathic and biocidal effect against nematodes and fungal diseases.
- The benefits of cover crops, while not providing an immediate revenue, fully pay back the costs disbursed by the farm, both in terms of better production levels and lower costs for the subsequent crop. In the long term the benefit of this practice is expressed in the increased soil fertility.
- Cover crops are included in “conservative agriculture” practices supported by the European Union, so as to make immediate use of the direct help provided as part of regional subsidies.

Padana Sementi, looking towards sustainable agriculture, has been studying and experimenting for years with mixtures suitable for this practice in the different crop and environmental systems. The result of this commitment is the range of products which are divided into groups due to the various objectives:

1. NITROGEN ENRICHING CROPS
2. CROPS WITH BIOCIDAL ACTIVITY
3. CROPS FOR INCREASING STABLE HUMUS AND IMPROVING THE SOIL STRUCTURE
1. NITROGEN ENRICHING CROPS

Leguminous crops, by means of root symbiosis with nitrogen fixing bacteria (rhizobia), can convert atmospheric nitrogen into organic nitrogen, permanently enriching the soil with this fundamental nutritional element. The biomass produced is also marked by its low C/N ratio, and rapid degradability in the soil.

**CRIMSON CLOVER**

**FEATURES:**
Autumn spring crop, can be used throughout Italy. Very resistant to winter cold, abundant spring flowering attractive to useful insects.

**SOWING PERIOD:** from October to November.

**SOWING RATE:** 25-30 kg/ha.

**VARIETY:** ALBEROBELLO, PIER (see page 30).

**BERSEEM CLOVER**

**FEATURES:**
In the centre-south it can be used with autumn sowing and spring burying at the start of flowering.

**SOWING PERIOD:** Usable in the north with sowing at the end of summer, the crop dies with the first frosts. This allows the sowing of the spring crop without any further processes.

**SOWING RATE:** 20-25 kg/ha.

**VARIETY:** LAURA, MARIO (see page 31).

**VETCH**

**FEATURES:**
Autumn-spring leguminous crop which can be used throughout Italy, with the best nitrogen fixing ability.

**SOWING PERIOD:** from October to November.

**VARIETY:** VILLANA (hairy vetch) (see page 32).

**SOWING RATE:** 75 kg/ha.

**VARIETY:** CUMBRE, BUZA (common vetch) (see page 32).

**SOWING RATE:** 90 kg/ha.

**FABA BEAN**

**FEATURES:**
Autumn-spring crop particularly suitable for the centre-south. It has a very deep root apparatus (improvement of the soil structure) and great nitrogen fixing ability.

**SOWING PERIOD:** from October to December.

**SOWING RATE:** 200 kg/ha.

**VARIETY:** PROTHABON 101 (see page 33).

**LUPIN**

**FEATURES:**
Species suitable for the leaner and more acidic soils of the centre-south.

**SOWING PERIOD:** from October to December.

**SOWING RATE:** 60 kg/ha.

**COWPEA**

**FEATURES:**
Summer leguminous crop very resistant to heat and water stress. It is used in the open field or in rotations with vegetable crops even in greenhouses during the summer period. Fast cycle (about 60 days).

**SOWING PERIOD:** from May to July.

**SOWING RATE:** 25 kg/ha.

**VARIETY:** RED CALOONA (see page 35).

**NITROFERT**

**FEATURES:**
Composed of hairy vetch, common vetch and oat.
- The high percentage of vetch guarantees a significant contribution of nitrogen, whereas the oats increase the organic substance yield. This formula is the safest and most balanced choice for an excellent result in terms of coverage and quality of green manure. The best effect is obtained by burying the crop when the vetch starts flowering.
- Early cycle.

**SOWING PERIOD:** October-November or early spring.

**SOWING RATE:** 75-100 kg/ha.

**USE:** suitable as green manure in the alleys of tree crops, as cover crop during the cold season for spring and summer-cycle crops.
Nematodes and fungal diseases of the soil are a problem that can be easily solved without using harmful chemical products, but by exploiting the natural properties of some cultivated species.

**NEMATODE RESISTANT OIL SEED RADISH** *(Raphanus sativus oleiformis)*

**FEATURES:**
- The varieties selected to contain nematodes work as they act as plant traps that attract these parasites to become established in their roots, but do not let them complete their life cycle.
- Species with a short cycle: in about 60 days they can flower.
- Very developed taproot system, with dual nematocidal and soil decompacting effect. Excellent coverage and weed composing effect.
- Good resistance to cold, can be sowed in autumn in northern Italy too.

