Hort Innovation

Final Report

Turf Industry Statistics and Research Project

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Project code:

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Project:

Turf Industry Statistics and Research Project TU16001

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Content

Summary

Accurate and reliable turf industry data is a fundamental resource, essential for effective strategic industry planning, resource allocation and tracking industry performance over time. The turf industry has developed a renewed focus for improving industry data through its current Strategic Investment Plan, however minimal investment has occurred in this area to date.

The Turf Industry Research and Statistics 2016/17 (TU16001) Project has addressed this data gap through completing a national survey of turf growers on core industry metrics including production value and volume. WRI undertook a program of industry engagement to develop industry knowledge of the purpose and timing of the survey, before delivering 104 complete surveys, in line with the project delivery plan.

The response rate achieved enabled the development of a statistically robust data set, providing insights into the volume and value of turf production at the regional and national level, turf deliveries, sales channels, employment and industry confidence. It is expected that this data set will assist the industry in making decisions, resource prioritisation, investment evaluation and strategic planning activities.

Key turf data outputs of turf production volume and turf production value estimated through this project are presented below:

Turf Production Volume

Specie Production by State (Sqm)	Buffalo	Couch and hybrid couches	Kikuyu	Zoysia	Paspalum and others (Tropical grasses)	Blue Couch (Tropical grasses)	Other specialty grasses	Totals	% of Australia
NSW + ACT	5,747,352	1,640,125	4,242,862	119,159	-	24,462	810,130	12,584,090	32.7%
QLD + NT	2,934,479	11,163,526	163,961	743,833	260,375	383,503	15,163	15,664,840	40.6%
VIC + TAS	1,856,629	632,841	1,814,862	-	-	-	698,817	5,003,149	13.0%
SA	527,415	119,143	1,924,171	-	-	-	36,452	2,607,181	6.8%
WA	606,882	509,552	1,478,519	86,308	-	-	610	2,681,872	7.0%
Australia	11,672,758	14,065,186	9,624,374	949,300	260,375	407,965	1,561,173	38,541,132	100.0%
% of Total	30.3%	36.5%	25.0%	2.5%	0.7%	1.1%	4.1%	100.0%	

Turf Production Value

Specie Value by State ($)	Buffalo	Couch and hybrid couches	Kikuyu	Zoysia	Paspalum and others (Tropical grasses)	Blue Couch (Tropical grasses)	Other specialty grasses	Totals	% of Australia
NSW + ACT	$47,397,064	$7,722,122	$17,530,517	$777,657	$0	$167,550	$6,898,954	$80,493,864	35.2%
QLD + NT	$25,509,965	$36,947,929	$758,732	$4,890,693	$1,005,870	$1,657,472	$60,651	$70,831,312	31.0%
VIC + TAS	$19,733,459	$3,978,619	$12,978,394	$0	$0	$0	$5,957,671	$42,648,143	18.7%
SA	$4,067,114	$804,180	$10,153,286	$0	$0	$0	$303,284	$15,327,864	6.7%
WA	$6,727,516	$2,693,901	$8,848,093	$1,064,561	$0	$0	$5,065	$19,339,135	8.5%
Australia	$103,435,118	$52,146,750	$50,269,021	$6,732,910	$1,005,870	$1,825,023	$13,225,625	$228,640,318	100.0%
% of Total	45.2%	22.8%	22.0%	2.9%	0.4%	0.8%	5.8%	100.0%	

Keywords

Turf, data, industry analysis, industry survey, production volume and value.

Introduction

Accurate and reliable turf industry data is a fundamental resource, essential for effective strategic industry planning, resource allocation and tracking industry performance over time. The turf industry has developed a renewed focus for improving industry data through the Turf Industry Strategic Investment Plan 2017-2021[1], however minimal investment has occurred in this area to date.

The Turf Industry Research and Statistics Project has addressed this data gap through the successful execution of a national survey of turf producers, which has then been developed into a national data set on turf production. WRI undertook a program of industry engagement to develop industry knowledge of the purpose and timing of the survey, delivering 104 complete surveys, in line with the project delivery plan.

This has allowed for the development of a statistically significant data set that provides insights into the volume and value of turf species at the regional and national level, turf deliveries, sales channels, employment and industry confidence. It is expected that this data set will assist the industry in making decisions, resource prioritisation, investment evaluation and strategic planning activities.

A summary of project activities, outcomes, outputs and an evaluation of project strengths and areas for improvement are included in this report.

[1] Available at the Hort Innovation webpage.

Methodology

WRI undertook a national survey of turf producers to estimate industry production and broader economic metrics. A range of activities were undertaken to successfully deliver the Turf Industry Statistics and Research Project. These were:

- Data evaluation: WRI evaluated existing data on turf production.
- Developing sample framework: WRI utilised Department of Agriculture and Water Resources data on the number of active turf levy agents, to develop a survey sample framework that was approved by the project stakeholder group and the turf industry SIAP committee.
- Pilot survey: WRI developed a pilot survey tool, with input from Hort Innovation, the project stakeholder group and the turf industry SIAP committee. A pilot survey was carried out, gathering 21 complete surveys, testing this survey tool. Participant feedback was utilised to amend the survey for use in the full survey.
- Communications and industry engagement: WRI undertook a program of communications and industry engagement to inform growers and gather industry support for the project. WRI developed communication materials including text and digital documents to assist these groups to engage with growers about the survey. Communications included:
    - Turf Australia included information on the project in the March magazine, the E-news release provided information on the project to growers in April, twice in June and gave a further mention in August.
    - State turf bodies emailed out a digital flier advertising the project to their stakeholder groups in June.
    - Direct email was sent out by Turf Australia in June introducing the project and asking growers to participate.
    - LSA direct emailed to their stakeholder group introducing the project and asking growers to participate.
    - State turf bodies emailed out to their stakeholder groups again in June.
    - WRI directly emailed growers to introduce the project and asking growers to participate in late July.
- Attending Turf Australia Conference: A WRI Senior Research Consultant attended the Conference in June to inform and engage growers in the project and get pre-commitments from growers to participate in the survey. WRI was successful in presenting a short summary of the project at the Conference Field Day and signed up 20 growers to be part of the survey.
- Survey delivery: WRI delivered a successful grower survey, achieving 104 complete surveys. This provided statistically robust data on which to base a national data set of turf production.
- Reporting: This Final Report, Snapshot Report and attached grower benchmark reports and an Excel data set, form the last deliverable under project milestones.

Data Confidentiality and Reporting

Turf grower confidentiality was a key concern of the project and growers were assured that personal information captured through the survey would remain confidential and that no identifying information would be reported or shared with other businesses or industry organisations. WRI can assure that personal information has not been released to any other organisation. Furthermore, data reporting has taken two steps to ensure that identifying information has not been shared.

Firstly, individual benchmarking reports, whereby individual grower's survey answers have been benchmarked, have utilised a unique grower number to ensure that each grower receives only his/her information, and that if the wrong report were to be sent to an individual, they would not be able to identify who the business results belonged to.

Secondly, results presented by State/Territory jurisdictions have been combined where necessary to retain confidentiality in jurisdictions with a small number of growers. The following State/Territory groupings were adopted for reporting purposes on this basis.

- NSW + ACT
- QLD + NT
- SA
- VIC + TAS
- WA
- Australia

Survey Approach and Mode

Growers received a number of communications in the lead up to the survey period (August 2017) providing information on the survey and inviting their participation. Growers were offered the chance to undertake a survey online or by phone interview. Of the 104 complete surveys, 34 (32 percent) were undertaken via a phone interview, with the remainder being undertaken online. Whilst on face value this suggests that the survey was mainly based on online engagement, this does not account for the very significant time invested in making phone calls to growers to explain the project and engage them in the process. Indeed, significant time was put into phone and email communications relative to each completed survey.

The survey tool had three compulsory questions, asking for respondent details and the volume/value of the different turf species they produced in the 2016-17 financial year. Following these questions were a number of non-compulsory questions that asked for feedback relating to turf deliveries, sales channels, employment and business confidence. The survey tool is included as an attachment to this report.

Survey Sample Framework

A survey sample framework was put together utilising data from the federal Department of Agriculture and Water Resources. This data was a breakdown of the number of operating 'levy agents' in 2015-16, across a range of turf production categories in each state. The count of levy agents was deemed the most detailed and authoritative source of information in developing this sample framework, as no other data source was found that provided a count of operating turf business, let alone with same degree of certainty as provided by a federal Department with levy collection authority.

