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# Organic agricultural production in Australia: 2010-11 and 2015-16

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# 1 Data: what is available and what shall we use

## 1.1 Organic data in Australia

In 2015-16 the farm gate value of organic production in Australia was estimated at well over \$1.1 billion, almost three times the value estimated five years earlier, in 2010-11. Over two-thirds of this production was generated by the livestock sector, including livestock products.

By far the largest contributor to the growth in that period was beef – with an almost six-fold increase in returns since 2010-11 – due mainly to the enormous growth in organic grazing areas, but also partly to an increase in beef prices in the conventional market and in premiums, and so in total value of production.

But this, of course, is not the whole picture of organic agriculture in Australia. It is clear that the Australian organic sector is more than extensive grazing – where beef cattle graze on unimproved pasture, although that covers over 90 per cent of the area under organic agriculture. There is also a more intensive agriculture with broad-acre and horticultural crops, where livestock is kept in a more intensively managed way.

In 2010-11 the Australian Bureau of Statistics (ABS) included organic agriculture in its census, which was repeated in 2015-16. In this paper the progress of the Australian organic production between those two years is tracked.

## 1.2 Organic data: a short history

Data on the organic sector in Australia is available mainly from the early 2000s. At that time the Australian Quarantine and Inspection Service (AQIS) – which was involved in certification of organic products in Australia – started to collect data on numbers of organic producers and area under organic management. A short history of availability of data in Australia is provided in Wynen (2016), which relates to data provided by certifiers.

Towards the end of the 2000s, the now Australian Organic Limited (AOL) started to publish bi-annual Market Reports – with estimates, in addition to numbers of farmers and area on organic farms, of the farm-gate value of production of the organic industry. These were based partly on their own surveys and estimates.

In 2011 the Australian Bureau of Statistics (ABS) included a question on organic certification in its 5-yearly census of the whole of the agricultural sector. This facilitated the publication of data on organic agriculture, including on numbers of certified operators, and several aspects of (at least partially) certified organic farms, such as area and quantities of commodities produced. In its 2012-13 survey (with approximately one third of the total farm population surveyed) it repeated the inclusion of organic agriculture, as it did in 2015-16 in a second census.

Figures in this report are the result of an analysis of the ABS census<sup>1</sup> data of 2015-16 – with comparisons with the census data from the earlier year, 2010-11. Data for these two years, and on

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<sup>1</sup> A census includes all growers. ABS reported a response rate of 88 per cent for 2010-11 (ABS 2011) and 85 per cent for 2015-16 (ABS 2016).

the growth between the years, are presented. Figures for 2012-13 are included in the tables in Appendix 2, and in the first charts in the main part of the report. They are included to provide some idea about the usefulness of ABS survey<sup>2</sup> data, collected in between two census years, for use in the future.

### 1.3 ABS-data: changing definitions and other issues

ABS conducts an Agricultural Census every five years. For the year 2010-11 ABS included for the first time a question on organic agriculture, which facilitates an analysis of the organic sector.

In an earlier publication, Wynen (2016) pointed out that there were several issues that necessitated adjustment of the ABS data to be able to provide a reasonable estimate of the organic market in Australia.

One was an adjustment to premiums paid for organic products. A second adjustment was needed because not all organically certified land was used for organic production. And a third issue was that not all organic production was sold on the organic market. For more information on those issues see Appendix 1 and Wynen (2016).

In 2015-16, ABS included organic agriculture again (see Box 1).

#### Box 1: Question included in ABS census: 2015-16

The screenshot shows a section of the ABS agricultural census form. At the top, it says 'Part 2 – Land details – (continued)' on the left, '8' in the center, and 'AGC' on the right. Question 10 asks: 'Does this business hold current organic or bio-dynamic certification, including in-conversion certification?'. Below this is a 'Note' box with two bullet points: 'Organic/bio-dynamic certification – Current organic and/or bio-dynamic certification to a recognised standard.' and 'In-conversion certification – Current certification that land is organic and/or bio-dynamic ‘in-conversion’.'. There are two radio button options: 'No' with a yellow arrow pointing to 'Go to Question 12', and 'Yes'. Question 11 asks: 'What area of this holding is certified as organic, bio-dynamic or in-conversion?'. To the right of the question is a numerical input field with a decimal point and a label 'Hectares' above it.