**SOWING RATE:** 20-25 kg/ha

**VARIETY FEATURES:**
- **ANACONDA**
  - Variety marked by the dual resistance to *Meloidogyne chitwoodi, M. fallax* and *Heterodera schachtii*.  
  - Very quick establishment and regrowing ability which, when possible, allows a cut to be performed leaving the regrowth to flower to further increase the nematocidal action.
- **ADIOS**
  - Variety with very quick establishment.  
  - The variety is resistant to the nematodes *Heterodora schachtii and H. betae.* Partially resistant to the nematode *Meloidogyne chitwoodii.*  
  - Over 90% reduction of the infestation of these parasites is possible.
- **RADICAL**
  - Compact size and very leafy, quick to grow back after the first cut.  
  - Substantial biomass production.  
  - Resistant to the nematodes *Heterodora schachtii, H. betae* and *Pratylenchus scripnerie.*
- **TERRANOVA**
  - Covers the soil quickly and has an excellent resistance to lodging.  
  - It has a wide resistance spectrum and consequent nematocidal effect: it is resistant to the sugar beet nematocides *Heterodora schachtii and H. betae* It is also resistant to *Meloidogyne chitwoodii, M. fallax* and *M. incognita, Prathylenchus scripnerie, Paratrichodorus allius,Trichodorus primitivus.*
- **ROMESA**
  - Early cycle variety, with rapid soil coverage and great biomass development.  
  - Particularly suitable as cover and soil decompacting (deep roots), as catch crops and as green manure.
  - Medium resistance to nematode Heterodera schachtii.
- **OCTOPUS**
  - Average cycle variety with expanded leaves that ensure rapid soil coverage and competition against weeds.
  - The rooting depth associated with high biomass production makes it a very effective catch crop for nitrogen recovery.

**BRISTLE OAT**

**FEATURES:**
Excellent green manure species with nematocide activity against *Pratylenchus,* and ability to reduce nutrient losses (catch crop).

**SOWING PERIOD:** from October to December.

**SOWING RATE:** 70 kg/ha

**VARIETY:** SAIA 6. (see page 28)

**NEMATODE RESISTANT OIL SEED RADISH** *(Raphanus sativus oleiformis)*

**FEATURES:**
- The varieties selected to contain nematodes work as they act as plant traps that attract these parasites to become established in their roots, but do not let them complete their life cycle.
- Species with a short cycle: in about 60 days they can flower.
- Very developed taproot system, with dual nematocidal and soil decompacting effect. Excellent coverage and weed composing effect.
- Good resistance to cold, can be sowed in autumn in northern Italy too.

**SOWING RATE:** 20-25 kg/ha

**VARIETY FEATURES:**
- **ANACONDA**
  - Variety marked by the dual resistance to *Meloidogyne chitwoodi, M. fallax* and *Heterodera schachtii.*  
  - Very quick establishment and regrowing ability which, when possible, allows a cut to be performed leaving the regrowth to flower to further increase the nematocidal action.
- **ADIOS**
  - Variety with very quick establishment.  
  - The variety is resistant to the nematodes *Heterodora schachtii and H. betae.* Partially resistant to the nematode *Meloidogyne chitwoodii.*  
  - Over 90% reduction of the infestation of these parasites is possible.
- **RADICAL**
  - Compact size and very leafy, quick to grow back after the first cut.  
  - Substantial biomass production.  
  - Resistant to the nematodes *Heterodora schachtii, H. betae* and *Prathylenchus scripnerie.*
- **TERRANOVA**
  - Covers the soil quickly and has an excellent resistance to lodging.  
  - It has a wide resistance spectrum and consequent nematocidal effect: it is resistant to the sugar beet nematocides *Heterodora schachtii and H. betae* It is also resistant to *Meloidogyne chitwoodii, M. fallax* and *M. incognita, Prathylenchus scripnerie, Paratrichodorus allius,Trichodorus primitivus.*
- **ROMESA**
  - Early cycle variety, with rapid soil coverage and great biomass development.  
  - Particularly suitable as cover and soil decompacting (deep roots), as catch crops and as green manure.
  - Medium resistance to nematode Heterodera schachtii.
- **OCTOPUS**
  - Average cycle variety with expanded leaves that ensure rapid soil coverage and competition against weeds.
  - The rooting depth associated with high biomass production makes it a very effective catch crop for nitrogen recovery.
**NEMATOX**

**FEATURES:**
- Mixture composed of special cultivar of oil seed radish and rocket lettuce.
  - The best solution for horticultural rotation. Ensure the best control against nematodes Meloidogyne chitwoodii, M. fallax, M. incognita, M. javanica and Heterodora schachtii.
  - Very quick life cycles (50-55 days with spring sowing).
  - Mustard is susceptible to winter frost therefore it should be sowed in spring-summer in the north, but can be sowed in autumn in areas with mild winters.

