Forage Mixtures

06

BATLLE´S ANNUAL
BATLLE´S MULTIANNUAL
BATLLE´S RAINFED PASTURES
BATLLE´S IRRIGATED PASTURES
BATLLE´S COVER CROPS
BATLLE´S BIOAGRICULTURE

Premium forage mixtures

GENERAL CONCEPTS

INTELLECTUAL PROPERTY

Semillas Batlle as a breeder protects its varieties **PBR's** ("Plant breeders' rights") that may be marketed or produced through a formal agreement with other entities. This allows the use of their own differentiated, exclusive genetics adapted to the edaphoclimatic conditions found throughout the Iberian Peninsula.

HARD SEEDED PLANTS

Plants whose seeds in which the coat is hard and impervious to moisture and which therefore germinate slowly unless mechanically or chemically treated. The varieties of high hardness are agronomic alternatives for permanent rainfed pastures, plant covers and other long-term crops, which have a high persistence over the years, without the possibility of irrigation.

NUMBER OF PLANTS PER SURFACE

Thousand kernel weight (TKW) may vary for each species and can be different even between varieties. It is fundamental to ensure the number of sufficient plants per hectare, and at the same time maintain the balance between the species to allow the intended biodiversity.

ADVANTAGES OF BIODIVERSE FORAGE MIXTURES

ADAPTABILITY

Biodiversity oriented to the soil type, climate, and agronomic purpose, has a greater probability of success than a monoculture. At the same time, biodiverse mixtures are more likely to ensure satisfactory production in adverse climatic years.

SUPERIOR NUTRITIONAL QUALITY

Biodiverse mixtures present a higher quality in protein, digestibility, energy, and nutritional balance.

LEGUMES CONTRIBUION

Legumes guarantees the fixation of atmospheric nitrogen, an additional supply of protein and a forage nutritional balance. Inoculation with specific rhizobium, allows to enhance this contribution, due to the symbiosis between the plant and the bacteria.

SAVINGS IN NITROGEN FERTILIZER

Less nitrogen fertilizer (N) is required for annual crops but in the case of rainfed pastures, pastures, irrigated land and long-term cover crops, no nitrogen fertilizer is needed. A long-term permanent crop, when in full production, can provide per hectare more than 100 units of nitrogen in dry land and more than 250 units of nitrogen in irrigated areas, always if legumes are present in sufficient quantity.

GENERAL AGRONOMIC RECOMMENDATIONS FOR FORAGE MIXTURES

SOWING DATE

Generally during autumn, as early as possible, from September to mid-November, warm soil (recommended minimum of 10ºC). Exceptions are irrigated crops that can also be sown in spring, between February and the end of April.

SOIL PREPARATION

Very superficial (maximum 15-20 cm). The soil must be well discarded and regular, to prevent the seed from being too buried.

FERTILIZATION

It depends on the type of mixture but also the soil conditions. A soil analysis is very important to make a correct fertilization plan. The main elements are nitrogen (N), phosphorus (P2O5) and potassium (K2O). Exception for permanent mixtures rich in legumes, which, if sowed appropriately, do not require nitrogen (N).

SOWING RATE

Respect the recommended quantity for each type of mixture, we should avoid grasses shading legumes, which generally present a slower implantation. A correct sowing rate helps to avoid competition between different species.

SOWING METHOD

Broadcast or in lines, so that the seed is well distributed. Direct seeding, whenever possible, is a viable alternative.

SOWING DEPTH

Maximum 1.0 to 1.5 cm, seed properly covered by soil.

SOIL SCROLLING

Very important operation to cover the seed and a uniform depth. Toothed roller, with independent discs, is the recommended machine for the operation.

LEGUME INOCULATION IN PREMIUM MIXTURES

LEGUME INOCULATION

Semillas Batlle inoculates its legume seeds with specific strains of rhizobium, for each species. The symbiosis that is generated immediately after the germination of the plant guarantees high rates of fixation of atmospheric nitrogen. At sowing, it is recommended that the soil has a temperature above 10ºC, for an effective beginning of the symbiosis.

BENEFITS OF INOCULATION

Improved soil fertility and structure, increased water retention capacity and high carbon sequestration, due to increased forage production.

