6. Are you planting the hedge?
Planting a large hedge is labour intensive. Large root-balled trees can weigh up to and above 100kg each. Do you have the right equipment to unload the plants, dig a trench, move the plants around and lift them in?

Plants can easily be damaged by mishandling. This could require at least two pieces of specialist equipment such as a Manitou forklift and a large excavator. Some hedge suppliers will offer a planting service which includes all of the appropriate machinery and knowledge involved in giving the hedge the best start possible.

Once the decisions have all been made, it will be time to start looking for the right plants. Where to start looking? Local nurseries are probably not your best option. It could take days or weeks to trawl through them to find anything remotely like what you’re looking for, assuming they can even offer the right quantity, size and quality. That could become a never-ending task.

Turning to the internet would seem like the obvious thing to do, but Google ‘Mature hedging’ and you are faced with the opposite problem. You will find dozens and dozens of websites all apparently offering the product you want, but the prices vary enormously. Also, how do you know what to expect in terms of quality and how do you go about sending back a lorry load of plants if they turn out to be the wrong size or type?

Current Distance Selling Regulations (2000) provide the buyer with a seven day cooling off period, which puts the onus on the supplier to get it right first time. It would seem that this old fashioned industry is moving forward to great effect.

The biggest bonus of internet competition is that quality is improving in order for suppliers to win more business. Discerning customers will always be after better quality plants and service. The competition is only ever a couple of clicks away.

There is no reason to accept anything other than top quality plants now and they are available at competitive prices. A mature box or yew hedge would have seemed like a major investment some years ago, but they have become much more affordable and commonplace in recent years thanks to internet competition.

The internet is not the only way that this business is moving forward. The product itself is changing fast, in order to respond to the growing demand for ‘instant results.’ While one has always been and cultivating plants in rows hundreds of metres long. Ongoing maintenance is carried out in the same fashion, by tractors crawling alongside the crop trimming and undercutting the plants automatically.

The person walking behind is there only to monitor the progress of the machine as it moves along. The results are spectacular too – hedges can now be supplied that are arrow straight, two metres tall and are literally the finished article.

Many growers are now offering very high quality, instant hedging plants or ‘elements’ which would fool most people that the hedge has been growing in that spot for a number of years.

Growers are now innovating in order to satisfy demand for instant hedges, and they are using sophisticated technology to do this. Some even go as far as to plant their crops using unmanned robotic tractors, guided by GPS

Contact
Steve Moul and Mark Jones
Hedgeworx Ltd
www.hedgeworx.co.uk
(01491) 826925
Moss is believed to be one of the earliest plant forms to have evolved on dry land. Approximately 20,000 species of moss have been identified and they exist on every continent. Mosses are classified in the phylum Bryophytes; a group that contains the liverworts (Marchantiophyta), the hornworts (Anthocerotophyta) and the mosses (Bryophyta). Evolutionists believe that the first life on earth began in the oceans and developed from primitive single-celled organisms. Around 1.5 billion years ago the first plants to evolve in these oceans were the algae — organisms that developed the chloroplast; giving them the ability to trap energy from sunlight in a process we call photosynthesis. All plants that exist today have evolved from types of algae that began to emerge from the seas some 450 million years ago!

In botanical terminology we refer to ‘lower’ and ‘higher’ plant forms, a reference to the degree of evolution and sophistication rather than the physical height. Bryophytes are considered to be lower plants and differ from higher plants in that they have no vascular transport system to distribute water and nutrients throughout the plant. They do not produce flowers or seeds but reproduce through spores. Bryophytes have no defined root structure for obtaining moisture and nutrients.

The life cycle of moss is complex, involving a sexual stage where the male gamete (sperm) fertilises the female gamete (eggs), to produce an embryo that gives rise to a spore-bearing structure known as a sporangium. During the sexual stage the motile male ‘sperm’ is transported on water droplets (rainfall or dew drops) to the female ‘egg’, therefore moss cannot survive in a totally arid environment. Moss spores are simple single-celled structures that serve to colonise new ground. They germinate in the presence of moisture to form new male or female plants. Asexual reproduction of mosses occurs by the development of new shoots from the previous year’s growth or by fragmentation of the plant. Mosses acquire nutrients through a variety of means; some get nourishment from direct contact with water droplets, others can extract nutrients from the soil or materials on which they are growing.

