



# Lawn guide



# All about green spaces

## Tips and tricks

Your new lawn should be able to grow and flourish. What it needs is healthy, crumbly soil, which can only be achieved through careful preparation. A green manure planting is recommended prior to sowing your new lawn, as this breathes new life into the earth and helps to prepare your soil with its biological healing and organic fertiliser. Both seed mixtures as well as individual species can serve this purpose. In addition to conventional lawn care practices such as fertiliser application, cutting and watering, maintaining a lawn's peak functionality over time requires additional upkeep, especially on surfaces that see intensive use. Otherwise, soil compaction and thatching of the lawn can occur, which can lead to disturbances in the lawn's water and nutrient balance. This hinders healthy lawn growth, reduces its resilience, sward density and regenerative capacity, and leaves space for weeds and diseases to increase their presence.



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# A brand new lawn

## Seven steps to follow when planting a new lawn:

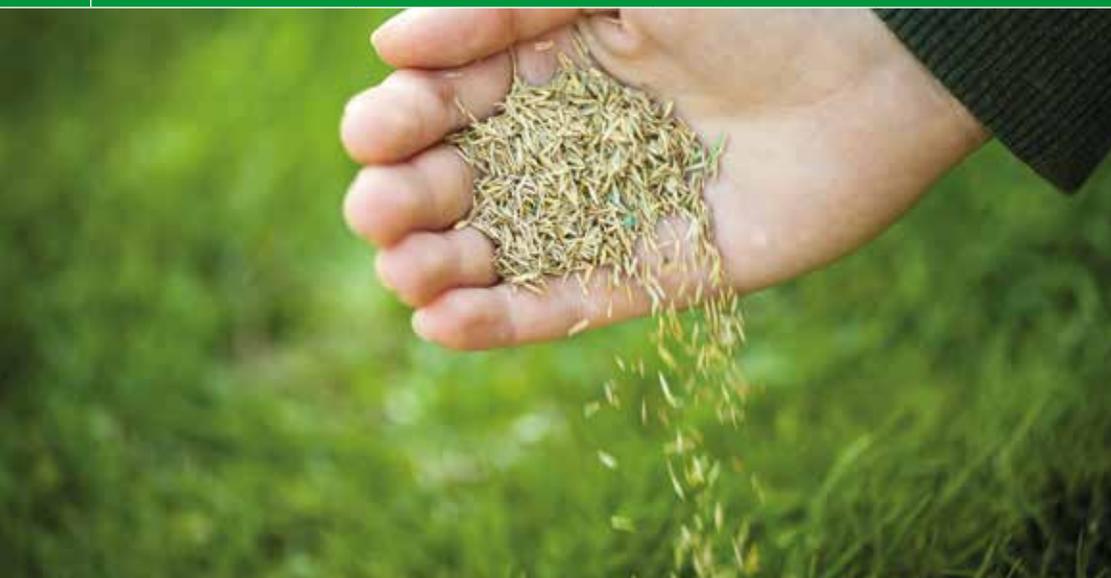
- 1.** The soil should be dug up to a spade's depth, which will bury existing plant growth as green manure, resulting in increased soil humus content and providing organic fertiliser. As an additional soil improvement, 4-5 sacks of garden compost can be added per 100 m<sup>2</sup>. Apply compost evenly and work it in well. This step will also break up the soil into smaller particles.
- 2.** Rake the seedbed to clean it of plant residues, large stones, and so on, while also levelling the ground at the same time.
- 3.** The lawn area should now rest for 14 days to three weeks so that the soil settles well and weeds in the topsoil can germinate and emerge.
- 4.** After the rest period, loosen the surface to a depth of 2-3 cm with a rake in order to remove the weed growth and even out any bumps. The soil can then be rolled or tamped down using a wooden board to keep it from being too loose.
- 5.** If the area is not too wet, sow the lawn mixture evenly and at the recommended sowing rate, either by hand or with a spreader. Grass can be sown from spring to late autumn, though the best months are April, May, June, September and October. Ideally, sowing should take place on a day with no rain or wind and light cloud cover. In order to provide optimal conditions for seeding the lawn, spread a special fertiliser (starter fertiliser) over the new seeds. Gently rake the grass seeds and fertiliser, roll or tamp and, if necessary, water moderately to keep the seeds from drying out.
- 6.** In the following three to four weeks, the newly planted surface must be kept from drying out. If necessary, water using a sprinkler. It is important to use a fine nozzle on the sprinkler to keep the seeds from being washed away and the soil from becoming muddy and hard. The best time for watering is early morning or late evening.
- 7.** Once the grass has grown to around 8-10 cm (hand height), the young lawn should be mowed for the first time. The lawnmower blades should be as sharp as possible, since the grass plants are still very delicate. Furthermore, only the tips (1-2 cm) should be cut in the first mowing. Subsequent cuts can be made at the desired height. Frequent mowing, especially during early growth stages, helps to quickly develop a thick, vigorous sward.



