

Placing a dollar value on Australian turf production

In 2006, a co-operative research project between the University of Melbourne and University of Florida set out to ascertain the size, scope and market value of turfgrass sod production in Australia. As well as providing an economic and agronomic analysis of the industry, the survey also sought to find out what firm and industry problems were confronting commercial turfgrass producers.



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Although there has been evidence of commercial sod production in Australia as early as the late 1970's, there has been relatively little documentation on the actual size, scope and structure of the industry.

In 1996 there was an estimated 200 turfgrass sod primary production farms growing over 5000 hectares in Australia. The market value of sod production at this time was estimated to be in excess of \$100 million per annum for the eastern Australian states.

In 1998 the Australian Bureau of Statistics estimated that there were some 420 sod farms in Australia, producing over 6400ha of turf and generating as much as \$350m per annum. Recently, turf research scientists found that there are some 225 production farms producing 4918ha valued at \$235.7m per annum.

This co-operative research project between the University of Melbourne and the University of Florida was funded by Horticulture Australia Ltd and the Turf Producers of Australia and carried out over 2006. It has become the nation's first economic and agronomic analysis of the Australian turfgrass industry.

The aim of the project was to provide reliable economic information on the Australian turfgrass industry so that individual producers, trade organisations, potential investors, academic institutions and policy makers

can make better, more informed decisions. The study had three major objectives, the first to determine the number of hectares in production; types and sizes of firms; number of employees; major grasses grown; production practices; harvesting methods and efficiencies; marketing channels and outlets; and marketing issues as reflected in turf quality and price.

The second objective was to identify the research and development priorities for the turfgrass industry and the third objective to assist in the determination of financial costs and returns for turfgrass producers.

The survey started in 2006 following a number of industry meetings with turfgrass industry representatives. The survey went out to two primary sources – an address list provided by Turfgrass Producers of Australia in November 2006 and an electronic address version taken of turfgrass producers by Australian Post in March 2007.

Information collected from the survey was based on the 1 July-30 June fiscal-year basis, rather than a calendar year, and sought information on production and harvesting, labour and water, financial information, harvesting methods, markets and transportation as well as operational and industry problems. A response rate of 36 per cent was achieved. For analytical purposes, farms were grouped by size — small (0-25 ha), medium (26-50 ha) and large (51-220 ha).

The collaborative research project showed there was a total of 4918ha of turfgrass sod produced in Australia in the 2006 financial year

RESULTS AND DISCUSSION

Figures show that there was a total of 4918ha of turfgrass produced in Australia in 2006. Much of this production came from small farms (32 per cent) to medium-sized (28 per cent) farms throughout Australia, with the larger farms contributing some 41 per cent of production but constituting only eight per cent of turfgrass producers.

Many of these farms were responsible for growing 85 per cent of the nation's warm-season grasses. The major warm-season grasses of importance were the couchgrass selections and hybrids (*Cynodon dactylon* x *C. transvaalensis*), buffalograss (*Stenotaphrum secundatum*), kikuyugrass (*Pennisetum clandestinum*), Queensland blue couch (*Digitaria didactyla*), zoysiagrass (*Zoysia* spp.) and paspalum (*Paspalum vaginatum*). Kentucky bluegrass (*Poa pratensis*) and tall fescue (*Festuca arundinaceae*) dominated the cool-season grass market.

An estimated total of 4246ha of warm-season grasses were grown in 2006 as well as a total of 671ha of cool-season grasses. Whereas all warm-season grasses in production were valued at \$200.9m, cool-season grass production was valued at \$34.8m.

Of the warm-season turfgrasses, the couchgrass selections and hybrids were the most important in terms of area in production (1844ha), but had only the second highest value (\$67.1m). Buffalograss had 1374 hectares in production, but was valued considerably more at \$94.7m. Kikuyugrass was ranked third in

both area (655ha) and value (\$22.2m) (Table 1, pg 42).

The number of hectares that were harvested of both warm- and cool-season turfgrasses is shown in Table 2. The harvest value also accounts for the fact that some producers are able to obtain two harvests every three years; this would mean that for any given fiscal year, there could be two harvests.

Warm-season grasses, such as couchgrass, still dominate the market with buffalograss and kikuyugrass coming in second and third respectively in terms of area harvested and value.

IRRIGATION

With water being such a crucial factor in production, the survey asked producers how many hectares of turfgrass were not irrigated due to water restrictions. Of the 15 per cent of producers that were faced with shortages, a total of 625ha was not irrigated. This estimate represents 13 per cent of industry output, with medium and large growers feeling the impact more than small growers. Assuming the industry average gross return of \$48,621 per hectare (\$181.6 M/3734 ha = \$48,621, see Table 2), non-irrigated areas represent a loss of \$30.4m in unsold product.

