

## Be prepared for the best results

Apart from choosing Yellow Jacket Nitrogenerator, the right soil type, optimal fertilising and correct harvesting methods will contribute to a high roughage yield.

### Soil type

Lucerne thrives in well-drained soil with the correct acidity. Sandy soil must have a pH value higher than 5.5, and clay soil at least 6.0. Lucerne must not have been grown for one (in wet areas) to three (in dry areas) years. Good soil structure is advisable.

### Fertilising and crop protection

Lucerne is a perennial crop. If the soil contains enough nitrogen at the time of sowing, there is no need to add extra nitrogen. Over time the crop itself will ensure nitrogen fixation from the air. Phosphate, sodium and potassium must be added based on soil analysis.

### Leave the crop alone

Because lucerne is susceptible to damage from traffic, it is important to leave the crops be as much as possible. When a lucerne plant dies, it will leave an open spot where weeds can get a chance. Barenbrug lucerne seed is free from noxious weeds

and scores well for nematode resistance. Disease and pest control are often easy to do with available resources.

### Cutting

Lucerne is mostly cut for making silage. Depending on the local climate, two up to five or more cuts are possible. In case of springtime sowing one less cutting must be taken into account. The best time for cutting is when five to ten per cent of the plants are flowering. The best cutting height is seven to ten centimeter. Lucerne is a broad-leafed crop, which means the choice of cutting machine is important. When handling is too intensive, too much leafy material is lost, at the expense of forage yield and quality.



## Forage yield

In the first year the potential dry matter yield of lucerne is six to nine tonnes per hectare. For the second and following years the dry matter yield is twelve to seventeen tonnes per hectare. These figures may vary per lucerne variety and regions.

### Silage quality

Lucerne is a great protein source and provides a high effective fibre content (NDF) to the feed ration.

### The complementary nutritional value of lucerne and maize

	Lucerne silage	Maize silage
Sugar (g/kg DM)	5	10
Starch (g/kg DM)	0	320
NDF (g/kg DM)	475	380
NDF - digestibility (%)	58	53
Crude protein (g/kg DM)	190	70
Energy for milk (MJ NEL)	5.2	6.7

The values may vary according to circumstances. Source: CVB.

# Lucerne, easy

For a guaranteed optimal yield of protein



**YELLOW JACKET**  
NITROGENERATOR

Higher bacteria activity in soil.

Improved plant establishment.

Higher yield during many years.

Excellent working convenience.



**BARENBRUG**

Make Life Beautiful



**YELLOW JACKET**  
NITROGENERATOR

# Lucerne, easy



**BARENBRUG**



## Lucerne, easy



From now on, growing lucerne is hassle-free. Seed for this high-protein forage is now available with an innovative seed enhancement, ensuring a good start for the crop and a rich harvest for you, as well as high-protein rations for your dairy cattle. The Yellow Jacket Nitrogenerator seed enhancement makes growing lucerne much easier.

A choice for lucerne is a choice for optimal roughage yield and maximum milk production. On top of that you will economise on purchasing supplementary concentrates. A proper establishment of lucerne is essential as it forms the base for a perennial, rich harvest. Badly established lucerne crops will result in yield loss for all the following years because it's impossible to sow extra lucerne in between existing crops, as the lucerne plants' roots excrete a substance that is poisonous to its own seed.

Barenbrug has developed the technology for the enhancement of lucerne seeds: Yellow Jacket Nitrogenerator. It contains active Rhizobium bacteria, which are essential for the growth of lucerne in the initial phase. Besides Rhizobium bacteria Yellow Jacket Nitrogenerator contains extra nutrients and a buffering layer. It increases the shelf life of the seed and protect the Rhizobium bacteria against stress.

