Introduction – Turf Varieties

Lesson Aim

Determine the range of grasses and other species available for turf culture (Part A).

THE BENEFITS OF TURF

A park, golf course, garden or other public space with well maintained grasses areas is not only visually appealing, it creates a sense of space and restfulness when combined with other elements in the landscape. Furthermore a healthy and vigorous lawn also provides the following benefits:

- Every 2-3 square metres of grass produce enough oxygen for one person for a day
- Lawns have a cooling effect on the immediate area
- Lawns absorb carbon dioxide emissions from nearby vehicles
- Lawns reduce noise by absorbing and deflecting sound
- Lawns reduce glare
- Lawns reduce water runoff through absorption
- Lawns improve the soil processes and general soil condition

A turf is a low-growing groundcover. The type of plant used in the turf may be a single variety or a mixture of plant varieties. It might be cut regularly or only rarely to maintain a desirable and even height. While grasses are the most common groups of plants used for turf, a very wide variety of other types of low growing plants have been used successfully, including clovers, *Dichondra*, thyme, and chamomile. These notes will concentrate on grass turf.

There are three main reasons for which turf is created:

a) *Functional* turf is used to control soil erosion, reduce dust and mud problems, reduce glare, noise, air pollution and buffer temperature fluctuations. Turf along a roadside or surrounding a factory are examples of functional turf.

b) *Recreational* turf is used for sporting activities, such as bowling greens, golf courses and football grounds, and other outdoor recreational activities such as surfacing a children's playground or picnic area.

c) *Ornamental* turf is primarily intended as a decoration, for example the front lawn of a home or office building or high quality grassed areas in public parklands.

NOTE: some turf might be created for a combination of reasons, and as such do not fit exclusively into one of the above categories.

HISTORY OF TURF

References have been found to lawns in several ancient cultures. We know that the Persians, Greeks and Romans all cultivated forms of turf. These earliest lawns were not, however, mown as today's turf is. English lawns in medieval times were made up of low-growing grasses planted with flowers to create a "meadow" effect. Literature from the thirteenth century contains references to cricket and bowls being played on lawns. More elaborate bowling greens were developed in the sixteenth century. A form of soccer was played on public grounds at this time. Golf was played in hilly grasslands, which were 'mown' by grazing sheep.

In 1665 John Rea published the following recommendations on turf management: "The next work is to prepare places intended for grass, and to provide turf for them. First, level the ground, and consider the thickness of the turf, which when laid, must be three inches lower than the upper edge of the rails, and the allies four inches, so the grass will be an inch higher, remembering still from the rails to fetch your measures, and level to keep the whole work in order, and if the ground under the turf be not barren of itself, it should be covered some thickness with hungry (infertile) sand to make it so, that the grass grow not too rank.

The best turf for this purpose are had in the most hungry common, and where the grass is thick and short, prick down a line eight to ten feet long and with a spade cut the turf thereby, then shift the line a foot or fifteen inches further, and so proceed until you have cut as far as you desire, then cross the line to the same breadth, that the turf may be square and cut thereby."

From John Rea's writing we can see that by the seventeenth century a certain degree of sophistication had developed in turf care. During the seventeenth and eighteenth centuries turf grasses were developed for both ornamental and recreational purposes. Many garden books of this time contained sections on turf care (ie. mowing, rolling, edging, weeding etc). Edwin Budding of Stroud (England) invented the first patented mowing machine in 1830. This mower commenced being manufactured in 1832. The first turf grass research commenced in the USA in 1880 (Michigan Agricultural Experiment Station).

Grass used today was originally bred and selected in the United States and Europe with Holland being the leader in turf varieties and the USA couch grass hybrids have been developed and are being used in sporting situations.

TURF VARIETIES

When planning a seed mixture it is important to understand the advantages and disadvantages of different grasses and why certain grasses are used in preference to others. The intended or actual use (and maintenance) of a particular area is the deciding factor.

For example bent grasses and fescues such as Chewings and Creeping Red can withstand lower mowing than other grasses. The bent grass strains known as Penncross and Palustris are both stoloniferous and tend to become spongy with age. If these bent are used alone or with fescues in a lawn, bowling green or golf green, annual scarifying, preening and coring is essential for their maintenance. In a park or sports oval these varieties of bent tend to colonise and form patches choking out all other grasses giving a very patchy appearance.