Dealing with moss in turf

Well managed actively growing turf will rarely suffer from the invasion of moss. Mosses are opportunists; they will only thrive where grass lacks vigour, so treatment with chemicals alone will not provide a long-term solution. We need to look for the cause of weak grass growth and take remedial action to provide sustainable moss control.

Just as moisture is an essential requirement for the growth of moss, it will also have an impact on turf health. Excessive moisture reduces the air supply to the roots of the grass which hampers the ability to produce the sugars necessary to build a strong root system. Dealing with moss in turf will require a combination of good cultural management and periodic moss control measures.

Graham Paul gives you the opportunity of adding to your BASIS points while offering some very sound advice on clearing moss.
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If moss is widespread, it is best to tackle it with a mechanical device that can either cut or uproot the moss. A sod cutter or knife can be used to remove areas of moss. This problem is best dealt with early in the season when the grass is actively growing. If the moss has been in place for a long time the problem may be very difficult to eradicate. A combination of mechanical control and application of moss killer is the best way to control established moss problems.
We cannot influence the seasonal patterns of solar radiation but we can in some cases address the problems caused by shading. Pruning or the complete removal/relocation of offending trees and shrubs may provide a dramatic improvement in turf health.

Treatting moss on turf with chemicals

Fewer chemicals are available to deal with moss in comparison to what we can do today, as legislation from the EEC has caused manufacturers to withdraw some of the more useful products. Prior to the early 1980’s mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers, which contained calomel (mercury-based moss killers) were used for moss control. These were withdrawn, along with the mercury-based fungicides, because of their inherent broad spectrum toxicity and long soil persistence. They were quickly replaced with products containing dichlorophen e.g. Super Mosatox. Dichlorophen had recommendations for use on both turf and hard surfaces and was known to have an affect on the spores as well as on the moss itself. However, dichlorophen was withdrawn after it failed to make it into Annex 1 – Directive 91/414/EEC. This directive was issued under the Plant Protection Products Regulations 1995.

Today, only two alternatives are available for controlling moss in turf – these are:-

• Jewel: a selective herbicide spray from Scotts containing carbethoxyn-ethyl and mecoprop-P that will control moss and a range of broad-leaved weeds. Products containing ferrous sulphate will leave rust stains on bricks, paving and other artificial surfaces so these should be avoided. However, there are a number of specialist hard surface cleaners that have proved effective in dealing with the problem. Some surface cleaners require a very high water volume and are not easy to apply on large areas with conventional spray equipment. A promising new product ‘Safor’ works by denaturing chloroplasts with biocides and can provide a rapid, long-lasting solution for cleaning deposits containing algae, moss and lichen. The required water volume is well within the capability of knapsack and machine mounted sprayers.

Note that the use of surface cleaners will require an application of the material followed by a secondary cleaning operation after a few days to remove the loosened deposits. Also, when treating hard surfaces (especially artificial turf) it is important to test a small area for material safety before treating the whole area.

Moss will survive on a wide variety of hard surfaces such as roads, paths, playgrounds, athletic tracks, hard tennis courts, other solid sports areas, artificial turf, building surrounds, walls and roofs. It just needs moisture, some nutrients from dust and atmospheric fall-out and a small crack or crevice for anchorage. Cultural control of moss on hard surfaces is not as effective as it can be on turf. However, drying out regularly affected surfaces may be possible by improving drainage to prevent flooding and by increasing the natural airflow that might be restricted by overgrown trees and shrubs. Brushing can be effective on certain surfaces. There are some very good approved pesticides for hard surface moss control. Products containing ferrous sulphate will

Self assessment

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Circle the correct answer(s)

1) Mosses and all other plants we know today evolved from algae. At what approximate time in earth’s evolution did these algae first appear in the oceans?

a) 450 million years ago
b) 300 million years ago
c) 1.5 billion years ago
d) 5 billion years ago

2) Which of the following characteristics distinguishes the Bryophytes from higher plants? (More than one may apply)

a) They produce green flowers only
b) They do not have leaves
c) They reproduce through spores
d) They do not have a vascular system to transport water and nutrients.