**SOWING RATE:** 20 kg/ha

---

<table>
<thead>
<tr>
<th>VARIETY</th>
<th>FEATURES:</th>
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</table>
| **ATTACK** | - Tall plant, quick establishment and soil coverage.  
- Resistant to the sugar beet nematodes *H. schachtii* and *H. betae*. Does not host (reduces the spread of) the following nematodes: *Globodera rostochiensis/ pallida, Heteroder a avenae, Heterodera trifoli, Heterodera goettingiana, Meloidogyne naasi, Ditylenchus destructor*. |
| **ARCHITECT** | A late cycle variety that has marked activity against the sugar beet nematodes *Heterodora schachtii and H. betae*.  
- Average sized plant with good soil coverage and good resistance to lodging.  
- Shows excellent resistance to the main diseases. |
| **BOROWSKA** | Plant characterized by a fast vegetative development and biomass production.  
- Suitable for use as a cover of soil and green manure.  
- Good resistance to winter frozen with late sowing (mid-October/November).  
- Excellent grain producer.  
- Low nematocidal activity. |

---

**WHITE MUSTARD** *(Sinapis alba)*

**FEATURES:**
- The species is naturally susceptible to nematodes. Genetic improvement has created varieties that are absolutely resistant to these parasites, therefore the nematocide effect is comparable with horseradish.
- Very developed taproot that can reach 1.5 m depth.
- Mustard is susceptible to winter frost therefore it should be sowed in spring-summer in the north, but can be sowed in autumn in areas with mild winters.

**SOWING RATE:** 20-25 kg/ha

---

**NEMATODE RESISTANT ROCKET LETTUCE** *(Eruca sativa)*

**FEATURES:**
This species which is very well known as a vegetable for eating, thanks to some carefully selected varieties, can guarantee excellent effects both as a nematocide crop and as a biofumigant. It can be sowed all year round.

**VARIETY**

<table>
<thead>
<tr>
<th><strong>TRIO</strong></th>
<th>FEATURES:</th>
</tr>
</thead>
</table>
| - The first rocket with a dual use: vegetable for with a pleasantly spicy flavour and a nematocide and biofumigant effect  
- It has guaranteed activity against *Heterodera schachtii*, *Meloidogyne chitwoodii*, *M. hapla* and *M. incognita*.  
- Once it is buried it performs a fumigating action on soil fungal diseases (contains high concentrations of glucoerucin).  
- Cycle: 55-60 days from sowing to flowering. |

**SOWING RATE:** 10 kg/ha.
There are essentially two types of crops used for biofumigation:

1. **Sudan grass hybrids**: production of hydrogen cyanide and relative release into the soil after burying the biomass.
2. **Brassica crops** (horseradish, mustard, rocket, etc.): production of glucosinolates that develop isothiocyanate in the soil.

For brassica crops, biofumigation takes place by chopping and burying the biomass which allows the glucosinolates contained therein to be transformed into isothiocyanates. These substances have a toxic effect on significant soil fungal diseases.

The BioFum® mixtures proposed here represent the maximum biofumigating effect: the varieties included in the mixtures associate a high glucosinolate content with the substantial production of biomass and leaves.

In the greenhouse tests it was shown that these mixtures contain the development of the following fungi:

- *Gaeumannomyces*,
- *Rhizoctonia*,
- *Fusarium*,
- *Helminthosporium*,
- *Pythium*.

The varieties used in BioFums have the ability to reduce the presence of nematodes due to the following resistances (total or partial):

- Sugar beet nematode, *H. schachtii and beta*
- Root knot nematodes, *M. chitwoodi, fallax, hapla and incognita.*
- Stem and bulb nematodes, *D. dipsaci.*

**MANAGEMENT**

The use of these mixtures involves chopping the crop at 60-80% flowering and then quickly burying within 30 minutes. Immediate burying with a combined machine is ideal (see photo).

To maximise the fumigating effect it is useful to provide light irrigation after burying (10 mm). The soil can be worked 2 weeks later and after another 2 weeks the next crop can be sowed.