In that year, another factor changed, which means that a change in use of data is needed to be able to make comparison between the included years. In the past, the ABS agricultural census (2010-11) and survey (2012-13) included only producers with an Estimated Value of Agricultural Operations (EVAO) greater than \$5,000. This means that farms with output of a total value of more than \$5,000 were included in the data. However, in the 2015-16 census this threshold was raised to \$40,000 which, in Australia, could exclude quite a number of (small) organic farmers. For example, for 2010-

<sup>2</sup> ABS agricultural survey for 2012-13 includes approximately one third of the total number of growers, randomly selected. This is in contrast to AOL’s approach – when relying on surveys – where totals are based on answers received from producers, without taking account of the characteristics of producers who do not respond. This can bias the results.

11 around one third of the total certified organic producers in that year had an EVAO of between \$5,000 and \$40,000.

To estimate growth rates, it is, of course, important to compare like with like. For this reason, the comparisons in this analysis are made between the group of farmers with an EVAO of over \$40,000 in both years. As mentioned, this reduces the number of organic farmers by about one third as compared with when all certified farmers are included. This goes at least some way to explain the low figures for the number of producers for the ABS data for 2010-11 and 2015-16 as compared with estimates from other sources in other years (see Section 2).

Although the change in criteria for inclusion makes a big difference in the number of growers, this is not the case for total area under organic management and total production. In 2010-11 this change in threshold decreased the total area from 13.6m ha to 11.8m ha – a decrease of 13 per cent as compared with 31 per cent of the number of growers. In other words – it is likely that the growers with lower values of agricultural operations, who are now excluded from the census, are the ones with smaller farms. But with a drop of 1.8m ha, it is also likely that some graziers, with very large properties, are included in that category. In addition, there are (probably mainly small) farmers who practise organic principles, but do not find it worthwhile to be certified, as they can sell via outlets such as farmers markets and box schemes. They would not be counted in the group of certified organic farmers. Also, some farmers are certified via international certification (such as International Certification Group), and do not involve themselves with the Australian domestic certification schemes, who provide the data for numbers and acreage. These last two groups may have increased the final figures collected by the organic industry, but not likely by much. Only the last group is likely to be included in the ABS data.

The difference in area under organic management is, of course, not only influenced by the criteria of the EVAO, but also by other factors. One important factor is that the ABS data on area under organic management includes the whole of the agricultural property, even when only part of the farm is certified organic. Other studies may report only on certified areas. This would bias upwards the ABS data for area under organic management, and possibly production and the Value of Agricultural Commodity Production (VACP) for the organic industry.

There are several challenges in calculating the value of organic farm production. This is especially the case for those commodities where only part of the enterprise is managed according to organic principles or where ABS indicates caution with the results. The main commodities of concern are grapes for wine, poultry for meat, and egg production.

Although based on ABS data, this report has benefitted from information provided by members of the organic industry – most of whom did not want to be named, although I like to acknowledge their contribution. This report could not have been what it is without their generosity of information. Any problems with the data are – of course – the author's responsibility.

## 1.4 This report

First we set the scene of the present situation in organic agricultural by summarising some general characteristics – such as area under organic management and number of producers – with a more detailed summary of land use for the last few years in Section 2. The main section of this report then handles the farm-gate values of organically produced products sold as organic (Section 3).

However, that section doesn't tell the whole story, as the total value of production is influenced by a number of factors such as area under production (Section 4), yields in a particular year and volumes sold (Section 5), and product prices – both conventional prices and organic premiums (Section 6). This then is all pulled together in the conclusions, in Section 7.

