

Comparison of establishment of seeded couch vs sprigged couch cultivars

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A couchgrass surface is an excellent choice for sportsfields, golf fairways, lawns and parklands due to its superior drought resistance, wear tolerance, performance under low inputs and its creeping growth habit. There are dozens of cultivars to choose from, some available from seed and some that can only be grown by vegetative means (i.e. sprigging). Since the 1980s a great many high quality vegetative cultivars have been used, such as Santa Ana, Wintergreen, Legend, WindsorGreen, TifSport and the dwarf and ultradwarf types used on greens. Turf Managers are familiar with these cultivars, and also the onerous process of establishing them by sprigging or line-planting. But some seeded couch cultivars rival the best of the vegetative cultivars for quality, density and short dormancy. A major advantage of seeding couch is the ease and rapidity of establishment. As this report will show, a full couch cover can be achieved in six weeks from seed, while sprigging takes around 12 weeks and line planting more like 15 weeks to reach full cover.

TRIAL 1: BALLARAT GOLF CLUB, 1999

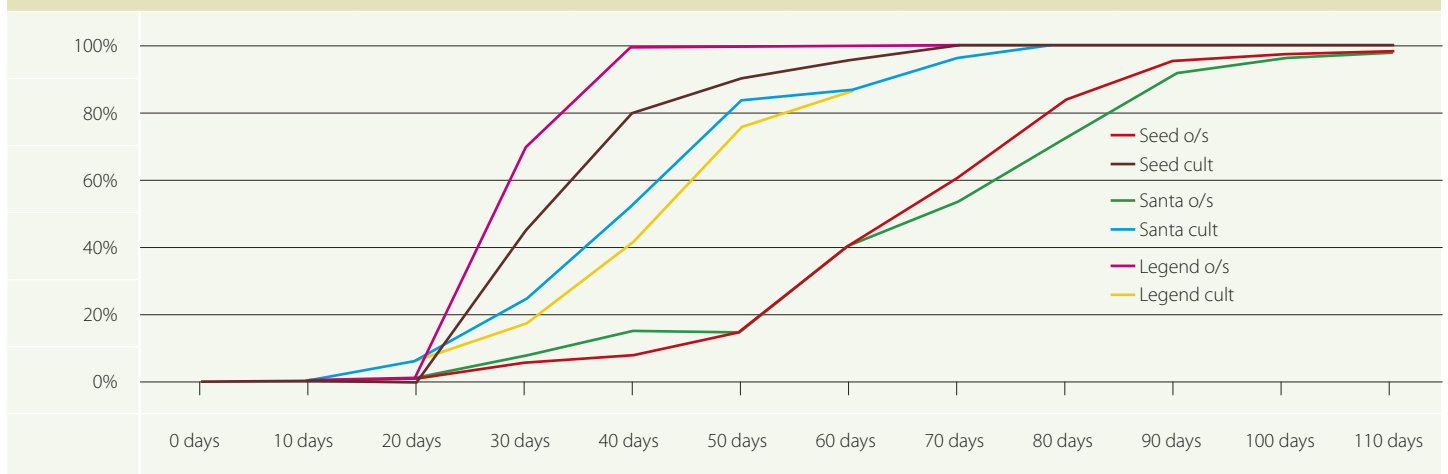
The Victorian Golf Association undertook a replicated trial at Ballarat Golf Club in 1999, comparing establishment by sprigging into cultivated ground with line-planting into an undisturbed, killed-out sward. The two vegetative varieties were Santa Ana and Legend. At the same time, a seeded couch (Jackpot) was seeded either into cultivated ground or oversown (direct-seeded) into the killed-out sward. The results are summarised below:

	Santa o/s	Legend o/s	Legend cult.	Santa cult.	Seed o/s	Seed cult.	LSD
0 days	0%	0%	0%	0%	0%	0%	0%
10 days	0%	0%	0%	0%	0%	0%	0%
20 days	0.8%	0.8%	6.7%	6.0%	1%	1%	2.4%
30 days	7.3%	5.7%	17.7%	25%	70%	45%	16.5%
40 days	14.3%	8.3%	43.3%	51.7%	100%	80%	16.5%
50 days	15%	14.3%	76.7%	83.3%	100%	90%	5.9%
60 days	40%	40%	86.7%	86.7%	100%	95%	14.5%
70 days	53.3%	60%	96%	95.7%	100%	100%	9.4%
80 days	71.7%	84%	100%	100%	100%	100%	15.7%
90 days	91.7%	95%	100%	100%	100%	100%	7.2%
100 days	95.3%	96.7%	100%	100%	100%	100%	3.8%
110 days	97.3%	97.3%	100%	100%	100%	100%	5%
120 days	98.3%	98%	100%	100%	100%	100%	0.6%

o/s = oversprigged cult = conventional cultivation

Table 1: Percentage groundcover of Santa Ana or Legend sprigged into cultivated ground or line-planted into a killed-out sward, compared to Jackpot seeded into cultivated ground or oversown into a killed-out sward.