## Rhizobium, indispensable

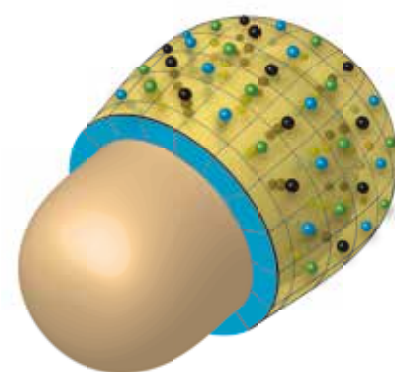
Aided by nitrogen-fixing Rhizobia, lucerne captures nitrogen from the air in root nodules. The bacteria also ensure improved crop establishment, resulting in higher protein and dry matter yield.

The technology behind Yellow Jacket Nitrogenerator makes it possible to embed Rhizobium bacteria directly on the lucerne seed in a polymer matrix. Extra nutrients and preservatives have been added to this ingenious polymer to increase the shelf life of the bacteria. The used Rhizobium bacteria strains for the Yellow Jacket Nitrogenerator is the result of extensive selection under various circumstances. Only the bacteria strains that are perfectly able to survive under difficult conditions, are qualified for Yellow Jacket Nitrogenerator.

### Major source of nutrients for plant growth

The Rhizobium bacteria on the seed are always active and close to the young roots. Nitrogen from

the air, which diffuses through the upper soil level, is taken up by the root knots of the young plants and converts to amides or uric acids by the Rhizobium bacteria. Hereafter the nutrients are transported to the plant. This is the major source of nutrients for plant growth. Lucerne seed treated with this unique Barenbrug technology saves labour and increases the certainty of optimal crop establishment and a high plant yield.



- Rhizobium
- Nutrients
- Trace elements

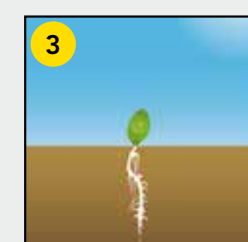
### How do the Rhizobiumbacteria work?



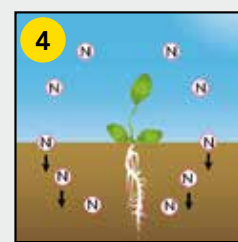
The lucerne seed germinates.



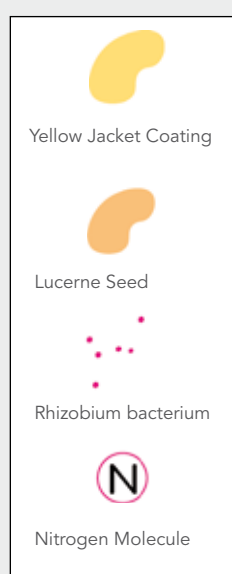
Rhizobia migrate from the coating to the soil.



The bacteria establish themselves on the roots of the lucerne plants.



The bacteria capture nitrogen from the air in root nodules. The nitrogen is transformed into amino acids and absorbed by the plant.



## The 7 proven benefits of Yellow Jacket Nitrogenerator

### → 1 Higher bacteria activity in soil

Rhizobium bacteria may occur naturally in soil in small amounts. But the occurrence and activity is not the same everywhere. Yellow Jacket Nitrogenerator increases the amount of active Rhizobium bacteria in the soil and bacteria on the seed are always active and close to the young roots, for optimum effectiveness.

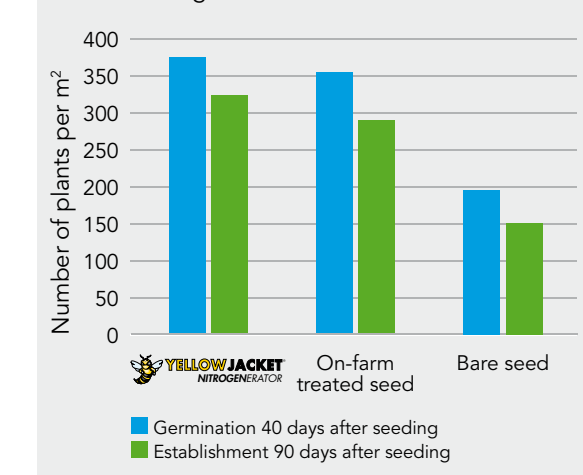
### → 2 Long shelf life

Bacteria in the Yellow Jacket Nitrogenerator survives well. The activity of these bacteria is guaranteed for at least six months in storage. This makes it possible to store excess seed for the next sowing period.