That then is the time for some reflection by the Australian organic industry to contemplate the usefulness of ABS data for the industry in the future. If decided positively, what are some of the questions the industry will need to consider and act upon in the near future? Some suggestions are provided in Section 8, but hopefully this is the beginning of a longer conversation within the industry, which will lead to better data availability for Organic Australia in the future.



## 2 Total area and number of producers

The area under certified organic production has changed enormously over the last few years (see Table 1). Rapid growth in area under organic management in Australia started around the early 2000s, with a dramatic increase from just over one million in the mid-1990s to over five million in 2001. A few years later, in 2003, it had jumped to over 11 million, a figure that has been reasonably stable until 2014, when AOMR (2014) reported an organic certified area of 18.3 million ha. In ABS's 2015-16 census, it was recorded at 28.9 million ha, which is 7.6 per cent of total of agricultural holdings in Australia (ABARES 2017). The latest estimates put the figures considerably higher, perhaps closer to 50 million in 2019.

**Table 1: Area under organic management, and number of organic producers**

Year	Area (ha million)	Share (% of total hectares Australia)	Organic producers (number)
1982			<500
1990-a			950-1200
1990-b	0.4		1,260
1995	1.1		1,462
2001	5.3		
2002	6.2		
2003	11.2	2.5	1,730
2004	12.1	2.6	1,859
2005	11.8	2.7	1,894
2006	12.3	2.8	1,710
2007	12.0	2.7	1,776
2008	n.a.	n.a.	n.a.
2009	12.0	2.9	2,129
2010-11	11.8	2.7	1,048
2014	18.3	4.1	1,707
2015-16	28.9	7.6	1,122
2017	35.0		1,998

Sources: 1982 and 1990-a: Conacher and Conacher (1991); 1990-b and 1995: Hassall and Associates 1995; 2001-2007: AQIS (adapted by author); 2009: AQIS (adapted by A. Mitchell *et al.*); 2010-11: ABS (customised report 2016); 2014: AOMR (2014); 2015-16: ABS (customised report 2018); 2017: AOMR (2018) estimate. Note: different sources may estimate in different ways (see text).

Looking at Table 2 it becomes clear that the growth of 'land mainly used in agricultural production' occurred in particular in 'other land', that is, in unimproved pasture. This category, including mainly extensive grazing areas, grew 2.5-fold since 2010-11, and comprised 91 per cent of the total - up from 88 per cent in 2010-11. We will see in Section 3 that sales of organic beef, which is the main commodity produced on unimproved pasture, increased close to six-fold over that period.

As management methods on (non-certified) unimproved pasture is generally close to organic management anyway, organic certification on those properties will often be easy to achieve, without the need for major changes in the farming practices.

**Table 2: Land use in organic agriculture in different years**

	2010-11	2010-11	2015-16	2015-16	2015-16 minus 2010-11
	ha	% of total	ha	% of total	% change
Total area of holdings	11,833,915	100	28,876,574	100	144
Land mainly used for agricultural production	11,439,212	97	27,511,047	95	140
of which:					
- Crops	200,197	2	169,087	1	-16
- Forestry plantation	4,482	0	4,299	0	-4
Total grazing	11,233,816	95	27,324,242	95	143
of which:					
- Grazing on improved pasture	851,710	7	941,040	3	10
- Grazing on other land	10,382,107	88	26,383,202	91	154
Other agricultural purposes	716	0	647,074	2	90,259
Other area - not used for agricultural purposes	404,685	3	919,919	3	127
of which:					
- Set aside for conservation	256,706	2	494,178	2	93
- Other	147,979	1	425,741	1	188

Based on: ABS (Customised report, 2016) and ABS (Customised report, 2018).

