

OFTEN COPIED,
NEVER EQUALLED!

Grass on demand at lower temperatures!



Super Over Seeding

Fastest overseeding solution, at low temperatures!

Your sports pitches are used day in, day out. It therefore comes as no surprise that by the time the winter break comes along, parts of the pitches will have been damaged and by the time the end of the playing season has arrived the pitches have almost completely lost their grass cover, severely limiting the number of available playing hours.



SOS is the ideal solution, as it takes half the time to recover after overseeding. SOS can be used in the 'difficult' months at the end or beginning of the year when stress dominates the turf grass and growth is restricted. SOS can be used at low soil temperatures (*down to less than 6 °C*) and after a short recovery period the playing season can be extended with additional playing hours!

SOS, a 'cool' concept for sports pitches

SOS is an innovative turf grass product, characterised by its extremely rapid germination and establishment, even after overseeding under very low temperatures. SOS germinates and establishes much faster than pure perennial rye grass under cool temperature conditions. Now, pitches that were damaged due to heavy duty can be renovated to the required degree of grass cover within a much shorter period of time. Thanks to SOS, there is a substantial reduction of 50 % in the 'recovery period' after overseeding, when overseeded just after winter when soil temperatures are around 6 °C.

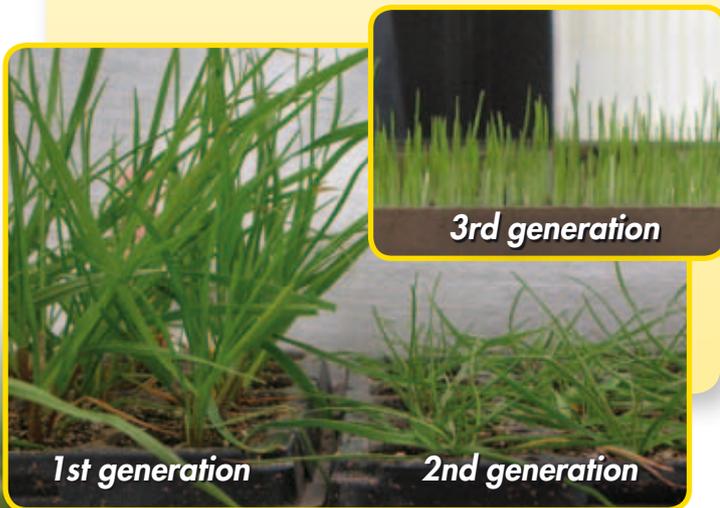
SOS will provide a dense grass cover in the periods that your turf grass suffered most from winter damage. SOS results into a pitch that remains playable for a longer time!

Fastest germination with SOS!

Fastest germination with newest generation annual rye grass: SOS! SOS has become a well-known overseeding solution providing superior germination and establishment in very cool soil temperatures (down to 6 °C) for year round sward cover.

SOS is the solution for reducing the recovery time of the pitch after renovation. Overseeding using SOS guarantees grass cover of at least 60 % within one month - 18 days faster than with standard blends containing perennial rye grass!

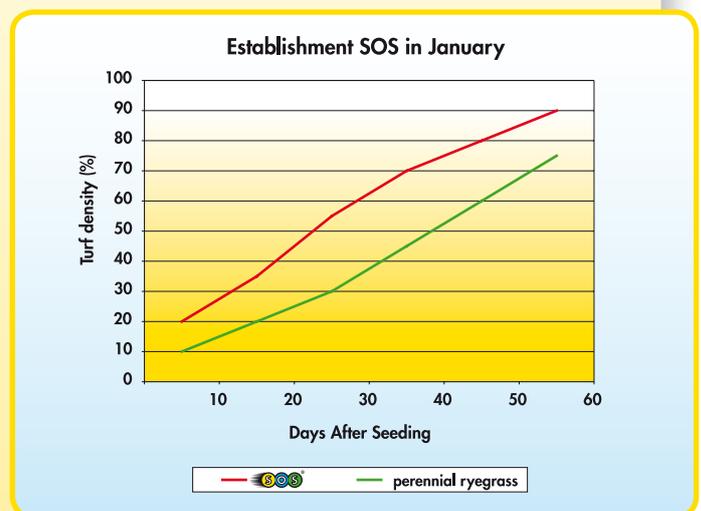
Forget the "forage-type" annual ryegrasses. Thanks to advanced breeding Barenbrug found the characteristics of the third generation SOS. Desirable fine leaved characteristics which can be seen below:



Overseeding at lower temperature

The most heavily used pitches normally loose most of their grass plants in the middle of the winter. This means clubs need to improvise in order to keep on playing on suitable pitches. SOS puts an end to all of this, as overseeding is carried out on a continuous basis, already from the end of the winter period, thereby ensuring that your grass cover is maintained at a high level.