Graph 1: Establishment rates of couchgrasses



Graph 1: Percentage groundcover of Santa Ana or Legend sprigged into cultivated ground or line-planted into a killed-out sward, compared to Jackpot seeded into cultivated ground or direct-seeded into a killed-out sward.



Photos: Jackpot seeded establishment compared to Santa Ana sprigging and Santa Ana line-planting at Day 40.

Jackpot is an old cultivar with moderate quality and we are not recommending its use (these days we use the superior quality cultivar Princess 77), but it demonstrates the speed of establishment of seeded couch in general. It reached full groundcover in 40 days when oversown (direct-seeded is the term some would use) into a dead sward. This was considerably faster than when it was sown into a cultivated seedbed. The dead grass from the previous sward provided a mulching effect, and later trials confirm that seeded couch early-establishment greatly benefits from some form of protection such as hydromulch, an organic amendment, seed covers or the sward of dead turf.

The vegetatively propagated couches were very slow to establish and only reached near 100% groundcover after 80 days (sprigged into cultivated ground) or 120 days (line-planted). Establishment rates such as these are normally expected in the field.

TRIAL 2: PGG WRIGHTSON RESEARCH FARM, LEIGH CREEK, 2010

A trial was undertaken in February 2009 to compare the establishment rate of couch and kikuyu from sprigs vs seed. Kikuyu seed germinated rapidly and was near full groundcover at 50 days, compared to only 15% coverage from the sprigged kikuyu. The speed of seed germination and establishment outcompeted weeds, while the slow establishment speed of sprigs allowed a heavy weed infestation. This report concerns couch, however – the results of couch establishment by mid-March (50 days after planting) are shown below:

Couch variety	Turf Groundcover % at 50 days
Santa Ana (sprigged)	50%
Sovereign (seeded)	89%
LSD (P = 0.05)	14%

Table 2: Establishment at 50 days after planting Santa Ana sprigs vs Sovereign seeded couch at Leigh Ck, 2009



Photos: Santa Ana sprigged establishment at 50 days, compared to Sovereign seeded couch

Noticeable in this trial, and in the next trial in this report, the seeded couch germinated and established very rapidly, allowing it to outcompete the majority of weeds. One of the advantages of sprigging or line-planting is that the herbicide oxadiazon can be used to control early weed competition, but many Turf Managers are reluctant to use oxadiazon because of past bad experiences, or simply the cost. If oxadiazon is not used then the rapid germination and early competition of seeded couch to weeds is a significant advantage over sprigging.

As in the earlier trial at Ballarat, which used Jackpot, we are not recommending the use of Sovereign as it has only moderate quality and doesn't cope well with cold winters. But in this case it once again demonstrated the significantly more rapid establishment of seeded couch compared to sprigged couch.

TRIAL 3: PGG WRIGHTSON RESEARCH FARM, LEIGH CREEK, 2015

A replicated trial was undertaken to compare the performance of five seeded couchgrasses, with the vegetative variety Santa Ana included as a standard. The seed was sown on 13th February at a rate of 5g/m² (50kg/ha) into a cultivated seedbed. Santa Ana sprigs were hand planted to simulate a sprigging operation, with sprigs plugged in at 75-100mm spacings. The area was covered with a seeding cloth and well irrigated over the first three weeks, at which time the seeding cloth was removed and irrigation applied if moisture stress was evident. Groundcover was assessed on 17th April (nine weeks after sowing) with the following results.



Photos: seeded couch germination at 7 days, and overview of plots at 11 days, with Santa Ana in the foreground.

Cultivar	% Groundcover at 9 weeks
SWI 1070	96
Veracruz	93
Princess 77	93
SWI 1113	88
Yukon	88
Santa Ana (veg)	5
LSD (P = 0.05)	7

Table 4: Groundcover of five seeded couch cultivars compared to a vegetative variety at Leigh Ck, 2015



Photos: Santa Ana (top left), SWI-1070 (top right), Princess77 (bottom left) and Veracruz (bottom right) at nine weeks after planting, Leigh Ck, April 2015.