# A year in the life of a lawn

Actions	March	April	May	June	July	Aug	Sep	Oct	Nov	Dec
New planting Reseeding	█					█				
Spring/ Initial fertiliser Summer fertiliser Au- tumn fertiliser	█			█						
Aerate (Dethatching)	█						█			
Watering			█							
Mowing	█									
Weed control	█							█		

This table provides an overview of the most important actions needed to care for a lawn over the course of a year.



## Lawn care:

After sowing has been successfully completed, proper maintenance is essential for preserving the lawn. The right lawn care is the only way to ensure that the lawn can last for several years with a uniform, attractive appearance. Mowing, fertilising, aerating (dethatching) and watering are the most important elements of lawn care. Weeding and treating plant diseases are also part of maintaining the lawn.

## Mowing:

Mowing the lawn is one of the most time-consuming yet vital elements of lawn care. Frequent cutting, along with proper fertiliser application, encourages the development of a thick, carpet-like sward, since mowing stimulates growth in a horizontal direction. In addition, it will make your lawn stronger and more resilient. When choosing the right time to mow your lawn, it is important to ensure that the grass plants lose no more than a third to a maximum of half of their growth. If much more growth is removed in a single cut (radical cut), the plant loses too much of its green matter to regenerate quickly. In a home garden, mowing should be done to a height of 3 to 5 cm. Accordingly, the lawn should be mowed when it reaches a height of 6 to 10 cm. Aside from this, you should try to cut the grass once to twice per week in spring, if possible.

## Fertilisation:

Since lawns constantly have to regrow and remain dense, and since mowing constantly removes nutrients from the lawn, applying the right kind of fertiliser is important for the formation of a dense, green sward.

Your lawn is constantly growing and the nutrients it requires must be supplied through targeted fertilisation. This involves providing the lawn with more than just nitrogen – it needs a balanced ratio of nitrogen, phosphorous, potassium, magnesium and trace elements. These nutrients play a variety of roles in the formation of plant tissues and controlling the plant's metabolism. As such, the most suitable option for lawns is a multi-nutrient fertiliser with a composition that provides the necessary ratio of nutrients.

## Watering:

Make sure that your lawn always has enough moisture. Normally, natural precipitation should be sufficient. Should it become necessary to water the lawn during long periods of drought, keep the following in mind: Newly planted lawns should be watered at a rate of about 1-2 L/m<sup>2</sup> every two days, while older lawns should receive a thorough watering of up to 20 L/m<sup>2</sup> once per week. Early morning or late evening are the best times for watering; bright sunlight is always to be avoided.