Batlle´s annual

Batlle´s annual grazing/cutting
Batlle´s annual single cut
Batlle´s annual strigosa
Batlle´s annual forridena
Batlle´s annual triticale
Batlle´s annual barley

USES AND FEATURES

Semillas Batlle has a wide range of species and varieties that have made it possible to develop well-adapted annual forage mixtures in different climate and soil conditions and adapted to the different agricultural forms of use and livestock farms. Very productive annual mixtures, of high nutritional quality and adaptation to the needs of agricultural producers, are a guarantee of excellent forage production.

Batlle´s annual grazing / cutting

- **Range of mixtures based on annual grasses and legumes focused to get high performances and a fast implantation. The high regrowth capacity allows choosing between a final cut or grazing it till the end**

MANAGEMENT

- **Sowing date:** autumn, from September to November.
- **Establishment:** N: 25 to 50 units; P_2O_5: 50 to 90 units; K_2O: 50 to 90 units.
- **Top dressing:** N: 40 to 60 units after each cut or grazing (between November and January)
- **First grazing:** when the soil allows it, ryegrass should have 8 to 10 leaves.
- **Final cut:** cattle must be removed to produce sufficient forage. The ideal date when 30 to 40% of the legumes are in bloom.

EXPECTED YIELDS

EXPECTED YIELDS	CRUDE PROTEIN	UFL	DIGESTIBILITY
6.000-12.000 kg the DM/ha	16-22%	0,80-0,95 kg/DM	60-80 % of the DM

AVAILABLE MIXTURES

- **ACID SOILS:** sowing rate: 30-35 kg/ha
- **SANDY SOILS:** sowing rate: 35-40 kg/ha
- **NEUTRAL / ALKALINE SOILS:** sowing rate: 35-40 kg/ha
- **NORTHERN PENINSULA:** sowing rate: 30-35 kg/ha

Batlle´s annual single cut

- **Range of mixtures based on annual grasses and legumes focused to get high performances and a fast implantation to get a high forage yield in a final cut**

MANAGEMENT

- **Sowing date:** autumn, from September to November.
- **Establishment:** N: 25 to 50 units; P_2O_5: 50 to 90 units; K_2O: 50 to 90 units.
- **Top dressing:** N: 40 to 60 units after each cut or grazing (between November and January)
- **Possible first grazing:** when the soil allows it, only for a weed control purpose; ryegrass should have 8 to 10 leaves.
- **Final cut:** The ideal date when 30 to 40% of the legumes are in bloom.

EXPECTED YIELDS

EXPECTED YIELDS	CRUDE PROTEIN	UFL	DIGESTIBILITY
6.000-13.000 kg the DM/ha	11-20%	0,60-0,75 kg/DM	55-70 % of the DM

AVAILABLE MIXTURES

- **ACID SOILS:** sowing rate: 35-40 kg/ha
- **SANDY SOILS:** sowing rate: 35-40 kg/ha
- **NEUTRAL / ALKALINE SOILS:** sowing rate: 35-40 kg/ha
- **NORTHERN PENINSULA:** sowing rate: 35-40 kg/ha

Batlle´s annual strigosa

- **Range of mixtures based on black oat (strigose), annual grasses and legumes focused to get high performances and a fast implantation to get a high forage yield in a final cut**

MANAGEMENT

- **Sowing date:** autumn, from September to November.
- **Establishment:** N: 25 to 50 units; P_2O_5: 50 to 90 units; K_2O: 50 to 90 units.
- **Top dressing:** N: 40 to 60 units after each cut or grazing (between November and January)
- **Possible first grazing:** when the soil allows it, only for a weed control purpose; ryegrass should have 8 to 10 leaves.
- **Final cut:** The ideal date when 30 to 40% of the legumes are in bloom.

