Vegetative Planting – TECH TALK
Why and How

Row planting couchgrass

Result of row planting couchgrass after eight weeks

Using a muck spreader to broadcast sprigs

AGCSATech technical officer Andrew Peart examines the process of sprigging and the relative merits of broadcasting and row planting techniques in the establishment of hybrid couchgrass.

The enforcement of more stringent water restrictions have forced managers of both golf courses and sporting fields to utilise more water efficient means of managing turf surfaces.

The most logical solution is to use grass species that are better adapted to cope with higher temperatures while requiring less water for not only survival but producing very good playing surface qualities.

These are the warm-season (C_4) grasses, and primarily varieties of common couch (Cynodon dactylon), couchgrass hybrids *(C. dactylon x C. tranvaalensis)* and kikuyu *(Pennisetum clandestinum)* are commonly used. While there are some good varieties of seeded couches, the preferred couchgrasses, at present, for playing surfaces require planting by vegetative propagation.

Sprigging is a vegetative process of establishing warm-season grasses. It is considered to be the most cost-effective means of vegetative establishment although some golf courses have used solid turf in different situations.

Sprigs are often sourced from chopping up pre-harvested sod, or they can be obtained from rotary hoeing an area and raking up the chopped material.

The other source of sprigs is from verticutting existing fairways or mature stands of material. This method then generally requires a higher planting or sprigging rate because the roots and crowns of the turfgrass are missing (McCarty and Miller, 2002).

Ideally sprigs should be at least 100mm in length and contain at least two vegetative nodes with few green leaves. The presence of leaves tends to cause the sprig to dry out more rapidly which can be detrimental during transportation and storage.

Ideally sprigs should be planted within 48 hours after harvesting. Sprigs overheating are the most likely cause of desiccation. To increase survival, the sprigs should ideally be turned to allow for air movement through them, be kept moist and out of direct sunlight. Storage in a thin layer is more beneficial than a larger pile as the weight of sprigs will minimise natural airflow.

The process of sprigging can be undertaken by two methods – broadcasting and row planting.

Broadcasting involves spreading stolons and rhizomes over the surface and then cultivating them in, while row planting utilises a specialist piece of machinery that directly plants sprigs into the surface.

Broadcasting

Broadcasting is often used on newly constructed areas where the sprigs are spread by a muck spreader or similar piece of machinery. They are then either rotary hoed into the surface, or the preferred method is the use of power harrows. It is advisable to bury as much of the material as possible because the sprig requires soil contact to maintain their moisture and initiate root development.

This method of establishment can provide a very quick coverage, however, as the sprigs are often quite shallow in the surface there are more susceptible to drying out than if row planted.

Row Planting

Row planting or line planting is often used in situations where an existing grass cover exists or had previously existed before being sprayed out.

Row planting is far less disruptive to the overall surface than broadcasting and therefore the likelihood of weed seed disturbance is reduced. Secondly, surface levels are not disrupted meaning it is less likely that topdressing will be required after the operation.

Some row planting machines have the ability to make sprigs from rolls of sod meaning the sprigs are fresher when initially planting rather than being transported to the site as sprigs.

Row planting, as the name suggests, plants sprigs in rows that are approximately 100mm apart. The width of the row will have a direct impact on how quickly the surface will obtain a full coverage.

However, the closer the rows are together the greater resistance in being able to pull the machine through the ground, especially on heavy soil types or loose sandy surfaces. This then has implications on the depth that the sprigs can be planted.

It is important to plant the sprigs into the surface to a sufficient depth that they do not quickly dry out or blow away.

The soil should be moist when sprigs are initially planted. As the sprigs have no root system, irrigation should be light and frequent to replace moisture loss through evaporation to prevent sprigs from drying out.

As the sprigs develop a green shoot and immature root system, the watering frequency can be reduced as the sprigs will be able to uptake water further down the profile.

Burying the sprigs using a row planting machine

Establishment

Establishment time is dependant on sprigging rate, percentage loss through desiccation, time of year (temperature) and maintenance implemented after planting.

Competition is a major factor in the speed of establishment of couchgrass sprigs. Ideally any vegetation or grass cover existing in an area before sprigs are planted should be eradicated with one or more herbicide applications.

Once the area has been sprigged a pre-emergent herbicide should be applied depending on the situation, to reduce the amount of weed seeds that may germinate.

The VGA Turf Research and Advisory Board conducted a trial at Werribee Golf Club in the summer of 2000/2001 and one strip of oxadiazon (Ronstar® @ 150kg/ha) was applied to an area of Legend couchgrass that had been overplanted.

Ford (2001) states that in the critical early phase of establishment the Ronstar® has allowed the couchgrass to rapidly cover the ground, reaching the critical 80 per cent coverage (when the fairway should be 'ready for play') three weeks earlier.

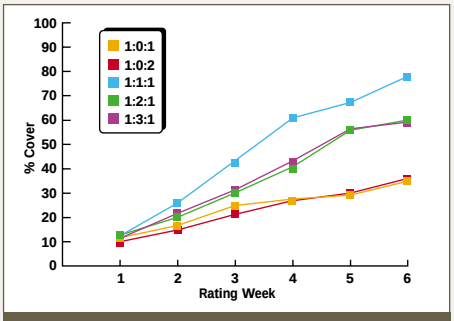
Ford concluded that this trial clearly demonstrated the benefits of this herbicide and it is strongly recommended in couch establishment work.

Fertility is another important component in the success and speed of establishment to achieve a full coverage after sprigging.

Fast establishment reduces the ability of weeds to dominate if a pre-emergent herbicide is not applied and secondly allows play to occur in a shorter period of time.

Rodriguez, Miller and McCarty (2000) undertook a study in 1996 to evaluate five different N:P:K fertiliser ratios for the establishment of three couchgrass varieties.

Fresh sprigs on surface after broadcasting



Percent cover for Tifdwarf couchgrass under five fertiliser treatments during establishment

Rates consisted of $N:P_2O_5:K_2$ ratios of 1:0:1, 1:0:2, 1:1:1, 1:2:1, and 1:3:1 based on a nitrogen rate of one pound per 1000 sq. feet per week. The graph below shows the results of the establishment of Tifdwarf.

Their findings showed that the 1:1:1 ratio provided the best cover rate over the six week period for the Tifdwarf and Floradwarf establishment as well as the greater shoot and root weights.

Rodriguez et.al. (2000) concluded that these studies indicate the need for balanced nitrogen, phosphorus and potassium nutrition when establishing couchgrass on deficient soils.

Conclusion

Both techniques of hybrid couchgrass establishment have their respective benefits. The most important aspect of either method is to have the majority of the plant material covered with soil, have good weed control methods, apply adequate irrigation to maintain a moist surface to initiate root development, fertilise with a complete fertiliser and then to cut the couch as soon as possible to encourage lateral growth.

Temperature is also a vital component to the success and rate of couchgrass establishment. Even if all the aforementioned post-planting methods are in place the ultimate result is very much temperature dependant.

References

Ford, P. 2001. *Comparison of couchgrass establishment methods (Year 2). VGA Turf Research and Advisory Board.*

McCarty, L.B., and G.L Miller. 2002. *Managing Bermudagrass Turf. Sleeping Bear Press.*

Rodriguez I.R., G.L., Millar and L.B McCarty. 2000. *Sprigged bermudagrass needs ample phosphorus at grow-in. Golf Course Management 68(6):59-62.*