It should be noted that a 'levy agent' is different from a turf business. It is WRI's understanding, confirmed with Turf Australia, that a 'turf levy agent' is an entity registered with the Department of Agriculture and Water Resources - Levies as a business that grows and sells more than 20,000m2 of turf per annum. Note that in some cases, a 'turf levy agent' can pay the turf levy for multiple turf businesses operated by the same owner. The collection of complete surveys was consistent with the sample framework for 'turf levy agents', insofar as individuals with multiple businesses (ie a 'levy agent') provided their total production results in one survey, rather than for each business. On this basis, levy agent data can therefore be adopted as the basis to extrapolate individual responses to aggregated national industry estimates as required.

Utilising the above data, WRI was able to develop a statistically robust survey sample framework. A target of 108 surveys was developed based on a population of 196 active levy agents.

Data

Statistical projects often require data to be managed in order to get a consistent and useful data output. This project required a few small data adjustments to this end, including:

- 12 incomplete surveys were removed from the data set. These surveys did not complete beyond question one.
- There were a small number of surveys with a mismatch between turf volume and value data. Mostly this related to price values entered in where no volume was provided. In a small number of cases, volume was entered with no corresponding average turf value. In these circumstances, the average price from other growers in that state was

substituted.

- When calculating employment data, one survey response was removed on the basis that it appeared to be an error, whereby the wage cost was well in excess of that specific company's revenue.

Turf Volume

Survey data relating to turf volume was extrapolated to a national data set on the basis of counts of turf levy agents in each state, by production category. The Department of Agriculture and Water Resources has provided data, based on turf levies, on the number of turf levy agents that were operating across different square metre (Sqm) production ranges in 2016-17. These ranges are:

- 0 to 99,999.9
- 100,000 to 199,999.9
- 200,000 to 399,999.9
- 400,000 +

Growers were asked for the total square metres of turf harvested for sale across the different turf species grown on their farm for the 2016/17 financial year. In each state, an average production volume was established for each production category, by dividing the total production of businesses in each production category by that number of businesses. This average production was multiplied by the number of levy agents in this category as per the Department of Agriculture and Water Resources levy agent data to arrive at a total volume of turf production.

Volume data was updated to reflect the breakdown of turf volume across the various turf species. To do this, survey data was analysed on a state basis to understand the percentage breakdown of turf production by specie. This percentage breakdown was applied to the total state production data.

Turf Value

Estimates of turf value were developed based on survey estimates of the average price growers received across the different turf species in each state. Individual grower volumes by turf species were multiplied by their nominated average prices to arrive at total values for turf production by species. Total state values by specie were then divided by the relevant turf production volume to arrive at an average price per square metre for each species, in each state.

Once individual state and specie values were calculated, these were applied to total production estimates. Price per square metre for each state and species was then multiplied by estimated production in each of those categories.

Employment

Growers were asked to provide information on the number of employees their turf production business employed (including themselves and other family members) and their total wage bill in 2016/17. Basic employment data was developed on total industry wage costs at the state and national level; total FTE employment at the state and national level; and average wage per Full-Time Equivalent (FTE).

- Survey data regarding full-time and part-time employment was converted to a count of FTE. In line with standard approaches to converting labour to FTEs, part-time staff numbers were divided by two to convert to FTEs and were summed with nominated full-time staff. This calculation provided the average number of FTEs per surveyed business.

- Total FTE employment at the state and national level was calculated by multiplying the average FTE by the number of turf levy agents in each state, as per Department of Agriculture data.

- Total wage cost at the state/national level was calculated by dividing aggregated reported survey wage data by the number of survey respondents. This provided an average wage cost per business. This average cost was multiplied by the known number of levy agents, as per Department of Agriculture data.

- Total wage cost by state was then divided by total survey FTE employment by state, to arrive at an average wage per FTE.

Deliveries

Growers were asked what percentage of their turf sales (by volume) their business/businesses delivered. Grower responses were averaged at the state level to provide an estimate of the percentage of total turf sales delivered. These percentages were also applied to turf production volume data to estimate the number of square metres of turf that had been delivered.

Growers were also asked if they charged for deliveries. Reporting on this question broke down the percentage of responses in each category.

Sales Channels

Growers were asked what was the percentage breakdown of their turf sales (in terms of volume) by sales channel in 2016-17. Growers individual production volumes were then multiplied by their percentage responses across the different sales channels to arrive at the total volume of turf sold through each sales channel for the survey cohort in each state. State turf sales volumes by sales channel category were then expressed as percentages of total state sales volumes.

Business Confidence

Growers were asked to respond to a number of confidence questions relating to their business and their view of the economy. Growers provided feedback via a numeric scale of 1 – 10. Grower responses were grouped by state and their numeric responses were averaged to deliver an insight into confidence levels in each state.

Outputs

Project outputs were defined in initial project documentation as:

- A final report outlining the findings of the data collection across the 2016/17 financial year, including aggregate measures of industry activity and key performance trends and issues.
- A brief snapshot report to accompany the final report, which will provide an effective communication tool for engaging with research participants and the broader sector (see Appendices).
- An edited dataset of all data collected via the survey. The dataset will be provided in MS Excel format and will be structured to facilitate querying of the data by a range of variables.
- Individual benchmarking reports for growers that participated in the survey.

These outputs form part of this final report.

Turf Industry Data Analysis

The principle output from the Turf Industry Statistics and Research Project is data on the volume and value of turf production, in addition to insights into other operational issues in the turf sector. The results (outputs) from the survey collection have been provided below.

Survey Sample

WRI compiled a turf grower contact list from a range of industry sources, totaling 196 potential turf businesses. The development of this list included a range of sources and WRI undertook additional research to put together the most authoritative list possible of current operating turf businesses. The development of this list revealed several complicating factors, including closed businesses, non-responsive businesses, growers who owned more than one business, and other issues. This process revealed the difficulty in establishing a formative list of operating turf businesses.

This point is further demonstrated when comparing existing estimates of turf industry businesses that do not necessarily align. The Turf Strategic Investment Plan 2017 – 2021 estimates 218 businesses, whereas the Turf Australia webpage states that there are approximately 250. After an extensive search, WRI was unable to find any more turf business names and contacts than the 196 mentioned above, and found that three of these 196 businesses were no longer growing turf and one business was a turf reseller.

The list of 196 turf business contacts matched the Department of Agriculture and Water Resources 2015-16 levy agent count (also 196). Of note, the 2016-17 turf agent levy count was found to have dropped to 190. WRI called every turf business contact on this list multiple times, in addition to email contacts. The approximate breakdown of responses is as follows:

- 104 – Complete surveys
- 4 - Agreed but did not complete
- 57 - Either did not answer communications or WRI interviewer couldn't speak with owner
- 31 – Refused or could not complete for various reasons

An issue arose through the project in regards to 'levy leakage', whereby growers may not declare or under-declare their turf production in order to avoid paying turf levies. A grower is not liable to pay the turf levy if no more than 20,000 square metres of turf is produced in a financial year. This creates a potential issue in that these growers may not be captured on the Levies database. Only a small number of survey responses were received from growers who produced fewer than 20,000 Sqm of turf. No additional information or evidence was gathered throughout the project on the issue of levy leakage. It is WRI's opinion that if any growers are not declaring some or all of their production to levy authorities, it would be unlikely that they would declare this production in an industry survey. It is unclear to what extent this issue impacted on the number of

complete surveys gathered through this project.

An important output of the project was the delivery of a successful survey, including a good response across regions, which was in-line with proposed survey sample. The survey gathered 104 complete responses. Surveys were considered complete when they were completed up to and including question three, meaning that information on the volume and average value of the turf varieties harvested for sale in the 2016-17 financial year was collected. The breakdown of complete surveys by region is as follows.

Region	Complete Surveys	Total Count of Levy Agents (2016-17)[2]	Margin for Error (95% confidence)
NSW + ACT	50	79	8.4%
QLD + NT	37	73	11.5%
SA	4	7	40.0%
VIC + TAS	6	11	30.9%
WA	7	20	33.0%
Australia	104	190	6.5%

Please note: Some states were grouped to avoid disclosure of individual production in certain states.