More recently, the Australian Bureau of Agricultural and Resource Economics has



estimated that by 2030 the effects of climate change on many agricultural crops may result in a 9-10 per cent loss of production if nothing is done to slow or adapt to rising temperatures. By withholding water from areas used for turfgrass production it could be said that Australian turfgrass producers have already made that sacrifice.

Most of the water used in sod production comes from multiple sources — either surface water, water from wells or reclaimed water. Where only one source was used, just over half (52 per cent) used surface water, 30 per cent used water from wells and three per cent used reclaimed water.

If the average revenue generated by all grass varieties of \$48,621 per hectare and dividing this by the average water application of 6.5 megalitres, this calculates to \$7480 per megalitre of water used in turfgrass production.

Again using the 6.5M average, returns per megalitre would range from a low of \$5277 per megalitre for kikuyugrass to a high of \$10,600 per megalitre for buffalograss. How these figures compare to other segments of Australian agriculture would be an interesting inquiry, but the results of such an exercise would probably be quite favourable to the turfgrass industry.

LABOUR AND INCOME

The Australian turfgrass industry employs an estimated total of 1321 people in 2006, which

An estimated total of 4246ha of warm-season grasses were grown in 2006 and 671ha of cool-season grasses. Warm-season grasses were valued at \$200.9 million and cool-season \$34.8 million

TABLE 1. HECTARES IN PRODUCTION AND VALUE OF TURFGRASS, BY GRASS VARIETY, 2006

Grass Type	Small		Medium		Large		Total	
	Ha	Value \$000	Ha	Value \$000	Ha	Value \$000	Ha	Value \$000
WARM SEASON	Total	Total	Total	Total	Total	Total	Total	Total
Couchgrass	589.4	18,981.4	527.0	19,292.6	727.4	28,796.8	1,843.8	67,070.8
Queensland Blue	111.9	4,883.2	58.5	2,079.2	13.6	479.6	184.0	7,442.0
Seashore Paspalum	0.6	43.3	80.0	0.0	17.4	1,086.3	18.1	1,129.6
Zoysiagrass	11.3	1,030.2	29.4	1,575.1	51.7	2,424.9	92.4	5,030.3
Buffalograss	538.0	37,489.6	338.3	24,532.6	497.9	32,706.2	1,374.2	94,728.4
Kikuyugrass	241.7	8,049.8	285.6	9,448.9	127.7	4,725.2	655.1	22,224.0
Carpetgrass	18.5	950.5	0.0	0.0	60.3	2,289.7	78.8	3,240.1
Sub-total	1,511.4	71,428.0	1,238.8	56,928.4	1,496.0	72,508.7	4,246.4	200,865.2
COOL SEASON								
Kentucky Blue	16.6	579.3	26.8	1,603.9	16.5	984.6	60.0	3,167.9
Tall Fescue	37.9	1,571.8	128.8	6,623.1	444.6	23,483.0	611.4	31,677.9
Sub-total	54.5	2,151.1	155.6	8,227.0	461.1	24,467.6	671.4	34,845.8
Total	1,565.9	73,579.1	1,394.4	65,155.4	1,957.1	96,976.3	4,917.8	235,711.0

was made up of 857 full-time (65 per cent), 348 part-time (26 per cent) and 116 seasonal (9 per cent) workers (Table 3, pg 44). Whereas the average turfgrass producer employs 5.1 full-time workers, 1.9 part-time and 0.7 seasonal workers, in terms of farm size comparisons, the average small farm employs two full-time workers, a medium-sized farm just over six workers and large farms some 18 full-time workers.

For the industry as a whole, although the majority (43 per cent) of income was derived from the production and sale of turfgrass, a full 27 per cent came from turf related services (i.e.: transporting turfgrass, landscape installation and/or maintenance). Another 17 per cent was derived from food production (vegetables, wheat, cattle, sheep, etc.) as well as 13 per cent from miscellaneous business activities. Examples of this last group include tree and landscape nurseries, flower production, truck driving, machinery rental, waste disposal, and seed and fertiliser sales.

A more informed distribution of income

shows that expenses are grouped under three main headings — production (growing) related activities; administration, sales and marketing; and landscape services. The latter category was included because many producers engage in landscape service activities including design, installation and maintenance.

Most of the harvesting of sod (36 per cent) occurred in the spring and early summer months between October and December with some two-thirds (68 per cent) of all turfgrass harvested using semi-automated systems, meaning a fair amount of human labour was employed in the process. Nearly all Australian producers (96 per cent) harvest their own sod, with very little contracting occurring.