EXPECTED YIELDS

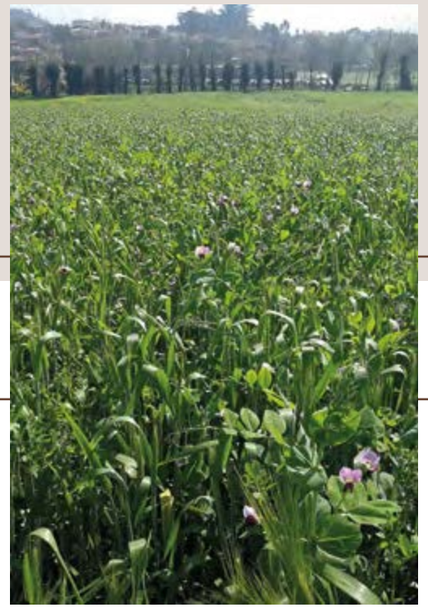
EXPECTED YIELDS	CRUDE PROTEIN	UFL	DIGESTIBILITY
7.000-14.000 kg the DM/ha	11-16%	0,60-0,75 kg/DM	55-70 % of the DM

AVAILABLE MIXTURES

- **ACID SOILS:** sowing rate: 40-45 kg/ha
- **SANDY SOILS:** sowing rate: 40-45 kg/ha
- **NEUTRAL / ALKALINE SOILS:** sowing rate: 40-45 kg/ha
- **NORTHERN PENINSULA:** sowing rate: 40-45 kg/ha

Batlle´s annual forridena

- **Range of mixtures based on Forridena common oat, annual grasses and legumes focused to get high performances and a fast implantation to get a high forage yield in a final cut**



MANAGEMENT

- **Sowing date:** autumn, from September to November.
- **Establishment:** N: 25 to 50 units; P_2O_5: 50 to 90 units; K_2O: 50 to 90 units.
- **Top dressing:** N: 40 to 60 units after each cut or grazing (between November and January)
- **Possible first grazing:** when the soil allows it, only for a weed control purpose; ryegrass should have 8 to 10 leaves.
- **Final cut:** The ideal date when 30 to 40% of the legumes are in bloom.

EXPECTED YIELDS

EXPECTED YIELDS	CRUDE PROTEIN	UFL	DIGESTIBILITY
5.000-12.000 kg the DM/ha	11-16%	0,60-0,75 kg/DM	55-70 % of the DM

AVAILABLE MIXTURES

- **ANNUAL FORRIDENA:** sowing rate: 60-70 kg/ha

Batlle´s annual triticale

- **Range of mixtures based on forage triticale, annual grasses and legumes focused to get high performances and a fast implantation to get a high forage yield in a final cut**

MANAGEMENT

- **Sowing date:** autumn, from September to November.
- **Establishment:** N: 25 to 50 units; P_2O_5: 50 to 90 units; K_2O: 50 to 90 units.
- **Top dressing:** N: 40 to 60 units after each cut or grazing (between November and January)
- **Possible first grazing:** when the soil allows it, only for a weed control purpose; ryegrass should have 8 to 10 leaves.
- **Final cut:** The ideal date when 30 to 40% of the legumes are in bloom.

EXPECTED YIELDS

EXPECTED YIELDS	CRUDE PROTEIN	UFL	DIGESTIBILITY
6.000-12.000 kg the DM/ha	11-20%	0,60-0,75 kg/DM	55-70 % of the DM

AVAILABLE MIXTURES

- **ACID SOILS:** sowing rate: 65-70 kg/ha
- **SANDY SOILS:** sowing rate: 65-70 kg/ha
- **NEUTRAL / ALKALINE SOILS:** sowing rate: 65-70 kg/ha
- **NORTHERN PENINSULA:** sowing rate: 65-70 kg/ha

Batlle´s annual barley

- **Range of mixtures based on forage barley, annual grasses and legumes focused to get high performances and a fast implantation to get a high forage yield in a final cut**

MANAGEMENT

- **Sowing date:** autumn, from September to November.
- **Establishment:** N: 25 to 50 units; P2O5: 50 to 90 units; K2O: 50 to 90 units.
- **Top dressing:** N: 40 to 60 units after each cut or grazing (between November and January)
- **Possible first grazing:** when the soil allows it, only for a weed control purpose; ryegrass should have 8 to 10 leaves.
- **Final cut:** The ideal date when 30 to 40% of the legumes are in bloom.