# Lawn care



## Preservation and regeneration techniques

### Dethatching:

Your grass needs air and light to grow. Over time, especially when grass clippings are left on the lawn, a lawn thatch made up of living and dead plant matter forms. This should be removed every spring. Dethatching tears the lawn thatch away from the surface of the lawn and removes it, decimating broadleaf weeds and moss. This also improves the air and water balance and the activity of soil biota, which in turn promotes the breakdown of the remaining thatch. Sports fields should have their turf dethatched at least once a year during the main growing season in April. Before dethatching, the grass should be cut short. The dethatching residue should be removed, after which the surface should be sanded and, if necessary, reseeded.

### Aeration:

Aeration helps to reduce the effects of surface compaction and provide air to the rhizosphere. A plug aerator cuts cores from the soil to a depth of 10 cm, which must then be removed. The surface is then sanded and fertilised. For aeration to be effective, at least 200 holes/m<sup>2</sup> should be made.

### Sanding:

Applying washed sand (particle size 0/2 or 0/3), either on its own or in combination with dethatching or aeration, has the following advantages:

- Evens out irregularities on the surface
- Improves soil texture via soil mixing or replacement
- Increases soil permeability
- Raises shear strength

Sand is brought in and applied; application rates can be as high as 5 L/m<sup>2</sup>.



### Reseeding:

Reseeding becomes necessary when gaps in a lawn surface become too large and can no longer be covered through regeneration. It can also be used to refresh the existing grass with more valuable species and varieties. Ideally, reseeded should be done after carrying out measures such as dethatching, aeration and sanding. However, methods do exist to sow seeds in existing lawn surfaces with no preliminary work needed (e.g. perforation). When reseeded, it is recommended to use an appropriate seed mixture. Coated Seed products have shown very good results in reseeded, with significantly higher rates of emergence.

### Topdressing:

Topdressing involves spreading a mixture of sand, peat, soil and fertiliser to even out surfaces and improve the nutrient supply. The practice is especially popular on golf courses (greens and pre-greens). The sand must be lime-free and match the particle size of the existing base layer. The best time for topdressing is in autumn, up to the end of September. Prior to topdressing, the ground should be aerated as appropriate.

If none of these measures are successful, larger-scale interventions will be needed to restore the lawn. These can include:

- Slicing
- Slit drainage
- Deep soil loosening

Where, when and which measures are sensible can only be determined in the field based on an analysis of the site and soil. This requires specialist advice.

### Slicing:

Slicing involves using a machine that digs around 100 slits/m<sup>2</sup>, at a distance of about 8 cm, measuring up to 10 cm deep, 10–15 cm long, and 1 cm wide. The cracks that emerge around the slits help in extensive loosening and aerating the soil surface. This process, however, also leads to uneven patches that can be eliminated using sanding and added soil.

### Slit drainage:

Slit drainage uses special equipment to mill slits into the soil, which reach down to the drainage system or more permeable layers. At the same time, the slits are filled with a permeable material (sand, lava rocks, expanded clay). The excavated material must be removed. The width, depth and spacing of the slits can vary. The goal is to improve the soil's aeration and allow water to flow away more quickly.

### Deep soil loosening:

Deep soil loosening makes it possible to eliminate soil compaction and impermeable layers at depths of 6–15 cm or even deeper (up to 25 cm!). Special equipment is used to bore slits or holes and loosen the surrounding area at the same time. The resulting openings are then filled with permeable building material.



# All about green spaces

## Moss on the lawn / Lawn reseeding

### Moss control

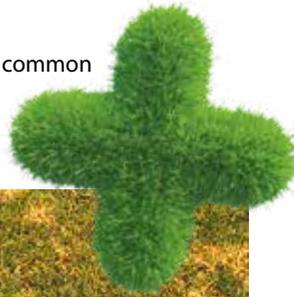
There are several reasons why moss appears in lawns. Contrary to popular belief, low soil pH is not the only cause. Despite good care, every lawn eventually gets older and patchier. And so the question is, what is to be done? Reseeding should also be carried out after dethatching, alongside spring fertiliser application. This rejuvenates the lawn every spring with new seeds, giving it a fresh, strong green appearance once more. Follow these steps to repair and rejuvenate the lawn:

1. Cut the lawn as low as possible, right down to the stubble. Use a grass catcher bag so that the clippings are removed immediately. If there are any clippings left on the lawn, rake them away to make sure the area is left "clean".
2. Now, quickly dethatch the lawn lengthwise and crosswise to remove thatch and plant debris. Set the dethatcher so that the ground is scored to around 3 mm. Then clean the area thoroughly once more so that the lawn seed has enough light, air and space to thrive.
3. Apply repair products evenly, following the instructions for use, and use a roller if necessary. The seed should be watered to keep it wet, which accelerates germination and prevents the seedlings from drying out.
4. The first cut should be made when the grass reaches a height of 8-10 cm.



# Lawn diseases

On the following pages, you'll find some of the most important and common lawn diseases with a description of their pathology, symptoms, causes, and the measures needed to combat them.



Snow mould (fusarium patch)



Red thread disease



Take-all



Dollar spot



Helminthosporium leaf spot



Fairy ring (Type 1)



Fairy ring (Type 2)



Fairy ring (Type 3)

## SNOW MOULD (FUSARIUM PATCH)

*Microdochium nivale*  
(syn.: *Fusarium nivale*)

**Importance:** The most widespread lawn disease, it causes significant damage.

**Season:** Any season under unfavourable conditions, generally in spring and autumn.

**Symptoms:** Initial appearance of small, dark-brown or orange circular points, which quickly increase in both size and number. Patches of dead grass appear. Affected grass can become wet and slimy. The patches tend to have a dark-brown ring and a lighter centre. The fungal mycelia (white to pink) is sometimes visible around the patches; the dead leaves often stick together.

**Where?** On very fine and thick lawns, sometimes ones that receive very intensive maintenance. All grass species are affected, though it may also be variety-dependent in some cases.

**Causes:** The disease is exacerbated by wet weather and wet surfaces; extremely high nitrogen levels, especially in autumn; excessive topdressing; and alkaline conditions.

**Preventative measures:** Measures to reduce long-lasting surface moisture, e.g. drainage; increasing air circulation by not placing trees, hedges, fences and walls too close on the lawn; aeration and sanding; eliminating water-retaining lawn thatch; limiting irrigation; not applying nitrogen or lime in periods that favour disease emergence; always removing clippings.

## RED THREAD DISEASE

*Laetisaria fuciformis*  
(syn.: *Corticium fuciformis*)

**Importance:** Very wide distribution; in severe cases the grass can die off entirely. Affected lawns generally recover.

**Season:** In summer and autumn, up to winter under mild conditions.

**Symptoms:** Spot-like damage on grass, often with a pink or reddish appearance (caused by needle-like fungal hyphae protruding from diseased leaves, which can grow up to 25 mm in length and are often branched). Spots are not clearly delimited and can vary in diameter from 20–50 mm on the low end up to 350 mm. In mild cases, necrosis only occurs in leaf tips.

**Where?** All turf grasses can be affected. Most common in *Lolium perenne* and *Festuca rubra*, especially in slow-growing varieties that require significant care.

**Causes:** Insufficient supply of nutrients, especially nitrogen.

**Preventative measures:** Nitrogen fertiliser should also be applied in the summer months in periods with adequate moisture in order to promote growth. Overapplication of nitrogen should be carefully avoided, however, as it can lead to outbreaks of snow mould.

## TAKE-ALL

*Ophiobolus graminis*

**Importance:** Not a widespread disease, though under unfavourable conditions it can cause significant damage.

**Season:** Summer or autumn, though affected areas can persist through the entire year.

**Symptoms:** Rings of yellow or orange-coloured grass emerge with a diameter of 0.1–1.0 m, followed by a ring of about 0.1 m of dead grass. The change in colour is a result of the fungus attacking the roots. Inside the ring, the only species that remain are those not susceptible to the disease and weeds.