Bentgrass (*Agrostis* sp.)

Creeping bent grass is a native of Europe and parts of Asia. Sometimes known as common bent or colonial bent. A cool season grass which grows in clumps or creeps (i.e. produces tufts, but throws out runners as well). Grows on all soils but prefers well drained sandy soils. It has a very fine leaf blade, producing a uniform surface; requires high maintenance and frequent watering in summer.

This group of grasses are adapted to cool, humid and transitional climates as they have very good low temperature hardiness. Most are perennials but some are annuals.

The growth habit varies from bunching types to an extensive prostrate spreading system. It forms a fine-textured, uniform, dense, high quality turf when closely mowed.

Growth is best on moist, fertile soils having a pH of 5.5 to 6.5.

Establishment: seed.

Uses: high quality lawn grass, frequently used in bowling and golf greens. Sometimes used with fescues for ornamental turf.

Varieties: Highland bent, Pencross, Astoria, NZ, Seaside bent.

The three most common grown species are:

a) Colonial or Browntop Bentgrass (*A. tenuis*)

This is an upright, fine textured, dense turf under close mowing.

b) Creeping Bentgrass (*A. stolonifera*)

Spreads fast by creeping stolons, it is shallow rooted, but is not resistant to hard wear or drought.

A fine leaved grass used widely throughout the world for close cut fine turf and formal lawns, it is a cool season grass with dense fine-leaved foliage and profuse creeping stems. It has a very smooth surface. It is shallow-rooted and requires frequent watering in summer.

Habit: Creeping, if cut low will form a very dense smooth mat.

Establishment: Seed in spring or autumn.

Uses: Ornamental and recreational turf. Excellent in seaside areas

Aesthetics: Formal

Climate: Cool climates, good drainage, light soils, plenty of watering.

Maintenance: High maintenance requirement in most respects.

Varieties: Palaustris, Woodland, Maritima, Pencross.

c) Velvet Bentgrass (*A. canina*)

A tuft-forming grass which throws creeping stolen, thereby spreading; grass is hard to mow without tearing.

Bermuda/Couch Grass (*Cynodon dactylon*)

A creeping, warm season grass, although it grows quite successfully in cooler areas. In cold frosty areas, it will turn brown, going into a dormant period over winter, before re-sprouting in spring. This dormancy can be shortened by an application of superphosphate a few weeks before dormancy starts. If closely mown, couch will form a dense smooth turf. Frequent scarifying, brushing and top dressing are needed to prevent a build-up of thatch. Good drainage, plenty of water and frequent fertilizing is necessary for good results; very resistant to weed and disease problems, average requirement for feeding and mowing; low water requirement.

Establishment: seed, sprigs and runners.

Uses: greens, turf wickets, tennis courts, sports grounds, children's play areas and any other areas suffering considerable wear and tear.

Varieties: wintergreen, Greenlees Park, Windsor Green, Santa Ana.

Bermuda grass is a major turf species for sports fields, lawns, parks, golf courses, and general utility turfs in Australia, Africa, India, South America and the Southern USA. It is found in over 100 counties throughout the tropical and subtropical areas of the world.

In addition to being a widely used species for forage and turf, Bermuda grass is a serious weed. Being a vigorous, stoloniferous grass, it rapidly invades crops in high rainfall or irrigated areas. Bermuda grass is ranked among the three most troublesome weeds in sugarcane, cotton, corn and vineyards in many countries. It is a difficult weed to eradicate because of its seed production and deep rhizomes

Bermuda grass is a highly variable, sod forming perennial that spreads by stolons, rhizomes and seed.

It grows best under periods of high temperatures, mild winters and moderate to high rainfall. Temperature is the main environmental factor that limits its adaptability to tropical and subtropical areas of the world.

Bermuda grass is found in tropical and subtropical climates with 25 to 100 inches of annual rainfall, but it also survives in arid climates along waterways and in irrigated areas. Bermuda grass grows well on a wide variety of soils from heavy clays to deep sands. It tolerates both acid and alkaline soil conditions and is highly tolerant to saline conditions. Bermuda grass survives some flooding but does best on well-drained sites.

Bermuda grass is extremely valuable for us in preventing soil erosion, stabilising ditch banks, roadsides and airfields, and providing a smooth, resilient playing surface for sports fields and playgrounds. Bermuda grass also provides hay and pasture for livestock throughout the tropical and subtropical areas of the world.