EXPECTED YIELDS

EXPECTED YIELDS	CRUDE PROTEIN	UFL	DIGESTIBILITY
6.000-12.000 kg the DM/ha	10-18%	0,55-0,70 kg/DM	55-70 % of the DM

AVAILABLE MIXTURES

- **ACID SOILS:** sowing rate: 75-80 kg/ha
- **NEUTRAL / ALKALINE SOILS:** sowing rate: 75-80 kg/ha

Batlle´s multiannual

Batlle´s multiannual
Batlle´s forestry

USES AND FEATURES

Semillas Batlle has developed mixtures for forage uses with a persistence of 2 to 5 years and forest mixtures with a persistence of 2 to 3 years. Thus, for the first case, forage solutions are sought for grazing or cutting in the most humid areas of the Iberian Peninsula; for the second case, marginal forest soils recovery crops for those which have been deforested and we seek to improve their fertility.

Batlle´s multiannual

- **Range of mixtures based on annual and multi-annual grasses and legumes, intended for areas with more than 800 mm of rainfall, or for irrigation. Specially elaborated for the North of the Iberian Peninsula, for a high forage production with multiple cuts and eventually grazing**

MANAGEMENT

- **Sowing date:** At fall from September to November, and in spring from February to April.
- **Establishment:** N: 25 to 50 units; P_2O_5: 50 to 90 units; K_2O: 50 to 90 units.
- **Top dressing:** N: 40 to 60 units after each cut or grazing (between November and January or between May and July, depending on its performance)
- **First cut or grazing:** when the soil allows it, ryegrass should have 8 to 10 leaves. This cut should help us for a weed control and mixture homogenization purpose.
- **Cuts and grazing:** Crop implantation occurs during the first year, and the cuts cadence may occur in intervals of 2 to 3 months with a huge sensibility of weather fluctuations.

EXPECTED YIELDS

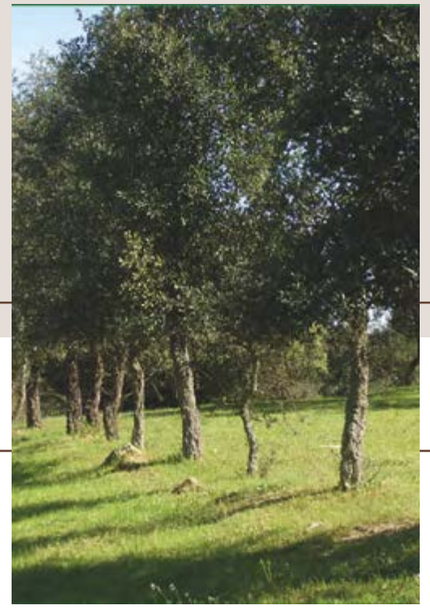
EXPECTED YIELDS	CRUDE PROTEIN	UFL	DIGESTIBILITY
9.000-15.000 kg the DM/ha	16-20%	0,80-0,95 kg/DM	60-80 % of the DM

AVAILABLE MIXTURES

- **2 YEARS:** sowing rates of 30 to 35 kg / ha
- **3 YEARS:** sowing rates of 30 to 35 kg / ha
- **4 YEARS:** sowing rates of 30 to 35 kg / ha

Batlle´s forestry

- **Range of formulas based on yellow lupin and annual legumes, fertility precursors. Those mixtures are designed for forest areas which are recovering from shrubs and weeds. Generally, after a cleaning, they allow a subsequent installation of a permanent culture**