The following graph shows just how quickly SOS germinates and establishes itself when overseeded in January at a soil temperature of 6.2 °C. One month later, the grass cover is already above 60 %.



At low temperatures SOS establishes itself more than 18 days faster than perennial rye grass.

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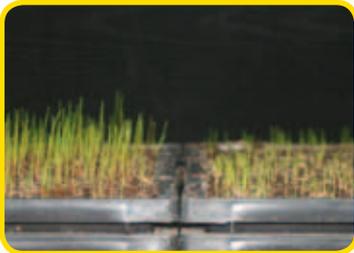
We are being copied all over the world. Cheap knock off products are shamelessly marketed and are "developed" within months after introduction of innovations like SOS. You really can have doubts about the quality of these cheap "me too" products, since we have invested 10 years in SOS....

Investing in Research and Development made our innovations stronger and better than ever! At the end of the day this copying behaviour is the best form of flattery!



Predicting the germination of your SOS!

Laboratory studies at Barenbrug Research showed the possibility to predict the germination of SOS due to calculating the so-called Growing Degree Days (GDD). GDD are calculated by the sum of the average day temperatures.



The varieties in the study were the SOS key variety (*annual ryegrass*), Bargold and Barlennium (*perennial ryegrasses*). The GDD formula was applied to the emergence of the first green leaf;

germination of course begins before this development stage, but the appearance of the first green leaf is what is recognized in practice in the field. At a stable temperature of 11.5 °C day and 7.5 °C night in a sand dominant rootzone, SOS emerged after 9 days, two days earlier than Bargold and 3 days earlier than Barlennium (see table below for the calculation of the GDD of SOS).

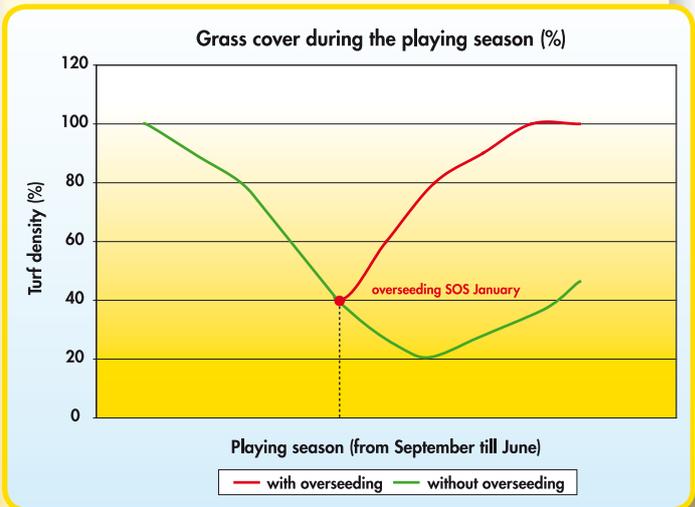
Not only was SOS faster to emergence, there was also a significant difference in the development stage. The emerging leaf of the SOS key variety was twice as long and continued growth at a higher rate in comparison to the perennial ryegrass varieties, providing a faster, greener appearance in a field situation (see picture above).

Table: germination in germination cabinet with different day and night temperatures, 8 hours of light

| Date | Maximum temp °C | Minimum temp °C | Average temp per day | GDD sum | Plant situation |
|--------|-----------------|-----------------|----------------------|---------|--------------------------------------|
| 16-nov | 12.5 | 7.5 | 10 | 10 | Moment of seeding |
| 17-nov | 11.5 | 7.5 | 9.5 | 19.5 | |
| 18-nov | 11.5 | 7.5 | 9.5 | 29 | |
| 19-nov | 11.5 | 7.5 | 9.5 | 38.5 | |
| 20-nov | 11.5 | 7.5 | 9.5 | 48 | |
| 21-nov | 11.5 | 7.5 | 9.5 | 57.5 | |
| 22-nov | 11.5 | 7.5 | 9.5 | 67 | |
| 23-nov | 11.5 | 7.5 | 9.5 | 76.5 | |
| 24-nov | 11.5 | 7.5 | 9.5 | 86 | |
| 25-nov | 11.5 | 7.5 | 9.5 | 95.5 | First plant tops SOS |
| 26-nov | 12 | 7.5 | 9.8 | 105.3 | Real germination with green leaf SOS |
| 27-nov | 9 | 7.5 | 8.3 | 113.6 | First plant tops Bargold |
| 28-nov | 9 | 7.5 | 8.3 | 121.9 | First plant tops Barlennium |

Extending the playing season!