Turf uses of common Bermuda grass include sports fields, lawns, parks, playgrounds, golf course fairways, roadsides, and cemeteries, etc. Bermuda grass is well suited to high traffic areas such as sports fields, golf courses, and playgrounds. A dense turf tolerates moderate wear and compaction and recovers rapidly.

South African Couch (*Cynodon transvalensis*)

Similar to common couch except that the leaf blade is finer (thus making it more desirable for greens).

A perennial spreading mostly horizontal grass, which sends off shoots at intervals. It is sown as a lawn grass but the runners are very vigorous and invade flowerbeds and are difficult to control.

Buffalo Grass (Stenotaphrum secundatum)

Creeping warm season grass, which forms a dense, coarse lawn; withstands average domestic use and is quite shade, drought and salt tolerant - can become spongy.

Establishment: runners.

Uses: domestic lawns, coastal areas.

Varieties: Velvet Buffalo.

Carpet Grass (*Axonopus* sp.)

Popular grass in warm districts due to its speedy growth and toughness; it is generally coarse-textured and is well adapted to wet or moist, sandy, acidic soils of low fertility. It tolerates shade and is frequently used in mixed turf combinations.

Establishment: seed or runners.

Uses: domestic and commercial gardens; and golf courses.

Varieties: narrow and broadleaf varieties available.

Chewings Fescue (*Festuca rubra* var. *commutata*)

A cool season tussock-forming grass - forms a fine textured, erect growing, dense lawn. If treated unfavourably, it can become tufted. Recuperative potential is medium-poor. Adapts well to shade and tolerates dry periods. Best cut high (50 mm); tolerates wear better than bents; best in well drained sandy soils.

Establishment: seed.

Uses: hardy, general all purpose grass for shaded or open situations; used with Kentucky bluegrass as general purpose turf.

Aesthetics: informal to semi formal. Leaf blade is finer than couch or standard ryegrass varieties.

Climate: cool climates, drought, shade and cold tolerant.

Maintenance: relatively hardy to disease, however can be infiltrated by weeds easily. Mowing, weeding and watering requirements are average.

Creeping Red Fescue (*Festuca rubra*)

Similar to Chewings Fescue, except this grass creeps (rather than forming a tussock). The rate of growth of upright shoots is slower than most cool season grasses (ie. mowing does not need to be as frequent).

Establishment: seed and sprigs.

Uses: has wide application on road sides, parks, golf fairways, cemeteries, ornamental lawns, airfields etc; often planted with perennial ryegrass.

Kikuyu Grass (*Pennisetum clandestinum*)

A thick-stemmed summer-growing grass, perhaps a little hardier than couch - adaptable to most soils, drought tolerant and very wear resistant. Produces a thick spongy turf; needs frequent mowing in summer and is very invasive.

Establishment: seed, but is easier using sprigs.

Uses: widely used on race tracks, also in some home gardens, park land, erosion control, roadsides etc.

Kikuyu grass is a low growing, deep-rooted perennial with stolons and rhizomes, and forms a dense turf very resistant to heavy grazing. This summer-growing grass is best suited to the sub-tropics but can be grown in more temperate areas as well. Under good conditions, it produces large quantities of foliage from mid-spring till mid-autumn. Growth rate slows down in winter and virtually stops in cold districts. It is drought resistant and very wear resistant.

Fertile soil that is not too heavy and adequate rainfall will keep kikuyu in rapid growth. It usually needs more than 900 mm of annual rainfall unless planted in areas which receive additional run-off water. The flowering stems are very short, and almost completely enclosed by the leaves. Seed is difficult to harvest. New plantings of kikuyu are highly palatable and nutritious, but the tight sward locks up nutrients, leading to nitrogen run-down.

Because of its strong spreading habit, ability to withstand traffic, and difficulty in eradication once established, Kikuyu has become a common lawn provided it is isolated from garden beds.

Widely used on race tracks, also in some home gardens, parkland, erosion control and road-sides etc.

Perennial Ryegrass (*Lolium perenne*)

One of the most common turf grasses throughout the entire world; except its leaves are lighter and coarser, and it establishes faster. After the first year it tends to diminish in a turf being replaced by other varieties. All of these characteristics make annual rye suited as a component in lawns which you want to establish quickly; but not suitable as a long term component in the lawn.

Establishment: seed.