MANAGEMENT

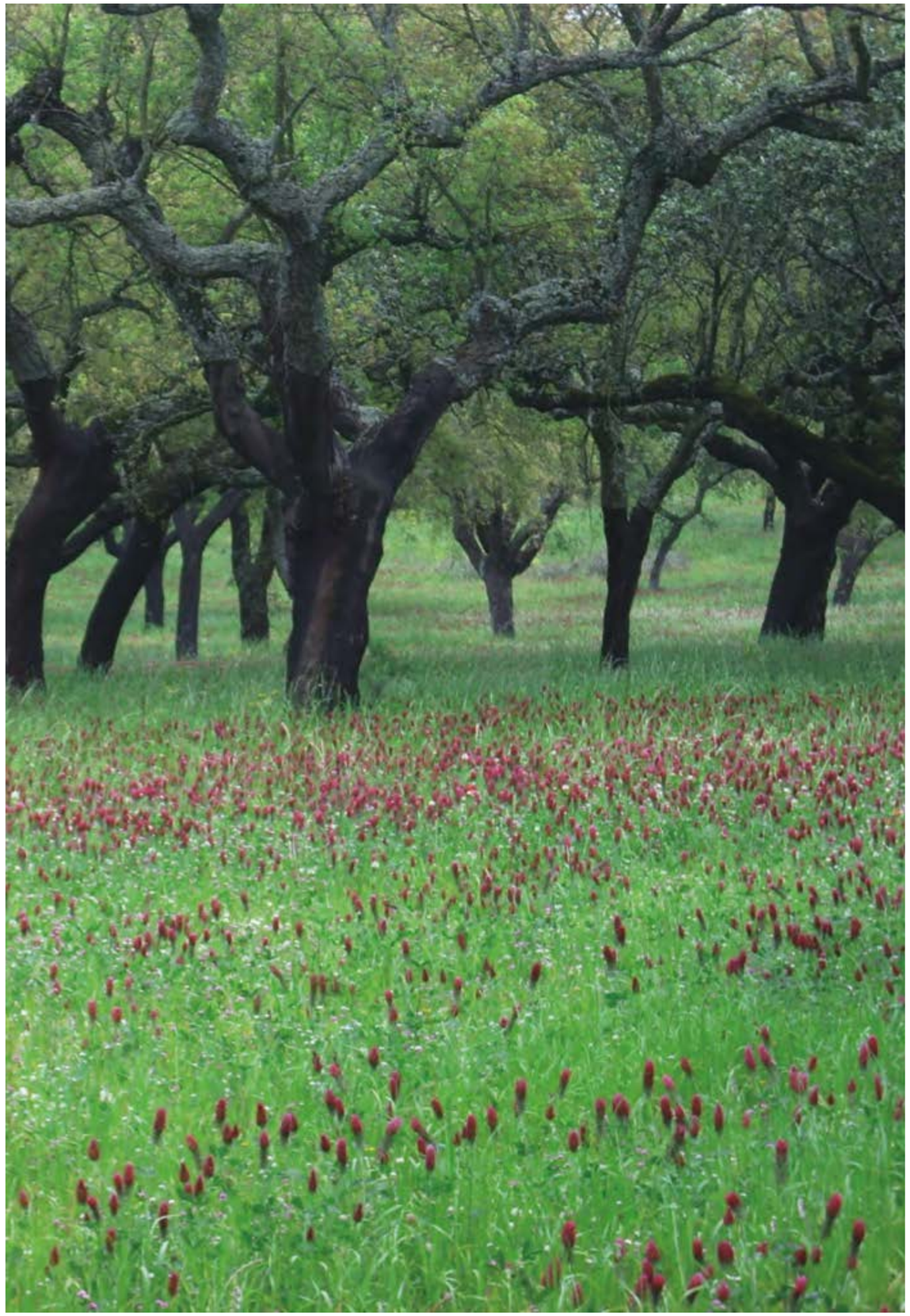
- **Sowing date:** At fall from September to November.
- **Establishment:** P_2O_5: 30 to 50 units; K_2O: 30 to 50 units.
- With **annual** or **biannual** duration, the intention is to increase the soil's organic matter. Possibility of grazing, but preferably it should be left to rest during the first spring for green manure. Some seed produced during that period may be left for a second year.

EXPECTED YIELDS

EXPECTED YIELDS	CRUDE PROTEIN
3.000-9.000 kg the DM/ha.	11-15%

AVAILABLE MIXTURES

- **ACID TO NEUTRAL SOILS:** sowing rates of 35 to 40 kg / ha
- **SANDY SOILS:** sowing rates of 35 to 40 kg / ha



Batlle´s rainfed pastures

INTRODUCTION

Long-term pastures, **Semillas Batlle** offers a wide variability of mixtures, duly adapted to the different soil and weather conditions in the Iberian Peninsula.

RAINFED PASTURES it is the best solution to produce long-lasting quality grazing grass. A rigorous choice of the most adapted, persistent, and productive varieties is the guarantee of grass of high quality, energy and digestibility, but also improving the soil structure by increasing its organic matter, reducing erosion and improving the water retention.