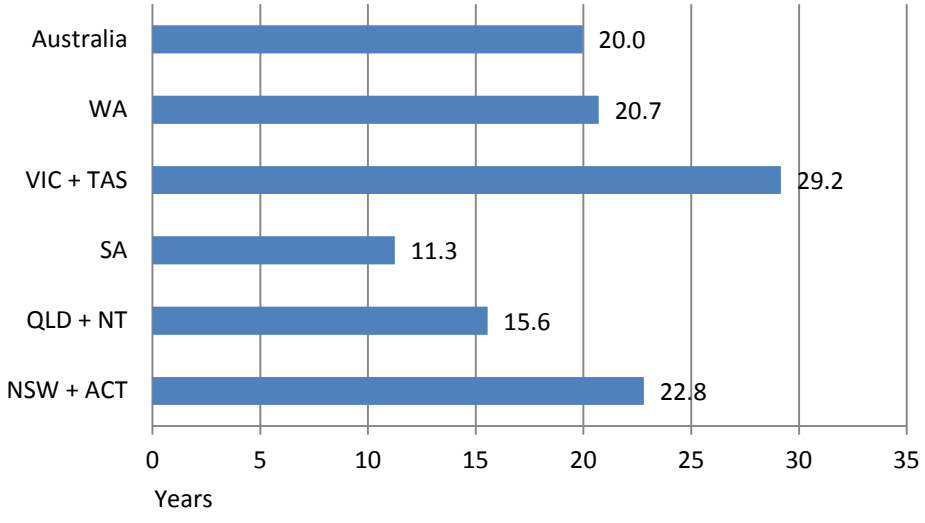
At the 95 percent confidence level, the total national result had a margin of error of 6.5 percent. This means that we can be 95% confident that the true result for the population is within 6.5 percent of the sample result.

[2] Department of Agriculture and Water Resources data on the number of active turf levy agents. Based on additional investigation through the survey process, the total number of levy agents was amended to include an additional agent in the NSW + ACT region.

Question 1 – Business Age

On average, turf growers in Australia have been operating their business for 20 years, highlighting low business turnover. Specifically, this relates to how many years the current owners have run their business, rather than how long a turf farm has been in operation. Victoria + TAS has the longest average business tenure, whereas SA and QLD + NT have the lowest average business tenure of 11 and 15 years, respectively.

Figure 1 – Average Business Tenure



Question 2 - Turf Production

National turf production in 2016-17 totalled 38,541,132 Sqm. Couch and Buffalo varieties had the highest levels of production accounting for 66.9% of production by variety and the NSW + ACT and Qld + NT regions produced over 73% of total national production

Table 2 – Turf Production Volume

Specie Production by State (Sqm)	Buffalo	Couch and hybrid couches	Kikuyu	Zoysia	Paspalum and others (Tropical grasses)	Blue Couch (Tropical grasses)	Other specialty grasses	Totals	% of Australia
NSW + ACT	5,747,352	1,640,125	4,242,862	119,159	-	24,462	810,130	12,584,090	32.7%
QLD + NT	2,934,479	11,163,526	163,961	743,833	260,375	383,503	15,163	15,664,840	40.6%
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Australia	11,672,758	14,065,186	9,624,374	949,300	260,375	407,965	1,561,173	38,541,132	100.0%
% of Total	30.3%	36.5%	25.0%	2.5%	0.7%	1.1%	4.1%	100.0%	

The above data set provides for an interesting comparison to existing turf production data. The Australian Bureau of Statistics (ABS) Agricultural Commodities, Australia 2015-16 release (7121.0) provides estimates of the total land area under turf production, not a square metre production estimate. The ABS data identifies that, nationally, 6,880 hectares (68,800,000 Sqm) of turf is under production. Note that this measures the area of land under turf production, not a measure of the volume of turf produced.

Another estimate of turf production is provided in the Australian Horticulture Statistics Handbook. Whilst looking at a different production year, the Hort Statistics Handbook 2015-16 shows total turf production volume of 47.2 million square metres of production. Estimates of turf production volume in the table above are lower than the Australian Horticulture Statistics Handbook estimates of turf production in all jurisdictions except South Australia.

The Handbook adopts a modelling approach that centres on determining the fresh market value and volume for each category, that reconciles production with local and international distribution channel throughputs. This process utilises existing data sources as a base for production estimates. On this basis, production estimates developed through this project may be in a position to provide input into the future development of Handbook turf production estimates.

Question 3 - Turf Value

The total farm-gate value of all turf sales in Australia in 2016-17 is estimated at $228,640,318. The farm-gate value reflects turf sales volume multiplied by the unit price. NSW + ACT had the highest value of production, followed by QLD + NT and then VIC + TAS. Buffalo varieties were the most valuable turf species, followed by Couch and then Kikuyu varieties.

Table 3 – Turf Value

Specie Value by State ($)	Buffalo	Couch and hybrid couches	Kikuyu	Zoysia	Paspalum and others (Tropical grasses)	Blue Couch (Tropical grasses)	Other specialty grasses	Totals	% of Australia
NSW + ACT	$47,397,064	$7,722,122	$17,530,517	$777,657	$-	$167,550	$6,898,954	$80,493,864	35.2%
QLD + NT	$25,509,965	$36,947,929	$758,732	$4,890,693	$1,005,870	$1,657,472	$60,651	$70,831,312	31.0%
VIC + TAS	$19,733,459	$3,978,619	$12,978,394	$-	$-	$-	$5,957,671	$42,648,143	18.7%
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Australia	$103,435,118	$52,146,750	$50,269,021	$6,732,910	$1,005,870	$1,825,023	$13,225,625	$228,640,318	100.0%
% of Total	45.2%	22.8%	22.0%	2.9%	0.4%	0.8%	5.8%	100.0%	

Turf production values can be compared with the Australian Bureau of Statistics (ABS) Agricultural Commodities, A Value of Agricultural Commodities Produced, Australia, 2015-16 release (7503.0). At the national level, the ABS data values turf production at $248,957,403 in gross value, approximately nine percent higher than the above turf production estimate. The ABS measure of local value of turf production ($248,683,788) may be a more comparative measure (in that it does not take into account the value of transport), but is very similar to estimates of gross value.

ABS estimates of NSW production are roughly comparative and QLD + NT is within a six percent variation, whereas ABS estimates of Victorian production are approximately 26 percent higher than project estimates. Interestingly, project estimates of South Australian turf production are markedly higher than ABS estimates, with a production estimate approximately 88

percent above the ABS figure.[3]

By comparison, the Hort Statistics Handbook 2015-16 finds that total the value of turf production in that year was $314 million. Obviously, this is an estimate of production in the previous financial year. No data is provided on the state breakdown of total production.

The above turf value estimates developed in this project have been based on detailed data gathered from growers on the average price per square metre of their turf sales, by species. This information has been provided for each region below. It should be noted that these figures are the average prices for all growers and sales types, including sales across wholesale, retail and other sales channels. Of further note, national estimates have been derived from a sum of regional production value and are not based on average national turf prices.

Table 4 – Average Turf Prices by Species and State

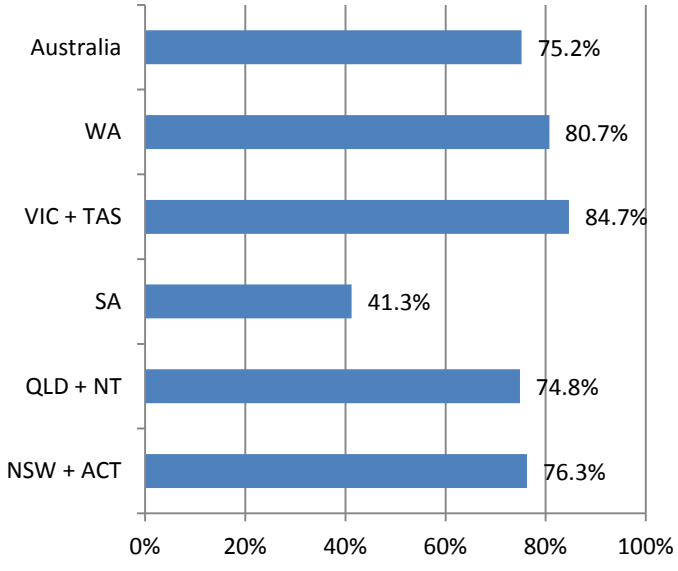
	Buffalo ($)	Couch and hybrid couches ($)	Kikuyu ($)	Zoysia ($)	Paspalum and others (Tropical grasses) ($)	Blue Couch (Tropical grasses) ($)	Other specialty grasses ($)
NSW + ACT	$8.2	$4.7	$4.1	$6.5		$6.8	$8.5
QLD + NT	$8.7	$3.3	$4.6	$6.6	$3.9	$4.3	$4.0
VIC + TAS	$10.6	$6.3	$7.2				$8.5
SA	$7.7	$6.7	$5.3				$8.3
WA	$11.1	$5.3	$6.0	$12.3			$8.3
Australia	$8.86	$3.71	$5.22	$7.09	$3.86	$4.47	$8.47

[3] The (ABS) Agricultural Commodities, A Value of Agricultural Commodities Produced, Australia, 2015-16 release (7503.0) does not provide individual estimates of production in NT, WA, ACT or TAS.