**SOWING RATE**: 15 – 20 kg/ha. The highest rate for heavy soils.

<table>
<thead>
<tr>
<th>MIXTURE</th>
<th>FEATURES:</th>
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</table>
| **BIOFUM SUMMER** | - Biocidal mixture for spring sowing comprising: Ethiopian mustard, horseradish, white mustard.  
|                 | - Very quick to develop.  
|                 | - The best time for incorporation should not be no later than the end of September.  
|                 | - Sowing period: from March to July.                                                      |
| **BIOFUM AUTUMN** | - Biocidal mixture comprising: Ethiopian mustard, horseradish, rapeseed.  
|                 | - BioFum Autumn is a mixture with early vigour and late flowering.  
|                 | - It is well adapted to autumn-spring rotation due to its resistance to winter frost.  
|                 | - Sowing period: September, October.                                                        |
3. CROPS FOR INCREASING STABLE HUMUS AND SOIL STRUCTURE

- Crops with a high fibre content and high C/N ratio are used to increase stable humus.
- They do not yield nitrogen and nutrients quickly, but allow the formation of stable humus and improve fertility in the long term (reserve of substances, improvement in physical and biological fertility).
- The species with developed and deep root apparatus allow the porosity of the soil and its water and air permeability to be increased.

**STRUCTURATOR** *(Raphanus sativus)*

**FEATURES:**
- Fast cycle (about 50-55 days with spring sowing). Special horseradish variety suitable to work in depth compacted soils, blocking also the leaching process.
- The unmistakable feature is the extremely developed taproot (see photos) with high penetration ability (50-60 cm depth).
- At the end of cultivation, large holes remain into the soil giving an excellent drainage.
- Extremely rapid development and expanded leaves ensure a good soil cover and competition against weeds.
- Poor activity against nematodes.

**SOWING PERIOD:** The optimal seeding period for maximum development is in late summer (within mid-September). Early sowing allows to partially finish the cultivation at winter frost, in Northern Italy. However, it can be sown throughout the year.

**SOWING RATE:** 6-8 kg/ha with precision sowing, 9-12 kg/ha with broadcast sowing.

**PHACELIA** *(Phacelia tanacetifolia)*

**FEATURES:**
- Very hardy species and also adaptable to marginal land.
- Well developed root apparatus with great ability to absorb and withhold nutrients (catch crop).
- Strong competitive, coverage and containment action against weeds, does not act against nematodes.
- Important melliferous plant, due to its abundant and prolonged flowering.
- It is sowed in autumn in areas with a mild winter and in spring in cold areas.

**SOWING RATE:** 10-15 kg/ha.

**VARIETY:** ASTA.

**HUMUSFERT**

**FEATURES:**
- Comprising barley, bristle oats and crimson clover, this mixture is used all over Italy with autumn sowing.
- Its great productivity, hardiness and precocity make it suitable for all pedoclimatic situations.
- Suitable for being chopped and buried, or for being rolled or cut and left as mulch (e.g. in between rows of tree crops).

**SOWING:** from October to November.

**SOWING RATE:** 85 kg/ha.

**ESTA-FERTIMIX**

**FEATURES:**
- Summer forage crop comprising: climbing bean, pearl millet and Sudan grass.
- Green manure that enriches the soil with organic substance, minerals and nitrogen. Excellent C/N ratio in the biomass produced.
- Excellent tolerance to drought at high temperatures, particularly suitable for greenhouse conditions.
- Cutting and burying: according to discretion, wait until the millet is at least 100-120 cm tall (60 days), for good biomass production.

**SOWING:** Spring, when the soil temperature is at least 16-18 °C.

**SOWING RATE:** 25-30 kg/ha, at the depth of 3-4 cm.
ALOSCA INOCULANTS

ALOSCA® RHIZOBIA: INNOVATIVE TECHNOLOGY TO GUARANTEE EXTRAORDINARY PERFORMANCE LEVELS

Padana Sementi continues to focus on innovation, proposing cutting edge technology for Italy exclusively for the bacterialization of leguminous forage crops.

With ALOSCA® rhizobia the farmer produces nitrogen directly in the field at a low cost!!

Why bacterialization is important

Root bacterial symbiosis is fundamental for all leguminous crops for:
• Fixing atmospheric nitrogen (and consequent soil enrichment)
• Increasing plant vigour
• Healthier plants and greater resistance to environmental stress

Symbiosis is a process that happens naturally in the soil, as long as there are enough specific bacteria present for the cultivated species. In unfavourable soils (acidic, alkaline, etc.) or where the affected species haven’t been grown for a long time, these microorganisms tend to diminish until they disappear.