Batlle´s rainfed pastures

MANAGEMENT

- **To ensure a long persistence of the rainfed pasture, the management is divided into the first year, the second year and the following years.**

FIRST YEAR MANAGEMENT

- **Sowing date:** in autumn, from September to November. The soil must maintain a temperature above 10ºC for the symbiosis between the legumes and the rhizobium incorporated in the seed to be effective.
- **Establishment:** P_2O_5: 50 to 90 units; K_2O: 50 to 90 units. Soil tests are a very important tool for a more efficient fertilization plan.
- **Grazing could begin in autumn:** when conditions allows it, it should be short and with a large amount of livestock for weed removal.
- **Spring flowering:** when first flowers are observed, pastures should be reserved with no animals to create all the seed necessary for the next few years. In this way, there will be an abundant seed bank that guarantees a long persistence.
- **Dry grass:** by animal grazing, dry grass created during spring should completely disappear before the first rains of next autumn. In this way, the emergence of the new plants will not find obstacles for their development.

SECOND AND FOLLOWING YEARS MANAGEMENT

- **Rotational grazing:** when the plants are large enough after the first autumn rains.
- **Dry grass removal:** by animal grazing, dry grass created during spring should completely disappear before the first rains of next autumn. In this way, the emergence of the new plants will not find obstacles for their development.
- **Top dressing fertilization:** can be done annually or every 2 years, usually with P_2O_5 20 to 40 units and K_2O 20 to 40 units annually. A long-term, permanent rainfed crop with an abundant presence of legumes can contribute at least with 100 units per hectare of nitrogen, increasing soil fertility and nutrients absorption by other species.

EXPECTED YIELDS

- Soil and climate conditions, as well as meadow age, greatly influence the yields and qualitative capacity of a permanent rainfed mix. The intervals presented are, for that reason, wide and diverse.

EXPECTED YIELDS	CRUDE PROTEIN	UFL	DIGESTIBILITY
3.000-12.000 kg the DM/ha	7-20%	0,50-0,95 kg/DM	50-70 % of the DM

AVAILABLE MIXTURES

Acid soils: sowing rate of 25-30 kg/ha

- BATLLE RAINFED PASTURES ACID SOILS < 550 MM
- BATLLE RAINFED PASTURES ACID SOILS 550 - 850 MM
- BATLLE RAINFED PASTURES ACID SOILS MORE THAN 850 MM

Neutral soils: sowing rate of 25-30 kg/ha

- BATLLE RAINFED PASTURES NEUTRAL SOILS < 600 MM
- BATLLE RAINFED PASTURES NEUTRAL SOILS MORE THAN 600 MM

Alkaline soils: sowing rate of 25-30 kg/ha

- BATLLE RAINFED PASTURES ALKALINE SOILS < 600 MM
- BATLLE RAINFED PASTURES ALKALINE SOILS MORE THAN 600 MM

Particular soils: sowing rate of 25-30 kg/ha

- BATLLE RAINFED PASTURES SANDY SOILS
- BATLLE RAINFED PASTURES WATERLOGGED SOILS

Legumes: sowing rate of 20-22 kg/ha

- BATLLE RAINFED PASTURES ACID LEGUMES
- BATLLE RAINFED PASTURES SANDY LEGUMES
- BATLLE RAINFED PASTURES LEGUMES
- NEUTRAL / ALKALINE

Specific areas

- **BATLLE RAINFED PASTURES CASTILLA-LEÓN:** sowing rate of 30-35 kg/ha
- **BATLLE RAINFED PASTURES DEHESA DE SEVILLA:** sowing rate of 18-22 kg/ha

Batlle´s irrigated pastures

INTRODUCTION

Long-term pastures, **Semillas Batlle** offers a wide variability of mixtures, duly adapted to the different soil and weather conditions in the Iberian Peninsula.

IRRIGATED PASTURES it is the best solution to produce long-lasting quality grass which will be managed for grazing or combined with some cuts in certain moments in spring and / or summer. A rigorous choice of the most adapted, persistent and productive varieties is the guarantee of grass of high quality, energy and digestibility, but also improving the soil structure by increasing its organic matter, reducing erosion and improving the water retention.