Question 4 & 5 - Turf Deliveries

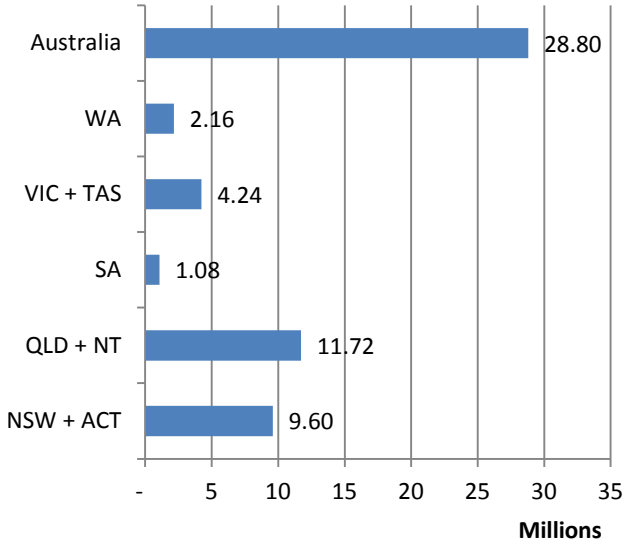
Responses provided through the survey demonstrate the complexity of the arrangements for the delivery of turf. When asked for the percentage of their turf sales that were delivered, at a national level, the average was for 75.2 percent of production being delivered. Interestingly, South Australia had the lowest percentage of delivery (41.3 percent) – considerably lower than other regions. This may be explained by a high percentage of total turf sales going to turf resellers, which is examined in further detail below.

Figure 2 – Delivery Percentage



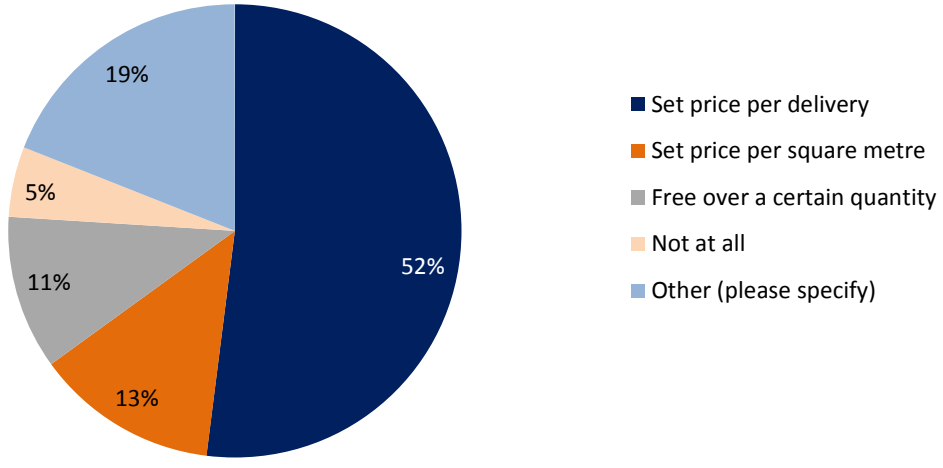
Applying the above estimates of turf deliveries to turf production estimates, provides an insight into the square metres of turf delivered in each state. When considered in terms of the volume of turf nationally, 28.8 million Sqm of turf was delivered.

Figure 3 – Delivery Volume



Growers were also asked how they charged for turf deliveries. At the national level, set price per delivery was the most common way of charging for deliveries. The 'Other' response was the second most common and these respondents advised that they used different volume and distance structures to calculate delivery fees. Interestingly, five percent of growers (n = 102) did not charge for deliveries at all.

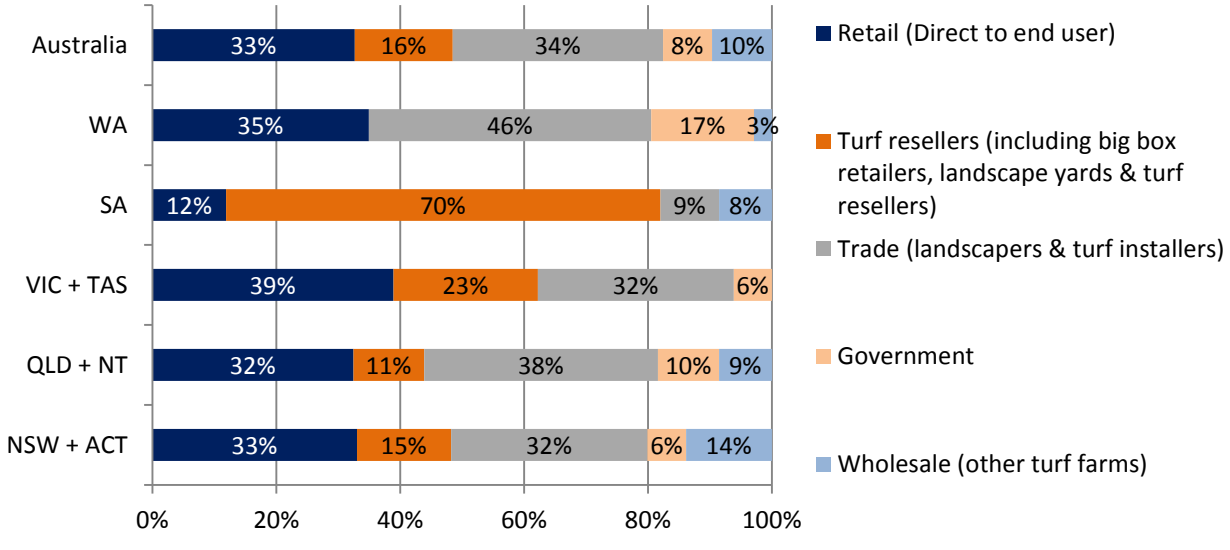
Figure 4 – Charging for Delivery



Question 6 - Sales Channels

Growers were asked to provide a percentage breakdown of turf sales by volume, across the various sales channels. At the national level, the two main sales channels for turf growers were retail (direct to end user) and trade (landscapers / turf installers). Interestingly, SA has a very high percentage of sales going to turf resellers (70 percent).

Figure 5 – Sales Channels



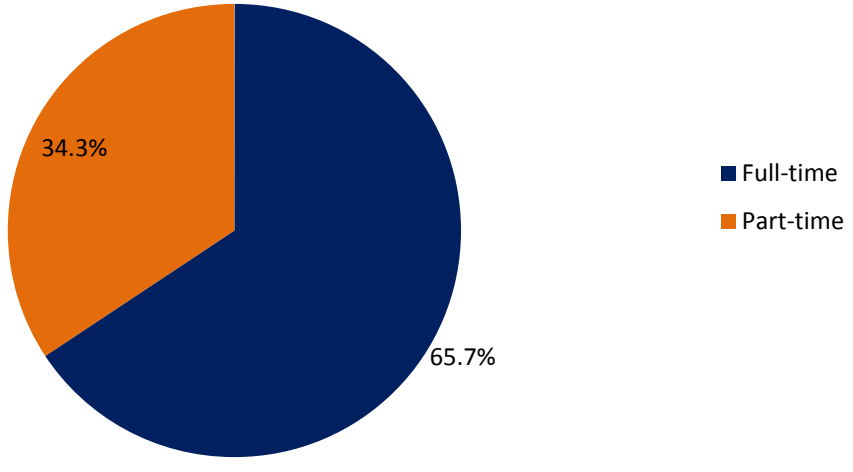
Question 7 - Employment

Australian turf businesses employed 1,171 FTE employees in the 2016-17 financial year. Of these employees, 65.7 percent were full-time and 34.3 percent were part-time. Total expenditure on wages in Australia was $59,491,973, with an average individual wage value of $50,799. Queensland + NT was the largest employing region, followed by NSW + ACT.