Uses: sometimes used to provide a quick interim cover until other turf species develop fully.

This is a hardy, upright growing grass that recuperates well. During the growing season, Perennial Ryegrass forms a large leafy herb. It requires a fertile soil of medium texture but does not like loose soils that dry out quickly. Generous fertilizer produces the best results.

Perennial ryegrass has been selected for improvement in both New Zealand and Australia. There is now a range of cultivars that differ significantly in maturity, summer dormancy and resistance to moisture stress and diseases. These cultivars are densely tufted with dark green leaves which are shiny on the under surface. The flowering stems are erect spikes bearing straw coloured seeds about 6mm long.

Seeds are best sown on clean, fertile loamy soil. Provided they receive adequate rainfall, seeds are easy to establish and will grow vigorously. The recommended sowing rate of 11.2 kg/ha is best in autumn, but spring sowing is possible in districts with more than 760 mm rainfall per annum. In low rainfall areas that have high evaporation rates, drill the seeds about 12 mm deep.

Perennial Ryegrass handles traffic well and heavy grazing. It is incredibly resistant to cold weather and frost, and grows from early autumn – winter. They flower in spring and early summer. Different cultivars have different lengths of summer dormancy; therefore summer growth is determined by this.

Perennial ryegrasses can be sown alone but more often grass mixtures containing perennial ryegrass, cocksfoot and tall fescue, with appropriate legumes are preferred. Ryegrass seedlings are vigorous; therefore do not sow species with less vigorous seedlings in the seed mix (eg. phalaris).

Diseases: It is susceptible to rust (*Puccinia coronata*) during warm humid weather usually in autumn.

It is used widely on sports grounds, for ornamental and functional applications. Probably the most commonly used turf. Perennial ryegrass makes up the most productive pastures in Britain, Ireland, Europe, New Zealand, and the cooler regions of North America and Australia. Nutritive value is very high and they are very palatable to sheep and cattle.

Cultivars include (but are not limited too):

Victoria Perennial Ryegrass (cultivar)

This natural selection was developed in Victoria, Australia, and it requires an approximate minimum of 550 mm rainfall a year. It is better adapted to the hot, dry summers of western Victoria. It is susceptible to crown rust and barley yellow dwarf luteovirus; less productive than other cultivars in most situations.

Victorian Ryegrass grows well in autumn but slows dramatically in winter. As the weather warms, growth recommences till part dormancy during dry summers.

Grasslands Ruanui Perennial Ryegrass (cultivar)

Developed in New Zealand, this ryegrass grows similar in pattern to Victorian Ryegrass. It is adapted to high fertility soils where summer temperatures are mild and annual rainfall exceeds 635 mm. It is most productive in spring and early summer.

Medea Perennial Ryegrass (cultivar)

Developed in South Australia, Medea is more drought resistant and has a different growing season to the above mentioned ryegrasses. It is more active during late autumn, winter and early spring but semi-dormant through summer. It does not respond to summer rainfalls.

Kangaroo Valley Perennial Ryegrass (cultivar)

This variety was developed by natural selection in the Kangaroo Valley of New South Wales, Australia. It has evolved the following characteristics: early maturity, excellent persistence in a wide range of situations, drought tolerance, leaf rust resistance and good late winter-early spring forage production.

It seems to be less drought tolerant than Victorian Perennial Ryegrass.

Certified seed of this cultivar can only be produced in the area where it evolved.

Italian Ryegrass (Lolium multiflorum)

Winter growth makes this ryegrass very valuable, as it can be twice that of perennial ryegrass. It requires high fertile soils with at least 760 mm of rainfall. It even grows well under very wet conditions. Fertile soils are required for best results. Otherwise it can be top dressed with nitrogenous fertilisers. It is not suited to highly acidic soils. It is extremely frost resistant. If sown in autumn this grass has excellent winter growth and rapid growth in spring before flowering in summer.

Italian Ryegrass seedlings are easier to establish and more vigorous than Perennial Ryegrass. They are taller, more robust, and the seeds are larger and have bristles or awns. It is often included in permanent pasture mixes to provide feed while other slower species become established. However due to its vigorous growth it can smother other grasses, such as clover, therefore it should be grazed in its first year otherwise a poor pasture may result.

Recommended sowing rates are 11.2 kg/ha where it is the only grass or much lower rates if it is included in a mixture.