Batlle´s irrigated pastures

- **To ensure a long persistence of the irrigated pasture, the following operations must be ensured:**

- **Sowing time:** At fall from September to November, and at spring from February to May, depending on the geographical areas. The soil must maintain a temperature above 10ºC so that the symbiosis between the legumes and the rhizobium incorporated in the seed is effective.
- **Establishment:** P_2O_5 70 to 120 units and eventually K_2O 70 to 120 units. Soil tests are a very important tool for a more efficient fertilization plan. Beginning of grazing at fall: When soil conditions are appropriate, grazing should be short and with a large amount of for weeds removal.
- Intermittent or rotational grazing: when plants are large enough after the first autumn rains.
- **Top dressing fertilization:** can be done annually or every 2 years, usually with P_2O_5 30 to 60 units and K_2O 30 to 60 units annually. A long-term, permanent irrigated crop with an abundant presence of legumes can contribute at least with 200 units of nitrogen per hectare, increasing soil fertility and nutrients absorption by other species.

EXPECTED YIELDS

EXPECTED YIELDS	CRUDE PROTEIN	UFL	DIGESTIBILITY
12.000-20.000 kg the DM/ha	15-25%	0,70-0,95 kg/DM	55-75 % of the DM

AVAILABLE MIXTURES. Sowing rate of 25-30 kg/ha

- BATLLE IRRIGATED PASTURES ACID SOILS
- BATLLE IRRIGATED PASTURES NEUTRAL / ALKALINE SOILS
- BATLLE IRRIGATED PASTURES MOUNTAIN AREAS
- BATLLE IRRIGATED PASTURES HORSES

Batlle´s cover crops

INTRODUCTION

Semillas Batlle has developed a wide range of mixtures considering the benefits it can bring to a main crop.

A rigorous choice of the most adapted and persistent varieties is a guarantee that the cover crop will improve the soil structure, increase its fertility and the organic matter, reduce the erosion and improve the water retention. Machinery access to the main crop will be improved too.

Batlle´s cover crops

COVER CROPS MANAGEMENT

To ensure a long persistence of the cover crop, management is divided into the first year, the second year and the following years:

FIRST YEAR MANAGEMENT

- **Sowing time:** in autumn, from September to November. The soil must maintain a temperature above 10ºC so that the symbiosis between the legumes and the rhizobium incorporated in the seed is effective.
- **Spring blossom:** Only in the first year, cover crop should be reserved to create a seed bank, which will guarantee a long persistence.
- **Dry grass removal:** by mechanical action, dry grass created during the spring should completely disappear, before the first rains of next autumn. In this way, the emergence of the new plants will not find obstacles for their development.

SECOND AND FOLLOWING YEARS MANAGEMENT

- **Dry grass removal:** by mechanical action, dry grass created during the spring should completely disappear, before the first rains of next autumn. In this way, the emergence of the new plants will not find obstacles for their development.

AVAILABLE MIXTURES. Sowing rate of 20-25 kg/ha

- BATLLE VINEYARD COVER CROPS
- BATLLE OLIVE GROVE COVER CROPS
- BATLLE FRUIT ORCHARD COVER CROPS
- BATLLE FORESTRY COVER CROPS

Batlle´s bioagriculture

INTRODUCTION

Current issues related to conserving the environment, climate change, landscape design and new agronomic technologies, bring new challenges for agriculture.

Some of the forage species that **Semillas Batlle** develops and trades have a new role in controlling pests and weeds, improving the soil's water retention, increasing the fauna and biodiversity, with special relevance for beneficial insects that are essential for pollination and pest control of our crops.

Batlle´s bioagriculture

- **Semillas Batlle has developed a wide range of forage and pasture mixtures with the ability to provide benefits in other areas of agriculture**

- **Mixtures for rotations:** allows rotations with main crops which may benefit from them.
- **Mixtures for pollinators:** their main purpose is to increase the population of beneficial pollinating insects in the ecosystem.
- **Mixtures for pest and disease control:** helps to reduce / eliminate harmful pests and diseases, favoring biological control.
- **Mixtures for landscaping:** aimed to improve the landscape environment, both rural and urban.
- **Mixtures for hydroseeding:** seed mixtures adapted to this technique, to achieve easier and faster sowing. They ensure greater germination and therefore more possibilities of revegetation.

AVAILABLE MIXTURES

- **BATLLE BIOROTATIONS:** ask our technicians
- **BATLLE POLLINATORS:** ask our technicians
- **BATLLE PEST CONTROL:** ask our technicians
- **BATLLE LANDSCAPE:** ask our technicians
- **BATLLE HYDROSEEDING:** ask our technicians