Table 5 - Employment

	Number of Turf Businesses	Total Wage Cost	Total FTE Employment	Average Wage/FTE
Australia	190	$59,491,973	1171	$50,799
NSW + ACT	79	$21,491,296	422	$50,944
QLD + NT	73	$20,936,394	454	$46,082
SA	7	$1,501,500	30	$50,471
VIC + TAS	11	$9,457,800	172	$54,881
WA	20	$6,104,983	93	$65,746

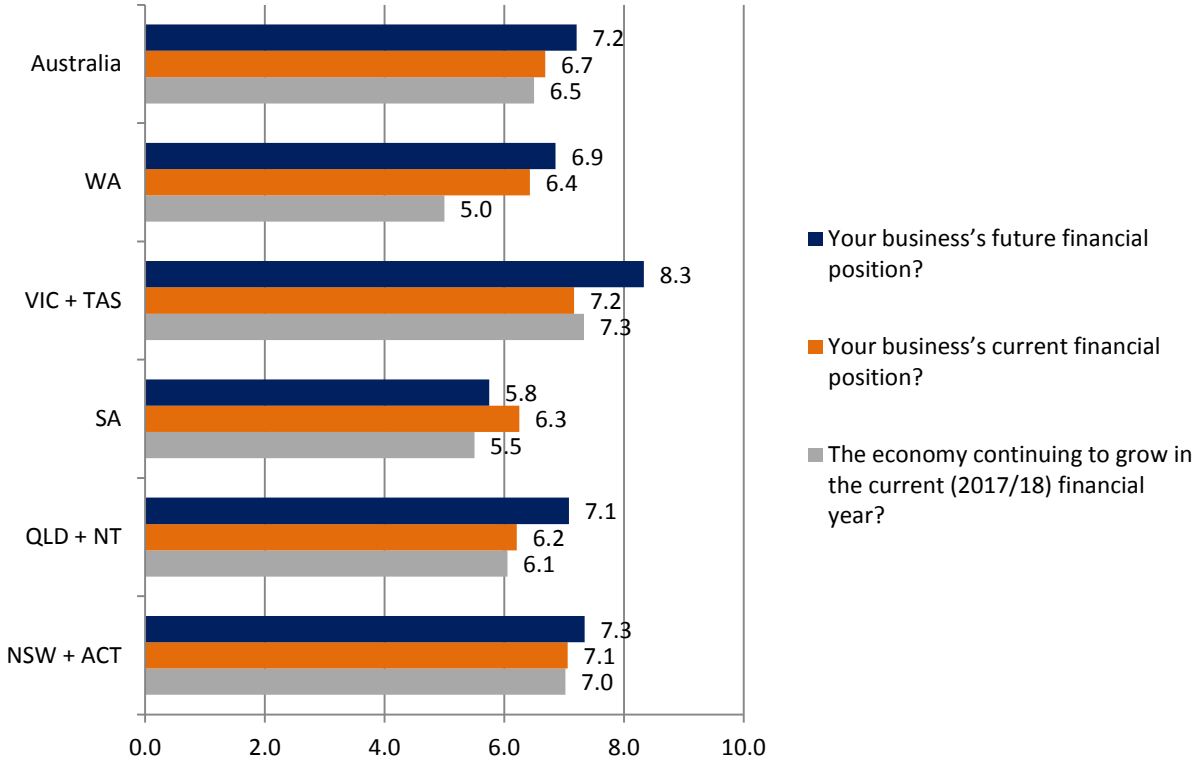
Figure 6 - Turf Full-time and Part-time Employees



Question 8 & 9 - Confidence

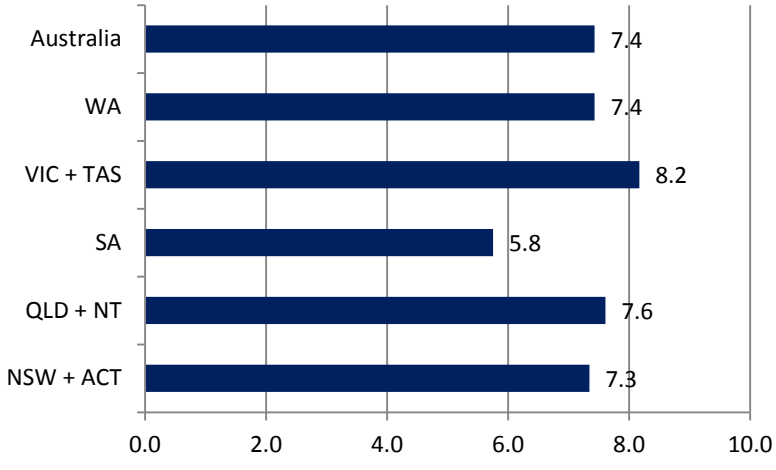
Growers were asked to rate their confidence in a number of key areas on a scale of 1 – 10, where 1 is not confident and 10 is very confident. Grower feedback illustrates a medium to high level of confidence in business conditions, although expectations for the economy are at the lower end of that range.

Figure 7 – Confidence Ratings



Growers were also asked to rate how likely they are to invest in their business in the next financial year on a scale of 1 - 10, where 1 is not likely and 10 is very likely.

Figure 8 – Likeliness to Invest



Additional Outputs

In the course of developing grower benchmark reports, WRI undertook additional analysis of the above data to develop certain production averages. The below tables highlight the average volume (total state, species production volume divided by the number of turf businesses in that state) and value (average volume multiplied by average state price) of turf production for each species.

Table 6 – Average Turf Production by Species by State

Specie Production by State (Sqm)	Buffalo	Couch and hybrid couches	Kikuyu	Zoysia	Paspalum and others (Tropical grasses)	Blue Couch (Tropical grasses)	Other specialty grasses
NSW + ACT	72,751	20,761	53,707	1,508	-		10,255
QLD + NT	40,198	152,925	2,246	10,189	3,567	5,253	
VIC + TAS	168,784	57,531	164,987	-	-	-	63,529
SA	75,345	17,020	274,882	-	-	-	5,207
WA	30,344	25,478	73,926	4,315	-	-	
Australia	61,436	74,027	50,655	4,996	1,370	2,147	8,217

Table 7 – Average Turf Revenue by Species by State

Specie Value by State ($)	Buffalo	Couch and hybrid couches	Kikuyu	Zoysia	Paspalum and others (Tropical grasses)	Blue Couch (Tropical grasses)	Other specialty grasses
NSW + ACT	$599,963	$97,748	$221,905	$9,844	$-	$-	$87,329
QLD + NT	$349,452	$506,136	$10,394	$66,996	$13,779	$22,705	$-
VIC + TAS	$1,793,951	$361,693	$1,179,854	$-	$-	$-	$541,606
SA	$581,016	$114,883	$1,450,469	$-	$-	$-	$43,326
WA	$336,376	$134,695	$442,405	$53,228	$-	$-	$0-
Australia	$544,395	$274,457	$264,574	$35,436	$5,294	$9,605	$69,609

Outcomes

The aim of the Turf Industry Statistics and Research Project was to produce accurate and reliable industry data which will provide a clear picture of the volume and value of turf production in Australia. The information gathered through this project will underpin efforts to evaluate the impacts of R&D investments made. It will be crucial to future decision making by Hort Innovation, government and turf industry organisations about more targeted investment in R&D, effective communication initiatives and even for regulatory initiatives such as biosecurity management.

This outcome was achieved with the development of a statistically robust turf production data set. WRI was successful in obtaining good coverage of turf production businesses geographically and across different production size businesses. This allowed for the development of a data set, based on sound statistical procedures, that closely confirms existing turf levy production data. This information provides a good baseline profile of turf production across Australia's turf producing regions, including insights into the production volume and value of different turf species and a number of industry operational issues, including deliveries, employment, sales channels and confidence.