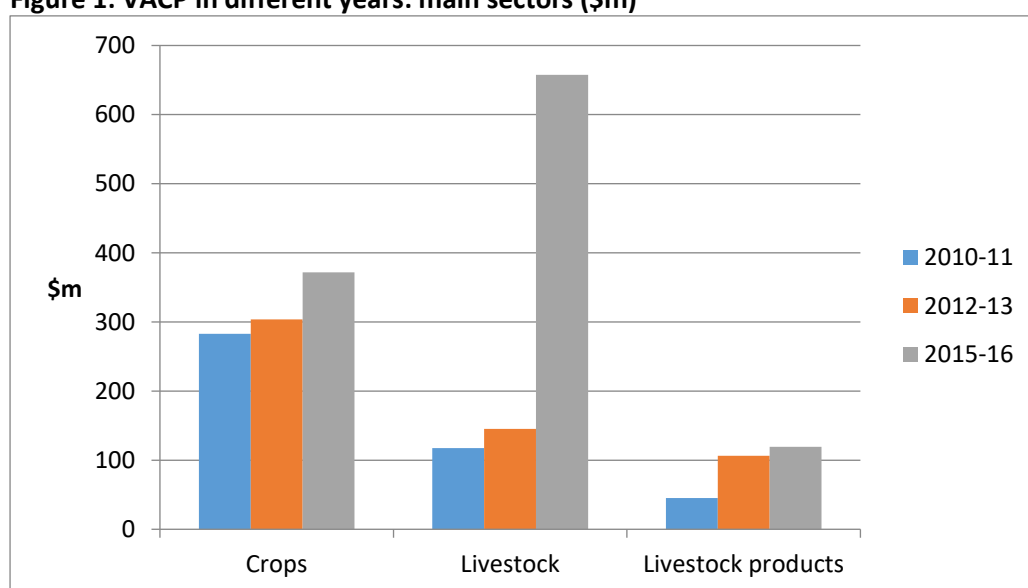
Much of the recent expansion of organic agriculture could therefore well be attributed to an expansion of the organic beef markets – rather than a shift in production methods from conventional to organic agriculture. When analysing the organic market in Australia it makes therefore sense to split the two sectors – extensive grazing and beef on the one hand, and the rest on the other hand (including crops and other livestock and livestock products).

## 3 Value of Agricultural Commodities Production

### 3.1 Overview total organic market

In 2015-16 the farm gate value of organic production was estimated at well over \$1.1 billion (see Table A.2.1), almost three times the value estimated five years earlier, in 2010-11. Over half of this was generated by the livestock sector, including livestock products (see Figure 1 and Table A.2.1). By far the largest contributor to the growth in the period was beef – with an almost six-fold increase in returns since 2010-11 – due mainly to the enormous growth in organic grazing areas (see Section 2), but also partly by an increase in prices in the conventional market, thereby also increasing organic prices, and so the total VACP (see Section 6). This growth in the beef industry occurred mainly in the last few years of that 5 year period – the ABS survey of 2012-3 did not show that growth.

**Figure 1: VACP in different years: main sectors (\$m)**



Based on: ABS (Customised report, 2016) and ABS (Customised report, 2018).

Also, poultry and eggs (in the livestock and livestock products sector, respectively) showed a remarkable rate of growth in those 5 years, albeit less in absolute figures – due to starting from a considerably lower base. However, industry sources estimate the returns considerably lower for both these sectors (see below).

In the crop sector, significant growth between the two years was recorded in particular in fruit and vegetables. Details are discussed in the rest of this Section.