Once again, the rapid germination and early establishment of all the seeded couch cultivars provided good defence against weed invasion, whereas the slow early establishment of Santa Ana, without oxadiazon, resulted in a major weed problem. One of the three Santa Ana replicates was completely blanketed by weeds.

This trial was started in mid-February, and by mid-April in Ballarat's climate the couch had virtually stopped growing. It was still green, not dormant, but further progress in establishment was minimal.

This highlights a major advantage of seeded couch compared to the vegetative varieties – if a planting is delayed until late in the summer, a seeded couch can reach full coverage within weeks whereas a vegetative couch will go into winter with a poor coverage, leading to all sorts of problems over that winter and then into the following spring and summer.

DISCUSSION AND CONCLUSIONS

The vegetative varieties such as Santa Ana, WindsorGreen, Legend and Wintergreen have dominated plantings in turf facilities converting to couch. Many Turf Managers might never have used a seeded couch, and assume that sprigging or line-planting were the only options for establishment. The quality of some seeded couchgrasses, such as Princess 77, rivals that of many of the vegetative varieties, and establishment by seed offers many advantages:

- Seed can be stored safely until required, whereas sprigs need to be used straight away.
- Princess 77 seed will be certified, proving that it is genuine F1 hybrid Princess 77. With vegetative couch material you are never entirely sure that the cultivar provided is the one you specified, as there is no sod certification system in Australia or New Zealand.
- Couch seed doesn't carry nematodes, mites, Spring Dead Spot or other weeds, pests and diseases, whereas sprigs or sod can carry all these in to their new site.
- Seeding can be a one-person job, using a conventional direct seeder, whereas sprigging requires a contractor with specialist equipment and a large team of workers.
- Seeding is the cheapest establishment method. At 50kg/ha x \$50/kg (as an example), couch seed will cost around \$2,500/ha. Add the cost of a contractor using a conventional seed drill and the total cost should be well below \$5,000/ha. Sprigging or line planting, on the other hand, will cost more than \$12,000/ha. And solid turfing will be more than \$50,000/ha.
- Although couch is an extremely drought tolerant turfgrass, it does require generous irrigation during establishment. Once full establishment has been achieved the irrigation requirement will fall dramatically. So the rapid establishment rate of seeded couch compared to sprigged couch means that considerably less water is required.
- Seed can be hydromulched onto a new surface. This is particularly appropriate for new sand-based surfaces, as the hydromulching equipment can stay off the field. And the hydromulch will cap the sand to prevent wind and water erosion, at the same time providing an excellent matrix for couch germination.

Add to these advantages the rapid establishment of couchgrass, its ability to outcompete weeds, and the ability to sow later in the summer, and the benefits of seeding are evident. While Turf Managers may not be experienced in seeding couch, the myth that it is slow and inconsistent is incorrect. When managed correctly, seeded couchgrasses will establish and provide full grass coverage much more rapidly and cheaply than vegetative propagation.

ESTABLISHMENT RECOMMENDATIONS

For conversion projects our research shows that direct-seeding couch into a killed out sward works extremely well, probably because the dead sward acts as a mulch. This process would simply involve one or two applications of glyphosate to kill the existing sward, followed a week later with couch seeding using a direct-drill (sod seeder) designed for that purpose.

Where a cultivated seedbed is being sown the seed can be sown to a shallow depth or broadcast and rolled, but we strongly recommend the use of some protection such as an organic amendment that holds moisture and binds the surface to some extent. PGG Wrightson Turf trials in New Zealand had excellent results with Sand-Aid, a granular seaweed product. For small areas the use of covers designed specifically for seeding are highly recommended.

Further research is being conducted on establishing seeded couch by hydromulching, using a modern wood-fibre mulch such as Profile Products Conwed 1000, Conwed 2000 or Flexterra. The Flexterra-couchgrass combination works extremely well in revegetation situations, often on difficult sites such as steep roadsides. And Flexterra is used successfully when sowing other turfgrasses - for example, fine fescues have established extremely well on troublesome sites such as new fairways on windy, exposed sand on coastal dune sites. We are very keen to promote the combination of Flexterra and Princess 77 as the couch establishment technique for the 21st century.