A significant aspect of this project, and an outcome in itself, was that WRI was successful in coordinating industry bodies and engaging with growers to deliver a successful survey. Noting that the various turf industry bodies and individual growers have their own priorities, preferences and workloads, the ability to draw these actors together and deliver a successful survey took significant project management, negotiation and communication skills on the part of WRI.
Based on extensive experience in surveying and project management, WRI anticipated the complexities of the project and delivered on a methodology that ensured a successful project outcome. The delivery of a pilot survey provided valuable insights into how to communicate with growers, to ask effective survey questions and to engage stakeholders while navigating around various needs and sensitivities.

A further and key reason for the successful delivery of the project relates to WRI's role as an independent, not-for-profit research agency. Understandably, turf growers are keen to ensure that their personal and business information remains private and that participation in an industry survey does not compromise their business integrity, or divulge commercially sensitive data that may impact on their business negatively. As an independent research agency, WRI was able to provide and deliver on assurances of privacy and allow growers to participate in the survey, knowing that other industry participants would not have access to their confidential information.

Survey Incentives

A final outcome of the project was the awarding of incentives to a small number of growers. The Turf Industry Statistics and Research Project utilised a small number of incentives to encourage growers to participate. Three incentives were given away throughout the project, consisting of three $300 vouchers for Office Works

Growers were asked how better industry data will help their business, with the best answers winning the prize. One of these vouchers was awarded to one of the 20 growers who signed up to be a part of the survey at the Turf Australia Conference, held in Pokolbin in June. Two more vouchers were awarded to growers who completed up to question 10 of the survey.

Evaluation and discussion

Key evaluation questions assist to understand the extent to which the above actions and deliverables were useful in delivering a successful project result.

Effectiveness: To what extent has the project collected and made available data and benchmarks for the Australian turf industry?
The project has been successful in developing a statistically robust data set of turf production and other related insights into the turf sector. Benchmark data has been developed for growers at the state level.

Relevance: To what extent has the project met the needs of industry levy payers in making available up-to-date, robust data for the Australian turf industry?
Whilst the project has been successful in developing a statistically robust data set of turf production and other related insights into the turf sector, the needs of the industry levy payers were not always clear throughout the project. Greater clarification and input on the needs of the survey at the inception of the project would have been useful. Despite this, the data set provides good detail around the volume and value of production at the state level, as well as insights into other areas of interest for growers.

In one example of this, certain growers made it known that turf deliveries was a vexed issue for the industry and an area where many growers lost money. The survey was tailored to deliver insights into this issue and will hopefully open up an area for discussion amongst industry participants.

Process appropriateness: To what extent were the target engagement levels of industry levy payers achieved?
Target engagement levels were developed by WRI in its initial proposal. These targets were for a minimum 100 complete surveys and a maximum of 125 complete surveys. At this early stage, WRI was informed that there were up to 400 turf businesses in operation. Based on the then known number of operating turf businesses, this target range was seen as providing a robust data set for statistical analysis.

WRI achieved 104 complete surveys, which is over and above the minimum number of complete surveys committed to in its proposal. It should be noted that project fieldwork only found evidence of a significantly smaller number of operating turf businesses than initially suggested (potentially up to 190 turf businesses, although 57 of these businesses either did not answer multiple communications or a WRI interviewer couldn't speak with the owner for some reason). This raises the question of whether there as many operating turf businesses/agents as suggested in some of the larger estimates.

By achieving more than the minimum number of complete surveys committed to in its proposal (against a significantly smaller number of operating businesses) WRI achieved a much higher coverage of turf businesses in percentage terms. That is to say, WRI achieved coverage of approximately 55 percent of the estimated 190 potential turf businesses established throughout the project (104 complete surveys out of approximately 190 turf businesses) which is higher than originally anticipated.

Process appropriateness: Have regular project updates been provided, including linkage with industry communication projects?
Regular project updates have been provided to Hort Innovation through a range of formal and informal communications. In terms of formal communications, at key stages throughout the project WRI has utilised a weekly Work In Progress (WIP) meeting to keep Hort Innovation up to date with project activities and messaging. Milestone reports have been provided at the end of the pilot survey and at the six month milestone. WRI has reported back to the project committee and the turf SIAP committee at various stages throughout the project.

In addition, informal communications have been used to gather feedback and provide information on project happenings. These included phone and email communications between WRI, Hort Innovation, Turf Australia, LSA and the various state turf bodies. These communications were invaluable in terms of managing processes and keeping these stakeholders up to date.

Process appropriateness: To what extent were engagement processes appropriate for collecting data?
WRI proposed a high contact method for engaging growers and delivering the survey, utilising phone, email and media communications. This method had a particular emphasis on phone and email communications to sell the benefits of participating and manage privacy concerns. Growers were offered the chance to undertake the survey online or over the phone with a WRI interviewer.
The project required extensive communications, particularly by phone to:

- Speak with the right person at each turf business – not always easy
- Get growers onside, explain the project and to get them to agree to complete a survey
- Get growers to actually complete the survey once they had agreed

A range of other communication lines were used to provide information to growers. These included the Turf Australia E-News release and utilising industry direct emails through Turf Australia, state turf bodies and LSA. WRI developed communication materials including text and digital documents to assist these groups to engage with growers about the survey.

Furthermore, WRI attended the Turf Australia National Conference in Pokolbin in June. WRI engaged growers at the conference to inform them about the merits of the project and to gain pre-commitments to take part in the survey.

WRI believes that this process, whilst intensive, was an appropriate method of engagement and was necessary to overcome relatively low levels of grower engagement within the turf industry.

Efficiency: Was the project an efficient method for collecting data?
The background context to this question is that there has been very little emphasis on this kind of data collection in the past. The impact of this was that the project required a high level of industry engagement in order to encourage participation. Indeed, many project stakeholders agreed at the outset of the project that engagement with turf growers could be difficult.

A number of efficiency considerations warrant a mention:

- <u>Telephone versus online surveying</u>
  The project was designed to offer flexibility to growers, allowing them to complete the survey online, or over the phone with a WRI interviewer. WRI's previous experience has found that survey collection needs to remain flexible to meet the needs, abilities and timeframes of busy respondents. By offering only one means of completing a survey, it is likely that a percentage of respondents will not participate.

  In this project, it was found that there are positive and negative aspects of both online and phone based interviews. With phone interviewing, it was found that (once you were able to make phone contact with a respondent) there was a much better chance that a full/complete survey would be achieved and that interviewers could assist and encourage growers to complete a survey sooner. The difficulty in this method was that growers can be hard to contact and that calling at the wrong moment can be an inconvenience to growers.

  Online surveys were the most popular method, with the advantage of requiring lower input from the project team. However, there was often a significant time gap between a grower agreeing to complete a survey and the actual completion of that survey. In many cases, multiple reminder calls were needed. In a number of instances, those who had agreed did not actually complete a survey. There were also more instances of growers logging into the survey and not completing.

  Over, it was found that a mixed mode of survey delivery was required to achieve the survey sample.

- <u>Pilot survey</u>
  A pilot survey was required to develop a usable survey tool that would provide sufficient data to develop a reliable data set, whilst being accessible and understandable for turf growers. The pilot survey asked a series of detailed questions about turf production volumes and sales, including factors such as total land under production, total production, total revenue, wholesale sales to other turf producers and a range of other factors. A number of review questions were also asked to gather feedback on the survey tool itself.

  Feedback on the survey found it that some parts of the wording did not make sense in an operational setting and that certain questions were difficult and time consuming to answer. Amendments were made to reduce the

time and complexity of the survey. This resulted in a tested, useable survey tool that was successful in gathering important data.

- Industry engagement
  Anecdotal evidence gathered throughout the project highlighted that across the various jurisdictions and turf organisations, there are a range of different and sometimes competing needs, wants and purposes. Extensive industry engagement was undertaken to communicate the purpose of the survey; address the concerns of various organisations; discuss potential privacy concerns; and overcome reticence to engage in the survey. Whilst this process was time consuming, it was a necessary component of the project, insofar as it encouraged industry organisations and growers to engage in the project.

WRI believes that the project was an efficient method for collecting data, in that the above activities managed to achieve a successful result. If these activities were not undertaken, and a lower engagement methodology was used, it is unlikely to have resulted in a successful survey.