Thanks to SOS, the playing season is extended with a few months. By overseeding your pitch in the very early spring you keep your pitch continuously dense. Pitches can be used more intensively than before. With SOS, the number of playing hours is drastically increased, in some cases even by around 100 additional hours a year!



Annual average grass coverage, using SOS

SOWING CALENDER

| Months | Rapide | Supersport | Speedy Green | Water Saver | RPR | SOS |
|-----------|--------|------------|--------------|-------------|-----|-----|
| January | | | | | | |
| February | | | | | | ✓ |
| March | | | ✓ | | ✓ | ✓ |
| April | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| May | ✓ | ✓ | ✓ | ✓ | ✓ | |
| June | ✓ | ✓ | ✓ | ✓ | ✓ | |
| July | ✓ | ✓ | ✓ | ✓ | ✓ | |
| August | ✓ | ✓ | ✓ | ✓ | ✓ | |
| September | ✓ | ✓ | ✓ | ✓ | ✓ | |
| October | | | ✓ | | ✓ | ✓ |
| November | | | | | | ✓ |
| December | | | | | | |

SOS leading technology

Currently so-called tetraploid varieties are on the market as alternatives to annual ryegrasses for turfgrass purposes. Tetraploids are naturally fast growers, but the ability to germinate at temperatures as low as 6 °C and speed of establishment of the SOS annual key variety is still unrivalled in laboratory testing.

Tetraploids

Tetraploid ryegrasses do not match annual ryegrasses for growth or germination in low soil temperatures, and the currently available varieties have low benefits for turf grass use in terms of improved wear tolerance.

Current tetraploid varieties are marketed as alternatives to annual rye grasses turf type which have recently been used with much success for overseeding and renovation in various times of the year, especially outside the growing season.

Tetraploids are naturally fast growers, but the ability to germinate at temperatures as low as 6 °C and speed of establishment of annual varieties inside the SOS is still unrivalled in laboratory testing.

Comprehensive trials by organisations such as STRI suggest that tetraploids offer little benefits at the moment as a permanent solution due to their poor shoot density and wear tolerance.

SOS - Super Over Seeding

The key component of our SOS mixtures is a variety of fast establishing annual ryegrass (*Lolium multiflorum westerwoldicum*) specifically bred for its turf characteristics. It is a third generation further developed annual rye grass just for use as turf grass. It is a proven performer.

The SOS annual component delivers a quick fix – nothing on the market germinates or grows faster at low temperatures. Perennial ryegrasses like Barminton provide longevity to the mixture and is a proven performer in European conditions.

See the tests!

With the well renowned properties of our SOS there are a number of companies who are keen to try and replicate its success. Our trial took place under laboratory conditions at Barenbrug Research in the Netherlands. This project aimed to answer this simple question: is the germination under low temperature of tetraploid varieties higher than SOS annual ryegrasses?

After 21 days the results were obvious; SOS annual ryegrass significantly out-competes tetraploid ryegrasses in cool temperatures as can be seen in the table below.

| Variety | Germination % after 21 days at low temperature (6 °C) |
|----------------------------|---|
| Tetraploid ryegrass | |
| Tetragreen | 37 % |
| Double | 57 % |
| Annual ryegrass | |
| SOS now | 76 % |
| SOS future | 84 % |

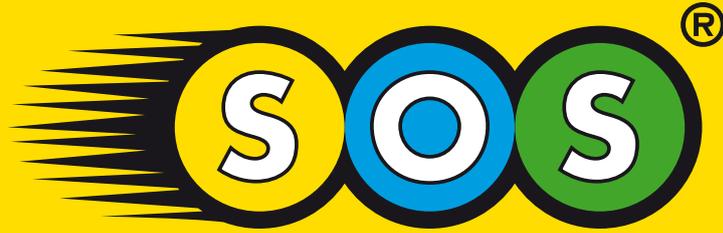
"I seeded SOS in December and counted the Growing Degree Days. Within 14 days the new SOS plants popped up. Great!"

Henry de Weerd
Groundsman Grolsch Veste (FC Twente stadium) Enschede (NL)

"If the temperature is below 10 degrees, we use SOS."

Jan and Kees Jong
Groundsmen Amsterdam Arena





Super Over Seeding

Why choose SOS?

- SOS is the quickest solution for renovating sports pitches
- SOS reduces the recovery time
- SOS germinates and establishes at low soil temperatures
- SOS suppresses poa annua
- SOS results in more playing hours
- SOS has a high rooting capability
- SOS provides a more even and comfortable pitch, so fewer injuries
- SOS enables improved ball behaviour for specific soccer skills

For more information go to www.barenbrug.biz/sos

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 **BARENBRUG**

Great in Grass