**Where?** Take-all can emerge in any type of turf grass, but is especially prevalent in Agrostis-dominated stands.

**Causes:** Standing water and alkaline soil pH strengthen the infection. The disease emerges when wet, acidic soils are treated with lime, for example on fairways. It can also emerge in new plantings, when the soil was previously disinfected or when foreign material such as sand or lava rocks are applied to the plant layer (in these cases, the lack of antagonistic fungi is probably the cause).

**Preventative measures:** Once the disease has become established, it is difficult to bring it under control. Preventing it through proper care is much more advantageous. Standing water can be avoided through a well-functioning drainage system. Under an ideal lawn care scenario, no lime needs to be applied. However, if lime is applied in the autumn, it should be followed by a spring application of acidifying fertiliser, such as ammonium sulphate nitrate. The soil reaction can also be improved through the use of alkaline sand for topdressing and irrigation water, which often contains a naturally high amount of lime. These factors should be considered when planning lawn care measures.

## RUST

*Puccinia* ssp.

**Importance:** Minor infections are common, severe ones are very rare.

**Season:** Summer and autumn.

**Symptoms:** Orange or brown pustules are formed on the leaf surface, which can be irregularly distributed or arranged in lines.

**Where?** Almost all grass species can be affected. Among turf grasses, infections are most likely to occur in *Lolium perenne* and *Poa pratensis*.

**Causes:** Warm and damp weather; most frequently occurs on long, unmowed lawns. Regular cutting can prevent infections.

**Preventative measures:** The risk can be minimised by selecting resistant varieties.

## DOLLAR SPOT

*Sclerotinia homoeocarpa*

**Importance:** Widespread in certain regions, especially on intensively maintained lawn types. Otherwise seldom observed.

**Season:** Summer and autumn.

**Symptoms:** Forms small, well-defined circular patches around 50 mm in diameter. Inside the patches, the grass is mostly dead, with a straw colour and dry. In severe infections, individual patches can combine into larger damaged areas. The disease can also co-occur with red thread disease.

**Where?** All turf grasses can be affected. Most common in *Lolium perenne* and *Festuca rubra*, especially in slow-growing varieties that require significant care.

**Causes:** The presence of susceptible grass species and varieties, and a lack of nutrients, particularly nitrogen, create favourable conditions for the disease.

**Preventative measures:** Using resistant varieties of *Festuca rubra trichophylla* and balanced nutrient additions with nitrogen.

## HELMINTHOSPORIUM LEAF SPOT

*Helminthosporium vagans*

**Importance:** Very widespread, but rarely causes notable damage.

**Season:** Can occur at any time of the year.

**Symptoms:** Spots on the leaf with varying colours, though they can be brown, black, olive-green or purple.

**Where?** Affects almost all grass species and lawn types.

**Causes:** The spread of leaf spots spread increases under warm and humid conditions. Stressed plants or old tissue is most vulnerable.

**Preventative measures:** Remove cuttings and old, dead plant matter; avoid creating unnecessary moisture (through overwatering); increase air circulation by removing obstacles (hedges, walls, fences, trees).

## TYPHULA BLIGHT

*Typhula incarnata*

**Importance:** Depending on weather patterns, severe damage can occur in some years.

**Season:** Infection often occurs in autumn or winter in damp and cool weather, though damage generally becomes apparent in early spring.

**Symptoms:** Circular spots of dead grass with a diameter of up to 40 cm, pale pink to white mycelia visible on leaves. The fungus causes root decay, leading to the death of the grass plant.

**Where?** In all turf grasses, especially in *Lolium perenne* (certain varieties), less commonly in *Festuca rubra*. More common on sandy soils.