### → 3 Improved plant establishment

Enhanced seed is heavier than unenhanced seed, which improves contact with the soil after sowing. Moreover, the enhanced seed will attract and retain moisture, enabling the crop to establish better compared to crops with unenhanced seed. A proper establishment of lucerne is essential as it forms the basis for a perennial, rich harvest, resulting in a higher protein level and dry matter yield. Various tests by Barenbrug Research demonstrates that the establishment and ground cover is far above the average.

### Difference in germination and establishment



### EU-CAP

Greening is an important element of the EU's Common Agricultural Policy (CAP). Because lucerne fits in well with this policy, some countries are offering subsidy opportunities for farmers growing lucerne - making it an even more attractive forage choice for dairy farmers.

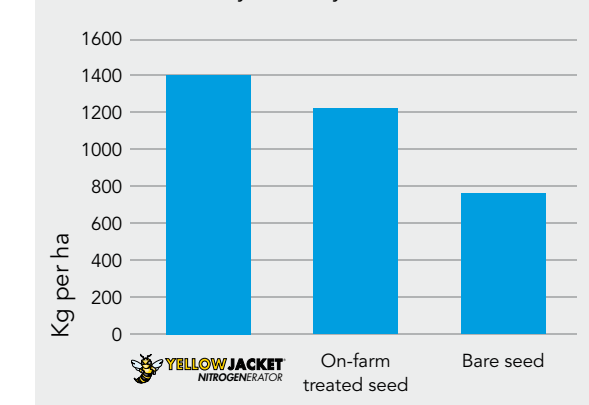
### → 4 Tip-top nutrition and acidity

Yellow Jacket Nitrogenerator contains essential nutrients and trace elements that feed the seedlings and enhance the effect of the Rhizobium bacteria. Lime (CaCO<sub>3</sub>) from the coating maintains the pH value around the roots.

### → 5 Higher yield during many years

Also the yield of lucerne with Yellow Jacket Nitrogenerator is higher during many years than the yield of unenhanced seed, resulting in a higher roughage yield and, consequently, more milk per hectare.

### Difference in dry matter yield at the first cut



### → 6 Tolerance to drought

A good establishment and initial growth of the young plants means that the lucerne roots can penetrate the ground more than 100 centimeter deep when the soil allows this. Its plants are better able to absorb moisture from the deeper layers of soil compared to grasses. This is why lucerne with Yellow Jacket Nitrogenerator is an excellent choice in dry areas of, for example, Central and Eastern Europe. In the coming decades, the likelihood of dry, hot summers will be on the rise, making lucerne the forage crop of the future.

### → 7 Excellent working convenience

Yellow Jacket Nitrogenerator is a ready-to use product, saving you a lot of work. Moreover, the distribution of the Rhizobium bacteria around the seed is much more even than when mixed manually.

## Barenbrug lucerne varieties

Barenbrug has a widely extended lucerne breeding program. Our program is running in Northern- France (Flemish types), Southern France (Mediterranean types), Romania (continental types) and Australia (non-dormant types). The main goal of Barenbrug lucerne breeding is to obtain the maximum farm benefits from lucerne.

### High quality seed by Barenbrug

All Barenbrug lucerne varieties give a high (protein) yield. They have a large proportion of leaves and flexible stem parts. The latter ensure that little high-protein leaf is lost during cutting. High-end Barenbrug varieties can easily yield more than low quality varieties to an equivalent of value of €150 per hectare per year. Barenbrug lucerne seed is free from noxious weeds and the lucerne plants have a high resistance against nematodes. Barenbrug can provide a suitable seed type for every climate zone.



### Overview of Barenbrug lucerne varieties and dormancy classification in Europe

Variety	Dormancy class
<b>Flemish type</b>	
Artemis	4.5
Alpha	4.9
Alexis	5.0
Bardine	5.0
Sanditi	5.2
<b>Semi non-dormant type</b>	
Dorine	6.4
<b>Non-dormant type</b>	
Verdor	8.0