There are many forms of Italian ryegrass. A wide range of cultivars have been developed and vary with their susceptibility to rust; crown rust being the most serious, followed by stem rust.

Widely used for temporary pastures (in crop rotations) and as a high quality hay crop around the world. Italian ryegrass may also be included in mixtures with perennial ryegrass and cocksfoot to give increased winter feed in the first year. Annual or short-lived legumes are also a good mixture.

Hybrid Ryegrass (*Lolium perenne* x *L. multiflorum*)

Natural hybrids between perennial and Italian ryegrasses do occur. In comparison with perennial ryegrass, a hybrid has a more extended growing season and higher production. Persistence and winter-hardiness are less than perennial ryegrass but better than Italian ryegrass.

These hybrids need high rainfall, a temperate climate and fertile soils. They may be used as short-term pastures with a mixture of red clover or included in pastures of perennial ryegrass and cocksfoot for high winter yield.

These hybrids are intermediate in size between the perennial and Italian ryegrasses. Seed size is larger than perennial ryegrass but smaller than Italian.

Annual ryegrass (*Lolium rigidum*)

This ryegrass is thought to have originated from seed brought from Europe.

Vigorous growth in low rainfall areas gives this ryegrass its main value. It produces a large volume of palatable growth at all stages of its growth and makes excellent hay or silage. It germinates after autumn and grows through winter and spring before flowering and setting seed in mid-spring. It regenerates by seed and will persist indefinitely. Seedlings are very competitive. This species has a heavy, extensive, fibrous root system.

Annual ryegrass is adapted to areas with rainfall of 350 – 600mm (even lower in some areas).

Leaves are narrow and shiny on the under surface and stems have a reddish tinge at the base. Seed borne on a single spike and are flatter and wider than other ryegrasses. Seeds can survive in the soil for a year.

Annual Ryegrass is recommended for land that is not tilled frequently. It is relatively salt tolerant. It grows best on soils of high fertility or those where nitrogen and phosphorus have been increased with legumes and superphosphate. Sowing rate for this grass in mixtures is commonly 3.4 - 5.6 kg/ha.

Annual ryegrass is suitable as a cover crop in grass waterways or riparian areas subject to flooding as it tolerates wet soils and temporary flooding. It can also be grown under conditions where other cover crops fail. It establishes quickly and grows throughout the winter; an excellent choice for soil protection and weed suppression.

Wimmera Annual Ryegrass is valued in low rainfall areas with a minimum of 305 mm per year. There is a danger of ryegrass toxicity, especially in Western Australia (a nervous disorder of sheep, cattle and sometimes horses. It results when these animals eat seed heads infected with a nematode and a bacterium).

Merredin Annual Ryegrass has a shorter growing season than Wimmera and tolerates low rainfall and shorter growing seasons.

Soft Brome Grass (*Bromus mollis)*

This is an annual, winter growing grass native to Europe and Asia. It is naturalized in North and South America, Africa, and parts of Australia.

It is adapted to high rainfall areas or irrigated inland land. In autumn, winter and early spring it gives good amounts of feed. It grows best on well-drained, fertile soils, which are slightly acidic. Flowering stems can grow to 600 mm high therefore it can become dominant in top-dressed sub-clover pastures.

It has shallow roots and easily pulled from the soil.

Sweet Smoother (*Dactyloctenium australe*)

Also known as Durban grass, this is a warm season shade grass that grows well in full sun or medium to heavy shade. Fairly broad leaves are relatively soft and light green. It does not appreciate heavy traffic or poorly drained sites.

Establishment: only available as sods or rolls.

Uses: domestic gardens.

Tall Fescue (*Festuca arundinacea*)

Tussock forming coarse-textured grass; tolerates a wide range of conditions and is the most drought and wear resistant cool season grass.

Establishment: seed.

Uses: road sides, parks, sports fields, ornamental lawns.

Varieties: shortstop, Falcon and Marathon.

Tall fescue is a native of temperate Europe and Asia. Therefore, it has been useful in countries with the same climatic conditions.

Tall fescue is a deep rooted, cool season perennial grass. The plant produces vigorous growth in the spring and fall and its extensive root system helps it withstand drought conditions. Tall fescue does produce short rhizomes but has a bunch-type growth habit - it spreads primarily by erect tillers. Tall fescue produces broad, dark green basal leaves. Leaf blades are glossy on the underside and serrated on the margins. The grass flowers in the spring and seed mature in early summer.