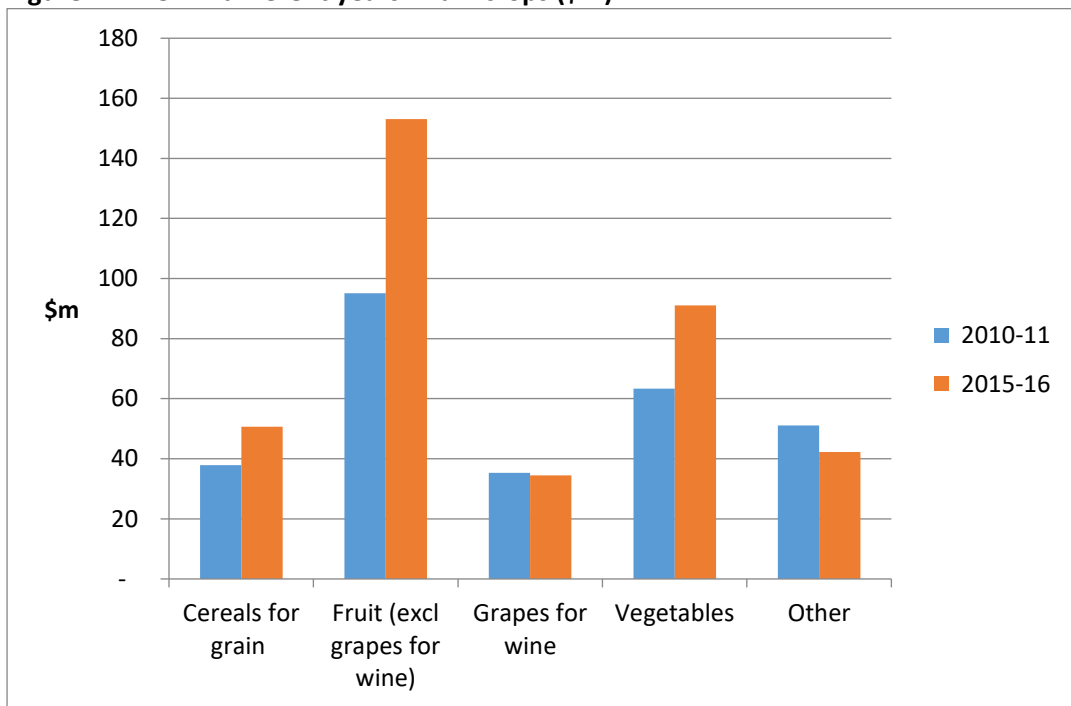
### 3.2 Crops

#### 3.2.1 Overview

In the crop sector, the growth between the two years is recorded in particular for fruit and vegetables, which grew at an annual rate of 8 per cent. Grain value grew very little, at 21 per cent over that period, equivalent to 4 per cent per year. Grapes grown for wine did not contribute to this growth - despite a growth in volume produced (see Figure 2 and Table A.2.3). This was due to a

decline in relative premiums between the two years. The 'other' category (including crops for hay, pulses and cotton) decreased by somewhat over the five years, though from a small base.