Stakeholder feedback

Project stakeholders, including Hort Innovation staff and project steering committee members were invited to provide feedback on project strengths and areas for improvement. Stakeholders expressed their interest in the turf production data set and advised that the project had been managed well. It was felt that the project steering committee had been kept informed of project activities throughout the project.

One stakeholder expressed the view that the initial scope of the project should have been wider, to include the total value of the turf sector. This view was also expressed to WRI staff by a number of growers throughout the survey process.

Recommendations

Recommendation 1: That the Turf Industry Statistics and Research Project should be undertaken annually.
WRI recommends that Turf Industry Statistics and Research Project be an annual project to ensure the industry has access to detailed and insightful data about turf production. The Turf Industry Statistics and Research Project was the first turf data collection project to develop robust and verifiable data on the volume and value of turf production in Australia. The data developed will assist growers and industry proponents to understand the dynamics of the turf industry and communicate the benefits of the industry.

The value of this data is in direct proportion to its currency and relevance. Future iterations will update this information and may be able to enhance the data collected to provide more industry insights.

Recommendation 2: That the Turf Industry Statistics and Research Project is recognised as an important industry engagement exercise.
WRI contacted every known turf producing business in Australia to participate in the survey. On this basis, the project needs to be understood as a key industry engagement activity. Many turf businesses contacted throughout the project operated in remote locations and/or had little engagement with the wider industry.

Involving growers in this project can assist industry bodies to engage with businesses, build trust and can boost future industry coordination efforts. Throughout the project, many turf growers volunteered information and were happy to discuss the industry and voiced insights and opinions on the future of the turf industry.

Recommendation 3: That future surveying continues to incentivise grower participation.
The project utilised an incentives budget to entice growers to participate in the survey through a competition to win one of three Office Works vouchers. Growers were incentivised to sign up and complete the survey at the Turf Australia Conference and at two stages throughout the survey period. Speaking with incentive winners, it was clear that this built goodwill and encouraged these growers to participate in future survey projects.

Recommendation 4: That steps are taken to support engagement with the various turf industry bodies to communicate the project.
Relationships are important in delivering a strong survey result. WRI worked with a range of turf industry bodies to communicate to growers and gain their participation in the survey. These bodies assisted mainly through email communications, but also included instances of verbal support from stakeholder organisations to growers. It is clear that, where relationships were utilised effectively, getting a complete survey was significantly easier. Finding ways to encourage industry bodies to better utilise their relationships to support survey completion would make future project delivery more efficient and would reduce project risk.

Intellectual property/commercialisation

No commercial IP generated.

Acknowledgements

WRI would like to acknowledge the assistance it received from turf industry bodies in developing and communicating the benefits of the project to turf growers. These organisations include Turf Australia, Lawn Solutions Australia, Turf New South Wales, the Queensland Turf Producers Association, the Turf Growers Association of Western Australia and the Turf Producers Association Victoria.

Appendix - Turf Grower Survey August 2017

The following questions were included in the turf grower survey.

1. Please provide the below information about your business. Your details will remain confidential and will not be shared with any other organisations or be utilised for any other purposes. Data will be aggregated before reporting and no individual data will be reported that would allow an individual to be identified.

- Best contact person
- Business name
- Email
- State
- Postcode
- How many years have you operated your turf business?

2. What was the total square metres of turf harvested for sale across the different turf species grown on your farm for the 2016/17 financial year? Do not include any turf purchased from other producers.

- Buffalo (Sq m)
- Couch and hybrid couches (Sq m)
- Kikuyu (Sq m)
- Zoysia (Sq m)
- Paspalum and others (Tropical grasses) (Sq m)
- Blue Couch (Tropical grasses) (Sq m)
- Other specialty grasses (Sq m)

3. What was the average price per square metre (including GST) you received for the different turf species harvested and sold by your business for the 2016/17 financial year?

- Buffalo ($)
- Couch and hybrid couches ($)
- Kikuyu ($)
- Zoysia ($)
- Paspalum and others (Tropical grasses) ($)
- Blue Couch (Tropical grasses) ($)
- Other specialty grasses ($)

4. In 2016/17, what percentage of your turf sales (by volume) did your business deliver?

5. How do you charge for deliveries?

- Not at all
- Set price per delivery
- Set price per square metre
- Free over a certain quantity
- Other (please specify)

6. In 2016/17, what was the percentage breakdown of your turf sales (in terms of volume) by sales channel?

- Retail (Direct to end user) (%)
- Turf resellers (including big box retailers, landscape yards & specialist turf resellers) (%)
- Trade (landscapers / turf installers) (%)
- Government (%)
- Wholesale (other turf farms) (%)

7. Please provide information on the number of employees your turf production business employed (including yourself and other family members) and your total wage bill in 2016/17.

- How many staff do you employ on a full-time basis?
- How many staff do you employ on a part-time or casual basis?
- What is your total wages bill? ($)

8. Please rate your confidence in the following factors on a scale of 1 – 10, where 1 is not confident and 10 is very confident.

- Your business's current financial position?
- Your business's future financial position?
- The economy continuing to grow in the current (2017/18) financial year?

9. Please rate how likely you are to invest in your business in the next financial year on a scale of 1 - 10,
where 1 is not likely and 10 is very likely.

- Likely to invest in your business.

10. To enter into the competition to win a $300 Officeworks voucher please tell us how better industry data will help your business? The best answer wins!

Appendix – Snapshot Report

Australian Turf Industry
Snapshot Report 2016/17

This snapshot report highlights industry aggregate and production benchmark statistics for the Australian turf industry, collected through the Hort Innovation funded Turf Industry Research and Statistics 2016/17 (TU16001) project. The project was commissioned to address a fundamental gap in turf industry data and statistics. The Western Research Institute (WRI) was engaged by Hort Innovation to lead industry engagement and deliver data insights.

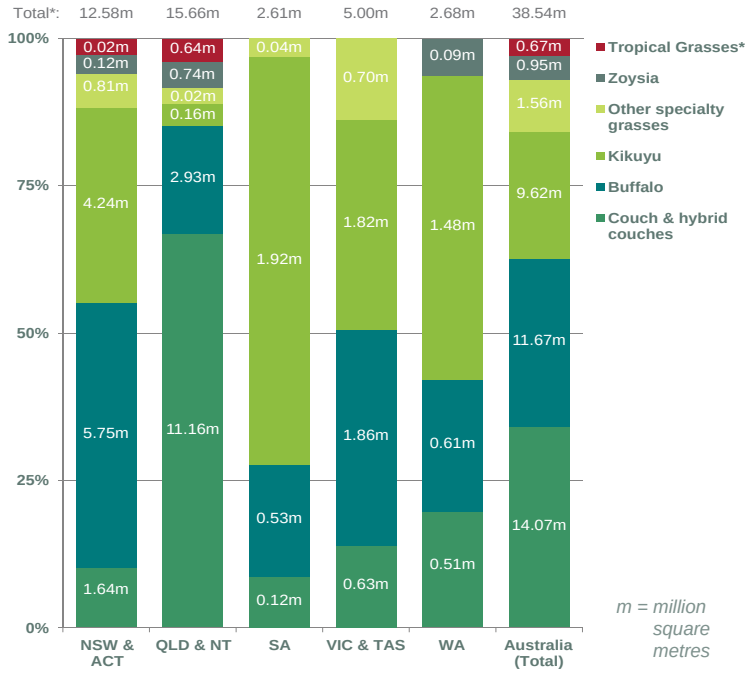
The results are based on a successful industry-wide engagement of over 100 turf growers. The data collected will assist the industry in data driven decision making, resource prioritisation, investment evaluation and strategic planning activities.

Further detail, including the Hort Innovation final report can be downloaded from http://horticulture.com.au/grower-focus/turf/.

Turf Industry Aggregate Data: This section presents survey data aggregated to national level for 2016/17.