Tall fescue is adapted to a wide range of soil and climatic conditions, but performs best on well-drained clay soils. Rainfall between 600-750mm is ideal for optimal growth. It is resistant to cold weather and frost and prefers fertile soils but will persist on soils of lower fertility. It will tolerate relatively high salinity and acid soils. It is very palatable to stock.

The improved turf-type tall fescues are finding widespread acceptance as lawn grasses. With proper management tall fescue can survive in densely shaded sites that warm season grasses cannot tolerate. Also, the improved tall fescues retain colour during the winter months and provide a year-round green lawn.

A number of cultivars have been developed. Some in the USA has resistance to the endophyte causing 'fescue foot' or 'summer syndrome.' *Demeter Fescue* is a variety of Tall Fescue. It grows throughout the year though is most active during late spring and autumn. Provided with water in summer and autumn it bursts into active growth.

Demeter Fescue will grow in a wide range of soils including occasionally waterlogged situations. It is less drought tolerant than Victorian Perennial Ryegrass by requiring a minimum of 130 mm per annum.

Kentucky 31 was developed in the United States. It has good autumn and winter production and will remain green all summer. It thrives on poorly drained soils and those of lower fertility.

Kentucky Blue-grass (*Poa pratensis*)

A native of Eurasia, this is a valuable component in many seed mixes. Cool season tussock-forming grass which grows on a wide variety of soils (prefers good drainage); requires regular fertilizing to produce a good turf. Does not stand close mowing.

Habit: upright with rhizomes (i.e. spreading underground roots).

Establishment: sow seed in autumn.

Uses: widely used on golf tees and fairways, mixed with other grasses for home gardens and in ornamental areas. Rich blue green, finer leaf than rye, medium hardiness, general all purpose grass.

Aesthetics: semi-formal

Climate: best in cool, but is heat tolerant.

Varieties: common Kentucky bluegrass, Park, Newport.

Phalaris (*Phalaris aquatica*)

Phalaris is a native of southern Europe and the Mediterranean region.

Phalaris is a deep-rooted perennial adapted to mild, moist winters and hot, dry summers with an annual rainfall of 400 – 750mm. It can also withstand moderate salinity, flooding and waterlogged conditions. However, it is very sensitive to soil acidity.

Phalaris produces best growth in autumn and spring and good growth in winter, and becomes dormant in summer after seeding. Phalaris is adapted to a wide range of soils but prefers heavier soils of high fertility.

A number of cultivars have been selected or developed. The Australian cultivars can be divided into a 'winter dormant' and 'winter active' group.

Winter Dormant

Cv Australian is still widely used but has poor seedling vigour and seed shatters easily. It is the most persistent and best able to suppress weeds such as thistles. Cv Australian plants spread better than those of the winter active cultivars.

Siro Seedmaster is similar to cv Australian in seasonal and total yields, establishment, seedling vigour, and digestibility. But it has a high degree of seed retention and does not shatter easily.

Uneta has slow winter growth, a stronger tendency to spread than the 'winter active' cultivars. Uneta is more competitive against thistles.

Winter Active

Sirocco is more productive in autumn and winter and survives better than cv Australian in low rainfall districts in south-eastern Australia. Seedling vigour is superior to cv Australian. Seedlings compete better than weeds and have better survival in first summer.

Sirosa has larger seeds which germinate faster and grow more vigorously than Australian creating reliable establishment and greater yields in early years.

Sirolan is equal to Sirocco in seedling vigour and winter production but slightly later at maturing. Produces and retains more seed than Sirocco. It was developed as an alternative cultivar to Sirocco for the drier marginal areas of south and eastern Australian (cv where Australian fails to grow).

Lawn Mixes

Ideally the lawn is a mix of grass varieties that are suited to different times of the year. One grass variety grows strongly in winter another weakens then in hot weather the weaker variety grows rapidly as the other one diminishes. In theory, you should always have one strongly growing variety that dominates and chokes out any invading weeds.

Unfortunately, this doesn't always work, as one grass often grows more vigorously than the others, and ends up being the only variety in the lawn. As the grass goes into its dormant period, the lawn loses its vigour and the weeds start to take hold. So it's important to choose a mix of varieties which grow well throughout the year.