WHAT ALOSCA® IS AND WHAT ITS ADVANTAGES ARE

Alosca inoculants comprise a substrate of bentonite granules, sized between 1 and 3 mm, inside which there are selected strains of nitrogen-fixing bacteria. This particular coating guarantees excellent protection for the bacteria both in packages (which can be kept for two years at temperatures from 0 to 60°C) and in the soil where they remain dormant until favourable environmental conditions allow the proliferation of the microorganisms in contact with the root apparatus and therefore quick and abundant nodulation (see graph).

ADVANTAGES OF THIS TECHNOLOGY:
• Increases nitrogen fixing up to 50% more for some species, allowing it to be made available for the next crop.
• Increases crop productivity in adverse situations (acidic soils).
• Increases the protein content of the forage.
• The product maintains its potential constant for a long time (easy storage).
• Extremely simple application, which consists of mixing the granules directly with seeds or with fertilizer. Also applicable for sowing on firm ground.
• Can easily be transported and distributed even in non-optimal conditions (e.g. dry soil, high temperatures)
• Can also be mixed with seeds treated with fungicides or other pesticides, without its efficacy being compromised.

This technology has been fully validated by some important research centres:
- Murdoch University Centre for Rhizobium Studies
- Western Australia Department of Agriculture

Detailed experiments are currently in progress also in Italy, at the University of Catania and the ISPAAM institute of the CNR in Sassari.
Table: Effect of inoculation with rhizobium Alosca on some leguminous crops. (Padana Sementi Elette data)

| Table: Effect of inoculation with rhizobium Alosca on some leguminous crops. (Padana Sementi Elette data) |
|---|---|---|---|---|---|---|---|
| | Crimson clover VITERBO | Pink serradella EMENA |
| no. plants | NT | RIZ | Increase (%) | NT | RIZ | Increase (%) |
| fresh plant weight (g) | 90.3 | 141.6 | 56.8 | 174 | 341 | 96 |

Pea AMICAL Forage pea RHEA

| Pea AMICAL | Forage pea RHEA |
|---|---|---|---|---|---|---|---|
| no. plants | NT | RIZ | Increase (%) | NT | RIZ | Increase (%) |
| fresh plant weight (g) | 540 | 680 | 25.9 | 670 | 780 | 16.4 |
| fresh seed weight (g) | 190 | 258 | 35.8 | 200 | 230 | 15.0 |

Alosca rhizobia, specifically for annual and perennial clover (group C), Pink serradella and Lupin (group S), Alfalfa (group AL), Pea, Faba bean and Vetch (group F), Annual medics (group M), are already mixed in the following products:

Forage Mixtures
- Mixed in the whole "Miscugli del sole" range
- Super Five
- Genius del Sud

Mixtures for permanent grasslands
- Gallura super
- Prato pascolo basento
- Self-reseeding
- Irriguo sardegna
- Asciutto Padana
- Irriguo Padana
- Prato Nuovo

Alfalfa
- Rhizobium group AL mixable with all the varieties in the catalogue

Individual species
- Specific rhizobium to be mixed when sowing available for all the species indicated by the brand

NOW AVAILABLE ALOSCA® POWDERED RHIZOBIUM SPECIFIC FOR SULLA.
- A significant part of Padana Sementi’s business comes from turf seeds thanks to constant investments in research and innovation in this sector.
- New turfgrass varieties with unique disease, trampling, drought or intense heat resistance features, as well as resistance to cold winters especially come from abroad, mainly in the USA, Denmark and Holland.
- These varieties are assessed in our test fields and after strict agronomic tests they are added to the different formulas.

**TOP CLASS and TOP CLASS 4 SOD:**
Mixture of top quality seeds especially formulated for professional use and differentiated so as to respond better to the different requirements. All the Top Class formulations follow rigid control procedures and contain the most recent and innovative varieties identified by research.

**TOP CLASS 4 SOD:**
this is a line intended for sod producers in which, as well as the best varieties, the lots with the highest purity are used.

*More than 50 sod producers in Italy currently use TOP CLASS 4 SOD!*

**TOP GREEN:**
Semi-professional mixtures, marked by a very wide range of formulations, which can satisfy all needs, from a small garden lawn to a large football field.

**NATURAL GARDEN:**
Mixtures of top quality American seeds ensure the quality standards of the professional line for domestic users. They are also marked by very low maintenance requirements with very few cutting and irrigation needs.

**TOP GREEN:**
This line comprises a special range of individual species, macro and microthermal, presented in different packages, which aim to meet specific needs.

Specific and detailed brochures are available for the different lines.
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