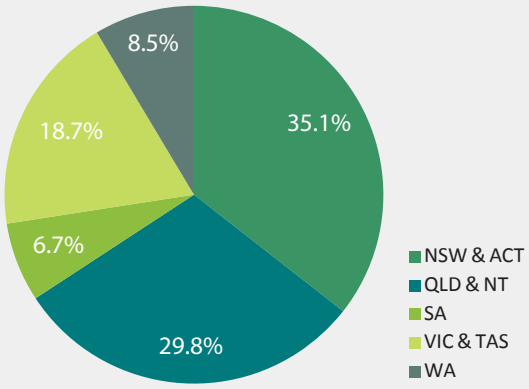
$228.64 million
Farm Gate Value of Turf Production in Australia

38,541,132 Sqm
National Australian Turf Production

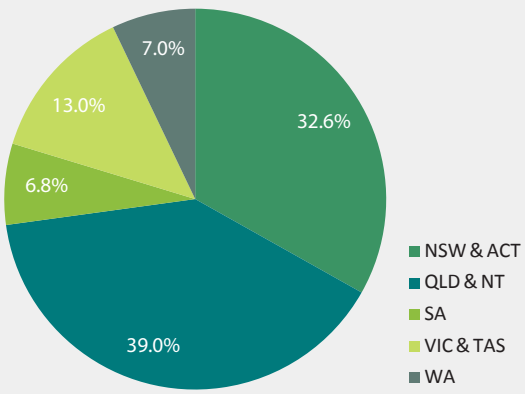


*Totals may not add due to rounding. **Tropical grasses includes both Paspalum, Blue couch and other tropical varieties.

Value
of Turf produced by State



Volume
of Turf produced by State



The project Turf Industry Research and Statistics 2016/17 (TU16001) was a strategic levy investment under the Hort Innovation Turf Fund. This project has been funded by Hort Innovation, using the turf industry research and development levy and contributions from the Australian Government. Hort Innovation is the grower owned, not-for-profit research and development corporation for Australian horticulture.

Australian Turf Industry
Snapshot Report 2016/17

Turf Industry Average Benchmark Data: This section presents benchmark averages at the farm level[1]

Average turf production (sqm) per farm

Species	Australia	NSW & ACT	QLD & NT	SA	VIC & TAS	WA
Buffalo	61,436	72,751	40,198	75,345	168,784	30,344
Couch and hybrid couch	74,027	20,761	152,925	17,020	57,531	25,478
Kikuyu	50,655	53,707	2,246	274,882	164,987	73,926
Zoysia	4,996	1,508	10,189	-	-	4,315
Paspalum and others	1,370	-	3,567	-	-	-
Blue Couch	2,147	-	5,253	-	-	-
Other speciality grasses	8,217	10,255	-	5,207	63,529	-

Note: Averages have not been calculated for jurisdiction/species with very low production.

Average farm gate turf revenue per farm

Species	Australia	NSW & ACT	QLD & NT	SA	VIC & TAS	WA
Buffalo	$534,005	$599,963	$349,452	$581,016	$1,793,951	$336,376
Couch and hybrid couch	$270,772	$97,748	$506,136	$114,883	$361,693	$134,695
Kikuyu	$249,238	$221,905	$10,394	$1,450,469	$1,179,854	$442,405
Zoysia	$34,315	$9,844	$66,996	-	-	$53,228
Paspalum and others	$5,294	-	$13,779	-	-	-
Blue Couch	$9,666	-	$22,705	-	-	-
Other speciality grasses	$69,601	$87,329	-	$43,326	$541,606	-

Average farm gate price ($/sqm) per farm

Species	Australia	NSW & ACT	QLD & NT	SA	VIC & TAS	WA
Buffalo	$8.86	$8.25	$8.69	$7.71	$10.63	$11.09
Couch and hybrid couch	$3.71	$4.71	$3.31	$6.75	$6.29	$5.29
Kikuyu	$5.22	$4.13	$4.63	$5.28	$7.15	$5.98
Zoysia	$7.09	$6.53	$6.57	-	-	$12.33
Paspalum and others	$3.86	-	$3.86	-	-	-
Blue Couch	$4.47	$6.85	$4.32	-	-	-
Other speciality grasses	$8.47	$8.52	$4.00	$8.32	$8.53	$8.30

Average volume of turf delivered per farm

Average	Australia	NSW & ACT	QLD & NT	SA	VIC & TAS	WA
Average volume delivered (%)	75%	76%	75%	41%	85%	81%
Average volume delivered (Sqm)	27,756,389	9,596,627	11,723,896	2,063,799	2,207,414	2,164,653

1. Due to the low number of turf producers in SA, VIC + TAS and WA, estimates in these jurisdictions have a margin for error (at the 95% confidence level) exceeding +/-30% and should be used with caution

Australian Turf Industry
Snapshot Report 2016/17

Average % of turf sales by sales channel

Sales channel	Australia	NSW & ACT	QLD & NT	SA	VIC & TAS	WA
Retail	33%	33%	32%	12%	39%	35%
Turf resellers	16%	15%	11%	70%	23%	-
Landscapers & Installers	34%	32%	38%	9%	32%	46%
Government	8%	6%	10%	-	6%	17%
Wholesale	10%	14%	9%	8%	-	3%
Total	100%	100%	100%	100%	100%	100%

Employment benchmarks

Average	Australia	NSW & ACT	QLD & NT	SA	VIC & TAS	WA
Number of Businesses*	190	79	73	7	11	20
Total Wage Cost	$59,491,973	$21,491,296	$20,936,394	$1,501,500	$9,457,800	$6,104,983
Total FTE Employment	1171	422	454	30	172	93
Average Wage per FTE	$50,799	$50,944	$46,082	$50,471	$54,881	$65,746

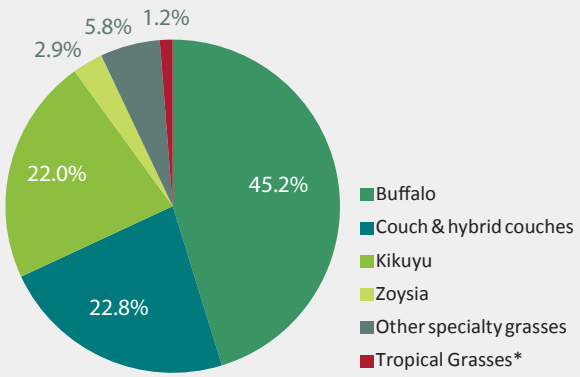
*Based on data from the Department of Agriculture and Water Resources. FTE: Full Time Equivalent employment

Business confidence

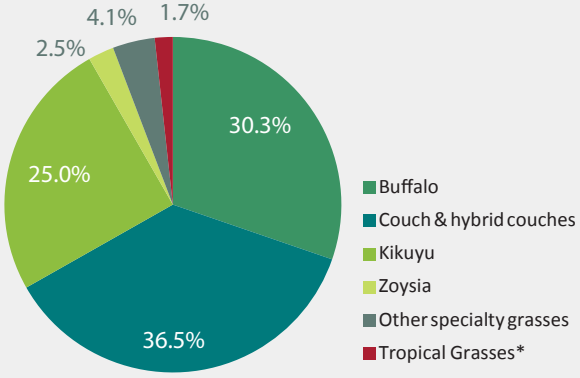
Average*	Australia	NSW & ACT	QLD & NT	SA	VIC & TAS	WA
The economy continuing to grow in the current (2017/18) financial year?	6.5	7.0	6.1	5.5	7.3	5.0
Your business's current financial position?	6.7	7.1	6.2	6.3	7.2	6.4
Your business's future financial position?	7.2	7.3	7.1	5.8	8.3	6.9
Likely to invest in your business.	7.4	7.3	7.6	5.8	8.2	7.4

*On a scale of 1 to 10.

Value
of turf produced by species



Volume
of turf produced by species



The graphs above present survey data aggregated at the national level.

Australian Turf Industry
Snapshot Report 2016/17

National Snapshot

104 *Respondents to the survey*

20 *Average years of business ownership*

75% *Turf delivered nationally*

About this research

The Western Research Institute (WRI) was engaged by Hort Innovation to undertake this research project. This project has been funded by Horticulture Innovation Australia Limited using the turf research and development levy and funds from the Australian Government. (TU16001 - Industry Research and Statistics 2016/17).

A summary of project activities, outcomes, outputs and an evaluation of project strengths and areas for improvement are included in the full survey report. The full survey results and reporting can be downloaded from the Hort Innovation website http://horticulture.com.au/grower-focus/turf/.

If you have any questions about this snapshot report, please contact WRI on 02 6333 4000. All care has been taken to ensure the confidentiality of respondents.

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