Most markets were relatively close to producers — 45 per cent transport turfgrass less than 50 kilometres and another 28 per cent between 50–100km. Interestingly, the most common market served by turfgrass producers was the homeowner retail market which accounted for 35 per cent, with the second largest the wholesale market to landscape

installation or maintenance companies (20 per cent). Residential developers came in third (18 per cent) with smaller sales into retail garden centres (11 per cent), other turfgrass farms (7 per cent), and golf or sportsfield venues (5 per cent).

FIRM AND INDUSTRY PROBLEMS

The final section of the survey asked producers to identify the four most important problems facing them from an individual business standpoint and industry-wide perspective. Not surprisingly, two issues were of over-riding importance — water and finances.

Given that the survey was conducted in 2006, which coincided with the prolonged drought impacting many parts of Australia, water was the number one concern (32 per cent) among turfgrass producers. Concern over water shortages was seen to impact on both producers and consumers, the latter of which ultimately compounds producer problems.

On the supply end, water shortages increase the risk that producers will not be able to adequately irrigate their turfgrass (indeed the survey shows that 625ha was not irrigated). On the demand end, producers were concerned about the impact that water restrictions will have on homeowners. Some areas of Australia are on severe water restrictions which prevent the watering of lawns.

Nearly a third of turf producers highlighted water restrictions as the number one issue confronting the industry



Research revealed that in 2006 the industry employed 1321 people

Although water was the number one concern, financial concerns ranked very closely behind (30 per cent). These worries include high operating costs (e.g.: labour, fuel, insurance, equipment, etc.) as well as over-production and competitive undercutting of prices.

Labour ranked third (8.5 per cent) and other industry problems included production-related concerns (7 per cent) including weeds and insect problems, maintaining quality, and providing the right grass varieties for the future. Regulatory issues (6 per cent), marketing concerns (6 per cent) and the lack of industry grades and standards (4 per cent) were also areas of worry.

CONCLUSIONS

This survey provides a key industry benchmark on turf production and marketing and provides Australia's turf producers a means of comparing their firm's operation with that of other industry



firms. The study also provides current financial information to existing turf producers, outside firms interested in becoming turf producers and the wider turfgrass industry.

ACKNOWLEDGEMENTS

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TABLE 2. HECTARES HARVESTED AND VALUE OF TURFGRASS, BY GRASS VARIETY, 2006

Grass Type	Small		Medium		Large		Total	
	Ha Total	Value \$000	Ha Total	Value \$000	Ha Total	Value \$000	Ha Total	Value \$000
WARM SEASON								
Couchgrass	527.7	17,562.1	398.7	15,196.6	453.2	18,943.9	1,379.6	51,702.6
Queensland Blue	103.3	4,744.6	44.0	1,606.7	10.5	370.7	157.8	6,722.0
Seashore Paspalum	0.5	32.1	0.0	0.0	12.7	787.0	13.2	819.1
Zoysiagrass	5.6	631.1	27.0	1,363.8	37.2	1,954.4	69.8	3,949.3
Buffalograss	393.5	28,336.3	349.5	25,353.9	380.3	25,410.2	1,123.3	79,100.4
Kikuyugrass	180.9	5,736.7	289.1	9,407.5	85.3	2,895.3	555.3	18,039.4
Carpetgrass	15.3	784.7	0.0	0.0	48.2	1,831.8	63.5	2,616.4
Sub-total	1,226.8	57,827.6	1,108.3	52,928.5	1,027.4	52,193.3	3,362.5	162,949.2
COOL SEASON								
Kentucky Blue	18.6	651.8	19.1	1,145.6	3.1	165.0	40.8	1,962.4
Tall Fescue	12.4	508.1	102.5	5,262.4	216.0	10,855.4	330.9	16,665.9
Sub-total	31.0	1,159.8	121.6	6,408.1	219.1	11,050.4	371.8	18,618.3
Total	1,257.8	58,987.4	1,229.9	59,336.6	1,246.5	63,243.7	3,734.3	181,567.5

of Stuart Burgess and Andrew Collins from HAL in administrating the project. The full report – *Economic and Agronomic Analysis of the Australian Turfgrass Industry* – can be obtained by corresponding with HAL, Level 1, 50 Carrington Street Sydney NSW 2000, ph (02) 8295 2300 or fax (02) 8295 2399. 📞

TABLE 3. LABOUR USE IN THE AUSTRALIAN TURFGRASS INDUSTRY

Farm size	Full-time		Part-time		Seasonal		
	Total	Average	Total	Average	Total	Average	Total
Small	314	1.9	166	1.0	50	0.3	530
Medium	236	6.4	83	2.3	32	0.9	351
Large	307	18.1	99	5.8	34	2.0	440
Total	857	5.1	348	1.9	116	0.7	1,321