**Figure 2: VACP in different years: main crops (\$m)**

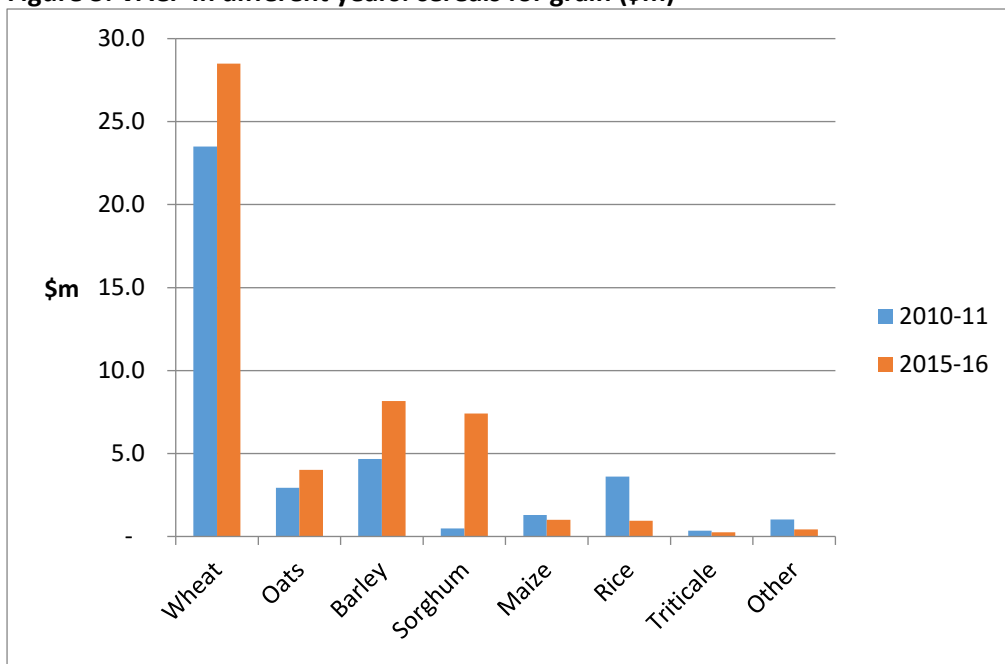


Based on: ABS (Customised report, 2016) and ABS (Customised report, 2018).

### 3.2.2 Cereals for grain

Many different grains are grown organically, but by far the most important one is wheat, being between about half to two thirds of the total, depending on the year (see Figure 3 and Table A.2.2).

**Figure 3: VACP in different years: cereals for grain (\$m)**



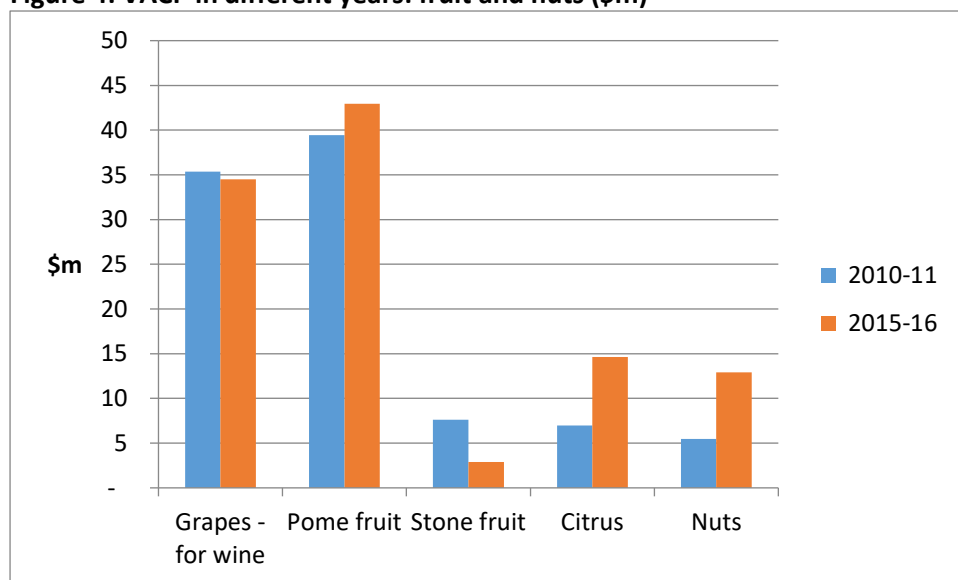
Based on: ABS (Customised report, 2016) and ABS (Customised report, 2018).

There is a very great and increasing demand for organic wheat for grain – not only for human consumption but also for feed in industries such as chicken and dairy. However, supply is not keeping up. There are several reasons including dry conditions in 2015-16, and other production problems, such as soil nutrient and weed issues. In addition, changes in outside factors such as irrigation policies have contributed in changes in area under grain production. The sales of water rights available to four large-scale dry-lake farmers contributed greatly to the decline in production of organic wheat around that time. In the 5-year period under consideration here, the greatest changes in grains were sorghum (considerable increase, though from a low base) and rice (decrease). Note that, an increase in value of a commodity does not necessarily mean an increase in quantity produced (see also Section 5).

### 3.2.3 Fruit and vegetables

Fruit and vegetables made up approximately three quarters of the VACP of crops on organic farms in 2015-16, up from two thirds of crop receipts in 2010-11 (see Figure 4).