3) Which of the following can contribute to lack of vigour in grass? (More than one may apply)

a) Poorly drained turf
b) Aeration with solid tines
c) Shading by trees
d) Soil with pH below 4.0

4) In which year were the Plant Protection Products Regulations issued?

a) 1986
b) 1994
c) 1995
d) 1991

5) What is the chemical constituent of the active ingredient calcium (now withdrawn from use)?

a) Calcium chloride
b) Phenyl mercury acetate
c) Aluminium chloride
d) Mercurochrome chloride

6) How many pesticides are currently approved for moss control on hard surfaces?

a) 5
b) 2
c) 4
d) None
roots putting the grass under stress. We often see the worst moss infestations in the winter and early spring when the water table is high and surface moisture is in abundance. Waterlogged turf can be caused by inefficient or inadequate drainage and by water retention in the thatch layer. Examination of the drainage system and the soil profile should reveal the cause of poor water management in these situations so that remedial action may be implemented.

Too little moisture has obvious effects on plant vigour since drought conditions will thin out the sward making room for moss to take hold where the moisture levels are reinstated. It is therefore important to maintain adequate moisture in the sward by irrigation, where this is possible, during prolonged dry periods. The application of a suitable wetting agent in dry weather can help to move the irrigation water away from the surface, getting it quickly down to the roots where it is most needed.

Light is essential for healthy plant growth and where it is restricted by the season or by buildings, trees, shrubs and other objects, grass growth will be affected in the immediate vicinity. We cannot influence the seasonal patterns of light and shade but we can act in some cases to address the problems caused by shading. Pruning or the complete removal/relocation of offending trees and shrubs may provide a dramatic improvement in turf health. While it may not be possible to achieve similar improvements near permanent structures such as buildings, it may be possible to increase light levels by making surfaces reflective with special coatings, cladding or reflecting paints.

Providing the correct balance of nutrients is important in encouraging strong growth, especially on intensively managed sandy soils. In most cases this requires a seasonal programme of feeding based on soil analysis that can identify deficiencies and supplement these when the conditions dictate. In striving for optimum grass growth one must also consider the need to avoid triggering other problems such as turf disease that can occur when the appropriate timing of fertiliser applications is not observed.

Soil analysis will provide essential data on the acidity, which can also have a detrimental effect on turf growth. Moss is quite often found in the thinned swards growing on acid soil. A pH value around 5.5 will provide the optimum pH for growing fine turf. Scorching or mowing the grass too low can be a further cause of summer stress. Clearly the height of cut depends on the type of sward. Putting surfaces and bowling greens use grass cultivars that can adapt to a low cutting height and are more intensively managed to counter the effects of close mowing but even these areas have limits beyond which scorching will thin the turf. Therefore, where moss is a problem in turf, increasing the mowing height may be worthwhile.

The final consideration in the search for the cause of poor grass growth is compaction, resulting from heavy traffic (machinery and foot) – particularly during the wet seasons. Compaction restricts air movement through the soil and the water and physically slows root penetration. The resultant loss of turf vigour will often be an opening for moss invasion. Dealing with compaction may require an increase in mechanical aeration, traffic management to steer users away from bottlenecks as a problem areas or soil amelioration with aggregates designed to permit air and water movement such as “Aqua” based on diatomaceous earths.

We cannot influence the seasonal patterns of solar radiation but we can in some cases address the problems caused by shading. Pruning or the complete removal/relocation of offending trees and shrubs may provide a dramatic improvement in turf health.

**Treating moss on turf with chemicals**

Fewer chemicals are available to deal with moss growth but we can act today, as legislation from the EEC has caused manufacturers to withdraw some of the more useful products. Prior to the early 1980’s mercury-based moss killers, which contained calomel (mercurous chloride) were used for moss control. These were withdrawn, along with the mercury-based fungicides, because of their inherent broad spectrum toxicity and long soil persistence. They were quickly replaced with products containing dichlorphen e.g. ‘Super Mosstop’. dichlorphen had recommendations for use on both turf and hard surfaces and was known to have an affect on the spores as well as on the moss itself. However, dichlorphen was withdrawn after it failed to make it into June 1st Directive 91/414/EEC. This directive was issued under the Plant Protection Products Regulations 1995.

