

What is Bent Grass?

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The term 'bent grass' is used generically in this series of information notes and includes the various bent grass species we are likely to have in Victoria. These include *Agrostis capillaris*, *Agrostis Stolonifera* and *Agrostis castellana*. These notes also relate to other species which grow in low fertility situations in association with bent grass, (e.g. sweet vernal and fog grass).

A number of factors influence the ability of bent grass to compete with other plant species; soil fertility, rainfall, drainage, temperature, grazing pressure and rotations are all part of this. This is important for producers to remember when trying to control bent grass in pasture.

Bent Grass in Victoria



Map of Victoria showing Bent grass distribution

Many pastures in the high rainfall areas of Victoria are dominated by bent grass. Such pastures produce well under their potential, often carrying 6 to 8 DSEs, (Dry Sheep Equivalents), when improved species in that situation would carry 12 to 15 DSEs.

However before embarking on expensive re-sowing or management options, there is a need to understand why bent grass is present in the first place. All species have an environment (which includes soil fertility and grazing management) in which they have a competitive edge over other species. What is it about the environment of the farm that allows bent grass to dominate the pastures?

Re-sowing with 'improved' species may lead to a temporary increase in pasture productivity. However, in the long term it is likely to be a waste of time and money unless the environment is changed to suit the new species. Simply improving the environment may lead to a species and productivity change without the need for re-sowing.

Species, such as bent grass, should be seen as symptoms of a 'low fertility' environment. In fact, if soil fertility has been allowed to run down, bent grass may well be the most productive species that the infertile environment can sustain.



Typical bent grass pasture in December.

Soil Fertility

Bent grass tolerates and is most competitive in very infertile soils. Soil tests are a valuable guide to fertiliser requirements prior to embarking on a renovation program. During the life of the pasture, pasture composition may be a better guide to fertiliser responsiveness in later stages. Plants require various nutrients for growth. These include the macro nutrients i.e. nitrogen, phosphorus, potassium and sulphur, as well as various trace elements. Most of our soils have adequate trace elements but are deficient in phosphorus and nitrogen.

Agrostis castellana will grow in extremely infertile soils with Olsen Phosphorus (Olsen P) values typically from 3 to 7 ppm. *Agrostis capillaris* requires slightly better fertility and is a slightly more productive species. Once phosphorus deficiencies have been corrected, soil nitrogen levels are the main factor that determines whether high or low fertility grasses will dominate.

Grazing strategies will need to be adopted and phosphorus, potassium and possibly molybdenum will need to be applied before clovers will start to dominate. Refer to Information Note "Grazing management tools to control bent grass".

Until an adequate pool of nitrogen has been developed, bent grass will have a competitive edge over more productive species. Low fertility grasses dominate infertile soils but once they are dominant, correcting fertility alone is unlikely to lead to a rapid change.

Rainfall

The distribution of bent grass is restricted to relatively cool climates and high rainfall. *Agrostis capillaris* requires approximately 800 mm annual rainfall and *Agrostis castellana* requires approximately 500 mm annual rainfall. Most winters are wet enough for bent grass to survive and compete well and it is primarily the summer rainfall which determines its competitiveness and rate of spread. In dry summers, infestations will remain static although a seed bank may be building up and dispersing in readiness for the next wet summer. Spread over wet summers can be very rapid, particularly if the surface is bare after a long dry spell.

Drainage

Bent grass will tolerate poorly structured, waterlogged soils better than many improved pasture species. In some situations this may help explain its dominance. Simply correcting drainage without addressing fertility and grazing management will not reduce its vigour.

Continuous stocking

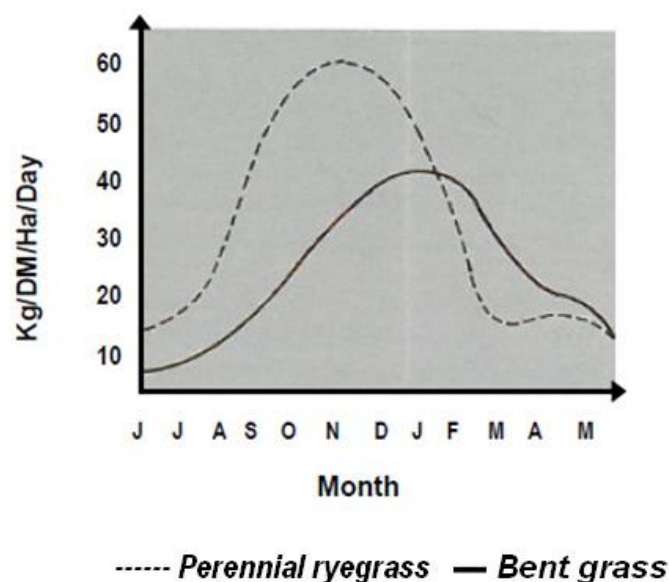
Heavy set-stocking favours bent grass over more productive species. As plants recover from grazing, the more productive and therefore quicker growing species which have higher sugar content are more upright, more palatable and more accessible to stock than the slowly growing bent grass. This is when they are selectively grazed out. The more prostrate bent grass is also more efficient at capturing sunlight than upright species, when constantly grazed close to the ground. But desirable species have an advantage if allowed to grow taller than bent grass.

However, heavy set-stocking is preferable to light set-stocking or very light grazing which suits bent grass as it allows a mat to form and accumulates excess late spring/summer feed which carries over as trash into autumn. This carry-over trash ties up nutrients and restricts the germination of clover. This in turn reduces soil nitrogen levels and the competitiveness of high fertility grasses.

Uniform Stocking Pressure

Relatively uniform stocking pressure throughout the year, whether set stocked or rotationally grazed, allows bent grass to dominate pastures. Bent grass produces very little in winter, which will limit stocking rates, but can be very productive late in the year allowing excess feed to accumulate. It is crucial to the control of bent grass to increase grazing pressure in the spring/summer period. Cattle are ideal for this because they will readily graze bent grass at the early flowering stage.

Graph 1 shows the growth pattern of perennial ryegrass and bent grass. The growth of bent grass between the months of December and April is very dependant on summer rain.



Graph 1: Seasonal growth of bent grass and perennial ryegrass at Ballarat

Acknowledgements

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