**Causes:** Surface compaction with excessive moisture, grass allowed to grow too high.

**Preventative measures:** Limit nitrogen fertilisation in autumn; maintain a mowing height of 3–3.5 cm prior to winter; aerate, sand and dethatch the upper surface.

## BROWN PATCH

*Rhizoctonia solani*

**Importance:** Infections are rare, but severe when they occur.

**Season:** During the entire growing season.

**Symptoms:** The fungus most commonly affects young grass seedlings following a new planting, thus causing seedlings to die and resulting in uneven emergence.

**Where?** All turf grasses are affected, especially *Agrostis* and *Festuca* species.

**Causes:** Seeds are most commonly infected prior to planting. Imbalanced nutrient additions, however, can favour fungal growth, especially when there is an excess of nitrogen and phosphorous with a lack of calcium and magnesium.

**Preventative measures:** Balanced nutrient provision, seed coating (e.g. use of Coated Seed).

## FAIRY RING (TYPE 1)

*Marasmius oreades*

**Importance:** Relatively common on fairways and similar areas, where they can cause significant damage. Less frequently observed on golf greens or tees.

**Season:** Rings can last for several years, but the symptoms are most clearly visible during dry summer weather conditions.

**Symptoms:** Type 1 fairy rings kill or severely damage the grass. Two rings are visible, in the shape of an arc or circle, and consisting of grass with vigorous growth and dark green colouration. Between these rings is a ring of bare ground with dead grass. The fungi create extremely hydrophobic soil conditions, which lead to the turf drying up. Underneath the ring, there is a thick, white net of mycelia that gives off a typical mouldy smell. Between summer and autumn, small yellow-brown mushrooms can be seen in the outer ring.

**Where?** All turf grasses.

**Causes:** The conditions are not yet completely understood, but surface waterlogging may play a role. Fairy rings are found in all soil types, but are most common on light, sandy soils.

**Preventative measures:** It is hard to fully eliminate fairy rings; often the most that can be done is to prevent further spreading. Rings rarely grow through obstacles that surround the soil, such as lawn edges or borders. Cutting across the infected zones is also frequently effective, as it allows antagonistic fungi to enter the ring area and prevent further spreading. Removal of the affected soil is also highly effective, though very costly. Prior to the use of fungicides, the hydrophobic zone must first be softened through aeration and the administration of a wetting agent.

### FAIRY RING (TYPE 2)

Scleroderma ssp.

**Importance:** Commonly occurs on very fine lawns (ornamental lawns, greens); however, serious damage only rarely occurs.

**Season:** Symptoms are most commonly visible in summer and autumn, but the fungi are present all year.

**Symptoms:** Rings, bands or arcs are visible, around which grass grows more quickly and has a darker green colour. Significant damage does not occur. As a side effect, the fruiting bodies of the fungi are occasionally visible (standing or gill fungi).

**Where?** Nearly all turf grasses can be affected. Type 2 fairy rings are most commonly observed on golf greens.

**Causes:** Unknown; the symptoms are clearest under conditions of low nitrogen.

**Preventative measures:** When grass is not damaged, the symptoms are often tolerated. However, it can become unsightly. Fairy rings can be hidden by administering extra nitrogen during the growing season or by using ferrous sulphate on the surrounding area to give it a darker green appearance.

### FAIRY RING (TYPE 3)

Scleroderma ssp.

**Importance:** Very widespread, generally no damage to the grass.

**Season:** The fungus is present year-round, but the ring is only visible for a short period, generally in autumn.

**Symptoms:** Fungal activity is apparent due to the formation of a ring with grass with vigorous growth and dark green colouration, as well as the irregular emergence of fruiting bodies.

**Where?** Observed on most types of lawns, though less frequently on hard-wearing lawns.

**Causes:** Unknown.

**Preventative measures:** Not necessary, since no real damage is caused. In order to prevent additional spread, the fruiting bodies can be removed before they release their spores.