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- **Products containing ferrous sulphate** – available in a multitude of formulations; a ready-to-use liquid sold under the brand name ‘Fermox’, fertilisers containing high levels of ferrous sulphate e.g. Scotts ‘Greenmaster Measokiller’, and various brands of lawn sand. The use of wetting agents and adjuvants to counteract the hydrophobic conditions associated with moss will improve the effectiveness of liquid moss control products.

**Controlling moss on hard surfaces**

Moss will survive on a wide variety of hard surfaces such as roads, paths, playgrounds, athletic tracks, hard tennis courts, other solid sports areas, artificial turf, building surrounds, walls and roofs. It just needs moisture, some nutrients from dust and atmospheric fall-out and a small crack or crevice for anchorage.

Cultural control of moss on hard surfaces is not as effective as it can be on turf. However, drying out regularly affected surfaces may be possible by improving drainage to prevent flooding and by increasing the natural airflow that might be restricted by overgrown trees and shrubs. Brushing can be effective on certain surfaces. There are no any approved pesticides for hard surface moss control. Products containing ferrous sulphate will leave rust stains on bricks, paving and other artificial surfaces so these should be avoided. However, there are a number of specialist hard surface cleaners that have proved effective in dealing with the problem.

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**SELF ASSESSMENT**

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www.sherriff-amenity.com/technical.asp?refaid=21

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A for anthracnose

Dr Terry Mabbett continues his examination of the country’s most common turf diseases by looking at anthracnose.

‘A’ was for anthracnose in appearing in late autumn as a distinctive dark-coloured basal (crown) rot of Poa annua (annual meadow grass) as long shadows and brown leaves fell across the greens.

Dry and compacted summer-stressed swards refreshed by rain and flushed with nitrogen fertilizer resumed growth in earnest during October but so did the anthracnose fungus having lain ‘dormant’ in the thatch during the dry summer months. Anthracnose was a definitive disease of disease of autumn through to spring with root causes in stressed grass plants in dry and compacted summer swards but has since become a real conundrum. A form of anthracnose distinguished by different symptoms, and called foliar blight, now pervades appears in summer to affect a much wider range of turf grasses.

The fungus responsible (Colletotrichum graminicola) has suffered a recent illogical scientific name change. More than two dozen different species cause anthracnose (means ‘like coal’) on everything from mangoes to bananas but just four are associated with anthracnose in the family Graminaceae (grasses and cereals).

These species are distinguished by small but distinct structural differences and discrete physiological differences which determine exact host range. C. graminicola was associated with anthracnose across a broad range of grasses and cereals but more recent findings indicate C. graminicola exclusively attacks cereals and mycologists now say the species infecting turf grass is Colletotrichum cereale. In layman’s language and understanding C. graminicola and C. cereale are for all intents and purposes interchangeable.

Anthracnose is no longer confined to shortened days, cool nights and morning mists of late autumn but already up and running in early August during the warm and ‘Dog Days’ of August and onwards. Based on current research it remains closely associated with late autumn and yet still essentially classified as Poa annua (annual meadow grass) but has been found on Agrostis. The foliar blight form of anthracnose is much less discerning and affects most cool season short grass species.

Anthracnose has firmly established as the second most important disease of UK turf after Fusarium patch (Microdochium nivale). Contemporary anthracnose infection is heavier and active over a longer part of the season on a much wider range of turf grasses. Its recent rise up the chart...
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Anthracnose is no longer exclusive to shortened days, cool nights and morning mists of late autumn but already up and running as ‘Dog Days’ of August and, often earlier. Based on research conducted in the heat months of late summer and early autumn, it is estimated that 80-90% of Poa annua (annual meadow grass) lawns have been badly affected. The leaf blight form of anthracnose is much less discerning and affects most cool season turf grass species.