There are a number of commercially prepared mixes that are blended for specific climatic conditions and uses. Some examples are:

- Florida, a blend of couch and bent grass; suitable for warm, dry climates
- Landscape, a blend of couch, Kentucky bluegrass and strawberry clover; suitable for hot, dry summer conditions,
- Canberra, with a high proportion of bent grass, smaller amount of Kentucky bluegrass, some fescue; suitable for colder climates
- Kentucky blend, containing a high proportion of Kentucky bluegrass, smaller amount of bent grass, some fescue; suitable for temperate and cool areas
- Green Valley, with bent grass, perennial rye grass; quick cover for less formal lawns in temperate areas
- Park Mix with a large proportion of perennial rye grass, small amounts of couch and bent.
- Shadetuff, which is a mixture of broadleaf carpet and green couch grasses, ideal for semi shade locations not full shaded sites. Can only be obtained as a sod, not seed.

What to Grow Where

In general, mixes which contain a high proportion of couch are best suited to warm, dry climates, while mixes with bent grass, Kentucky blue, rye grass and fescues are suitable for cool temperate to cold areas.

- Cool winter and dry summer: couch, buffalo, tall fescue, kikuyu.
- Mild summers and cold winters: fescues, Kentucky blue grass, rye grass, couch.
- Warm to hot and humid conditions: couch, buffalo, kikuyu, Queensland blue couch, carpet-grass, sweet smoother.

- Tropical: couch, Queensland blue couch, buffalo, Carpet-grass, Sweet Soother

IMPORTANT LESSON NOTES

You will notice that many set tasks require you to contact a range of professional and industry people and representatives. You are advised to look at the set tasks of future lessons so that you can ask most (or all) of the relevant questions at the one time.

Lesson 10 consists of a trial that must be carried out. It may actually take a few weeks or a few months to finish. Please read this set task No 3 in Lesson 10 so that you are prepared for it. You may wish to start the trial early.

TURF VARIETIES REPORTS

With each of the first ten lessons you must write a report on two varieties of plants used in turf. Over the 10 lessons, you will therefore write reports on 20 turf varieties. These will be mainly grasses, though some other plants such as clovers and *Dichondra* may be included.

Each specimen should be accompanied by the following:

- The plant's names (common and scientific)
- A description of the plant's appearance
- Its growth habit
- Its preferred growing conditions
- Maintenance requirements
- Appropriate applications or uses (eg. sports grounds, bowling greens, home gardens, children's playgrounds).

Refer to the example of a Turf Variety Report Worksheet (following) for ideas on how to present your report.

Illustrating the Turf Variety

This may be done any of the following ways:

- Submit a photograph or drawing of the plant.
- Send a scan of a photograph or drawing. Do not send large graphics files over the internet. Consult your student manual for details.
- Provide link to a website page location where you have found the plant illustrated on the internet.
- Submit a photograph of a pressed specimen.
- **Note:** Do not send pressed specimens across state or national borders. To do so may be illegal and breach quarantine law.

HOW TO LAY OUT YOUR TURF VARIETY REPORT

TURF SPECIMEN No.1 *Photo/diagram*

Plant Family .....

Genus .....

Species .....

Common Name .....

Propagation .....

Growth Habit .....

Preferred Growing Conditions.....

Maintenance Requirements.....

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Applications/Uses.....

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TURF SPECIMEN No.2

Photo or diagram

Plant Family .....

Genus .....

Species .....

Common Name .....

Propagation .....

Growth Habit .....

Preferred Growing Conditions.....

Maintenance Requirements.....

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Applications/Uses.....

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SET TASK

Activity 1

Obtain catalogues from lawn seed suppliers in your area (search the internet and/or look in a local telephone directory).

Activity 2

Contact the parks supervisor in charge of parks and sports grounds in your local area. Find out what you can about the maintenance of turf in parks and ovals, including the following:

- What turf facilities are under the control of the council? For example: lawns in public parks, playing fields, median strips besides roadways, turf wickets, or bowling greens.
- What is involved in maintaining these areas?
- Do they have any problems with maintaining these areas?

Activity 3

Contact various companies and associations related to the turf industry. These contacts are to become your base for resources in later assignments. Use these contacts to collect additional information relevant to the lessons. Consider contacting equipment suppliers, grass seed companies, chemical distributors and turf associations or other professional bodies.

Such bodies are best found through an Internet search. Information can also be found in horticultural and specialist trade journals.