# The most important grasses

## Perennial ryegrass / *Lolium perenne*

Perennial ryegrass is one of the most important grass species for establishing lawns. It prefers moist, nutrient-rich soils and is characterised by quick germination and very fast early development, forming thick swards. It is very durable and grows back quickly after being worn down. Perennial ryegrass is an excellent candidate for heavily worn surfaces such as football pitches, playgrounds and sunbathing lawns. In addition to site characteristics, its growth is dependent on having a very good supply of fertiliser and water.

## Smooth-stalked meadow grass / *Poa pratensis*

Smooth-stalked meadow grass is the second representative of the hard-wearing lawn grasses. It is an important component of sports fields and playground lawns and prefers moist soils. Since smooth-stalked meadow grass forms underground runners, also called rhizomes, swards with a high percentage of the species exhibit high shear strength. Smooth-stalked meadow grass has slower early growth and germination than perennial ryegrass, meaning that its sward only becomes stronger in the year after sowing.

## Chewing's fescue / *Festuca rubra commutata*

Chewing's fescue forms low-lying, thick clumps with very fine leaves, which form thick, fine swards. It is undemanding in terms of its nutrient supply and can withstand lengthy dry periods without suffering damage. Chewing's fescue is mainly used for ornamental lawns, recreational lawns, golf greens and even landscaping.

## Creeping red fescue / *Festuca rubra rubra*

Creeping red fescue spreads by means of underground stolons (rhizomes), enabling it to close gaps. It thrives in high, cool sites and on lighter soils. Its leaves have a darker colour than those of Chewing's fescue; indeed, both species are often used in the same mixtures.

## Slender creeping red fescue / *Festuca rubra trichophylla*

Slender creeping red fescue (hairy red fescue) is an intermediate form between Chewing's and creeping red fescue and forms short underground stolons (rhizomes) that enable it to close gaps. The leaves of slender creeping red fescue are dark green and very fine. It is the hardiest and most enduring of the red fescues and is also relatively tolerant of salt. Slender creeping red fescue is primarily used in ornamental lawns and golf courses.



Perennial ryegrass



Creeping bentgrass



Hard fescue



Common bent



Red fescue



Smooth-stalked meadow grass



Tall fescue

## Hard fescue / *Festuca trachyphylla*

Hard fescue belongs to the group of undemanding tuft-forming grasses and has grey to blue-green, bristly leaves that form a relatively loose sward. A persistent species, it prefers light, dry and nutrient-poor soils. Hard fescue tolerates some partial shade and requires an intermediate intensity of care with relatively infrequent cutting. It is the most important species for extensive greening applications such as landscape lawns, roadside greenery, embankments etc.

## Common bent / *Agrostis capillaris*

Common bent forms thick to loose tufts with short aboveground and belowground runners. It is a persistent species with fine leaves and is at home in nutrient-poor, acidic soils and pastures, but also in high-altitude sites and partially shaded areas. Common bent forms hard-wearing, homogeneous swards that can tolerate low cutting very well as long as they receive sufficient water and nutrients. Common bent is mainly used on golf courses and recreational lawns.

## Creeping bentgrass / *Agrostis stolonifera*

Creeping bentgrass spreads by means of aboveground creeping shoots of varying lengths that root at the nodes and form daughter plants. This allows it to very effectively fill in patchy areas; under optimal conditions it is a very aggressive species. It forms dense, homogeneous swards that tolerate deep cutting very well. Creeping bentgrass is primarily used in golf courses and very fine ornamental lawns.

## Tall fescue / *Festuca arundinacea*

Tall fescue forms strong, persistent clumps, some with underground shoots. It has a relatively broad leaf and is not considered to be an ornamental grass. Tall fescue is well-suited for use on very dry sites, though it can also adapt quite well to wet and shaded areas. Tall fescue is very robust, which makes it well-suited to hard-wearing areas (e.g. racetracks). In such areas, however, it should not be cut too short.



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