Anthracnose is firmly established as the second most important disease of UK turf after Fusarium patch (Microdochium nivale). Contemporary anthracnose infection is heavier and active over a longer part of the season on a much wider range of turf grasses. Its recent rise up the UK turf disease list makes it necessary for turf managers to be aware of anthracnose and its control methods and strategies.
turf disease rankings has resulted in a re-assessment of measures required to avoid, manage and control anthracnose including use of fungicides.

Gone are the days when anthracnose was purely a problem for autumn greens with a high percentage of Poa and only acted upon when disease symptoms appeared in October through present year-round in the thatch. Year-round vigour and action to avoid and alleviate turf conditions present year-round in the thatch.

Greens are now at risk of anthracnose for most of the year, not just in late autumn and through to spring.

Microdochium nivale, is ticking over in the thatch. Thatch in itself adds to anthracnose. And especially if the ground is compacted, high compaction and physiological stress, the very conditions that make turf grass generally more susceptible to anthracnose. Soft growth quickly weakens the turf and abrasions and damaged turf grass and damaged turf grass and year-round presence of the fungus on the thatch.

Close up on basal rot anthracnose of Poa annua (Photograph courtesy Headland Amenity)
Basal rot and foliar blight may aggravate anthracnose and management practices which avoid and alleviate turf conditions Year-round vigilance and action to present year-round in the thatch. Anthracnose damage on a green high in Poa (Poa pratensis var annua) (Photo courtesy Headland Amenity)

Once liberated from the acervulus conidia are spread across the turf by rain splashes, air currents, machinery and footware to infect previously healthy areas of turf. Dead tillers and plants killed by basal rot and leaves with foliar blight die back to become thatch, where C. cereale survives as a parasitic mode on the dead and damaged turf grass and its accompanying high risk of anthracnose infection. Turf carrying a high proportion of Poa annua with its high-thatch and high humidity baggage offers a broader and bigger base for anthracnose residence and persistence and a more attractive substrate for infection and spread. Poa annua is present to some degree in many fine turf swards forming species that exploits and matted. Twin key factors underpinning anthracnose are the pathogen’s propensity to invade stressed and damaged turf grass and year-round presence of the fungus on the thatch. Even when turf is green and clean Colletotrichum cereale, like Microdochium nivalis, is ticking over in a saprophytic or weakly parasitic mode on the dead and drying grass material comprising the thatch. Thatch in itself adds easy points of access and entry for anthracnose infection so help reduce anthracnose. Baggage offers a broader and bigger base for anthracnose residence and persistence and a more attractive substrate for infection and spread. Poa annua is present to some degree in many fine turf swards forming species that exploits and matted. Twin key factors underpinning anthracnose are the pathogen’s propensity to invade stressed and damaged turf grass and year-round presence of the fungus on the thatch. Even when turf is green and clean Colletotrichum cereale, like Microdochium nivalis, is ticking over in a saprophytic or weakly parasitic mode on the dead and drying grass material comprising the thatch. Thatch in itself adds easy points of access and entry for anthracnose infection so help reduce anthracnose. Baggage offers a broader and bigger base for anthracnose residence and persistence and a more attractive substrate for infection and spread. Poa annua is present to some degree in many fine turf swards forming species that exploits and matted. Twin key factors underpinning anthracnose are the pathogen’s propensity to invade stressed and damaged turf grass and year-round presence of the fungus on the thatch. Even when turf is green and clean Colletotrichum cereale, like Microdochium nivalis, is ticking over in a saprophytic or weakly parasitic mode on the dead and drying grass material comprising the thatch. Thatch in itself adds easy points of access and entry for anthracnose infection so help reduce anthracnose. Baggage offers a broader and bigger base for anthracnose residence and persistence and a more attractive substrate for infection and spread.
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Murray Mannall, Greenkeeper

The support for this fund has enabled BIGGA to enhance the value of being a member, and it has previously given many greenkeepers the opportunity to further develop their careers. As an association we owe our Gold and Silver Key sponsors a huge vote of thanks.

John Pemberton, Chief Executive

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