**Figure 4: VACP in different years: fruit and nuts (\$m)**



Based on: ABS (Customised report, 2016) and ABS (Customised report, 2018).

VACP received for grapes for wine, which is not included here in organic fruit production, was very similar between the two years. As opposed to wheat, the quantity produced increased and the premium dropped, resulting in lower total farm gate receipts. However, figures for the VACP for organic grapes for wine are difficult to verify as differentiation between the organic and non-organic production is not recorded by ABS.

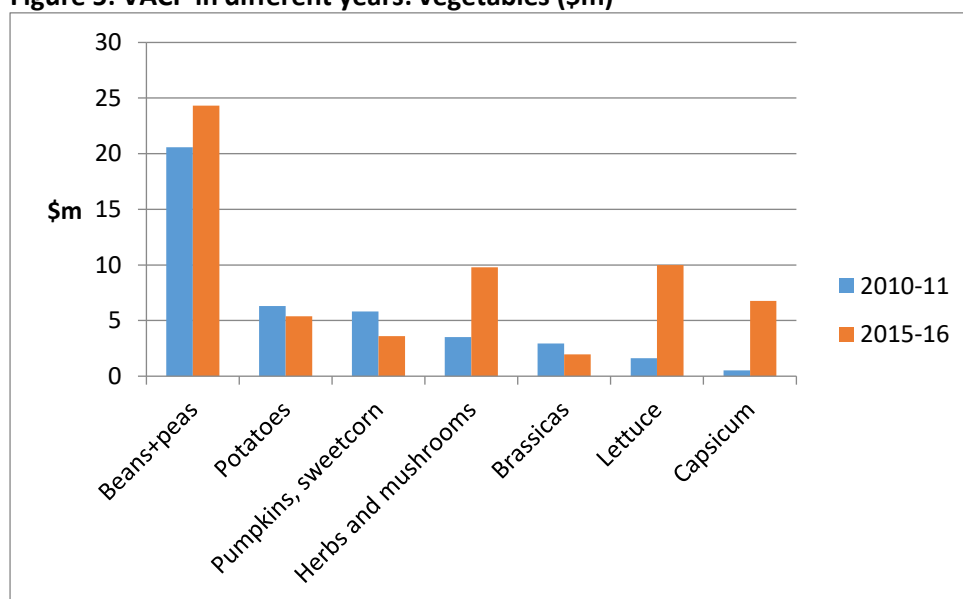
It is likely that a much higher percentage of the organically-grown grapes are grown on properties with a large proportion of its area under conventional management. This is the case because some large wineries manage only a small percentage of their total area as organic, while ABS counts the whole area of the property. For example, in both years, two thirds of the VACP from grapes for wine were grown on properties with less than 50 per cent of area under organic management, and only around 10 per cent on properties that reported their whole area as being certified.

Returns from grapes for wine are almost as high as from the pome fruit, mainly apples (see Table A.2.4), by far the most important sector in fruit.

Stone fruit, citrus and nuts each made between around 5 per cent of the total value of organic fruit in 2010-11. Stone fruit was the only category that decreased in the 5 year period discussed here. Citrus, coming from a low base (\$7 million in 2010-11), reached an estimated farm gate value of almost \$15m in 2015-16 – more than double the value in 2010-11. Nuts also grew considerably by more than doubling its estimated value during the period but, at \$12.9m, is still a very small player in the total fruit market in 2015-16.

For vegetables, beans (and some peas) were the largest group, making up around 30 per cent of the total vegetable market (see Figure 5 and Table A.2.3). Other major crops were potatoes, pumpkins and sweetcorn, making up another 20 per cent, though the last two groups decreased in value in the 5 years under consideration. The sectors with growth were herbs and mushrooms (contributing 10 per cent to the total vegetables), and especially lettuce and also capsicums. Both of these came from a very low basis in 2010-11 and grew to between 11 and 7 per cent, respectively, of the total vegetable market in 2015-16.

**Figure 5: VACP in different years: vegetables (\$m)**



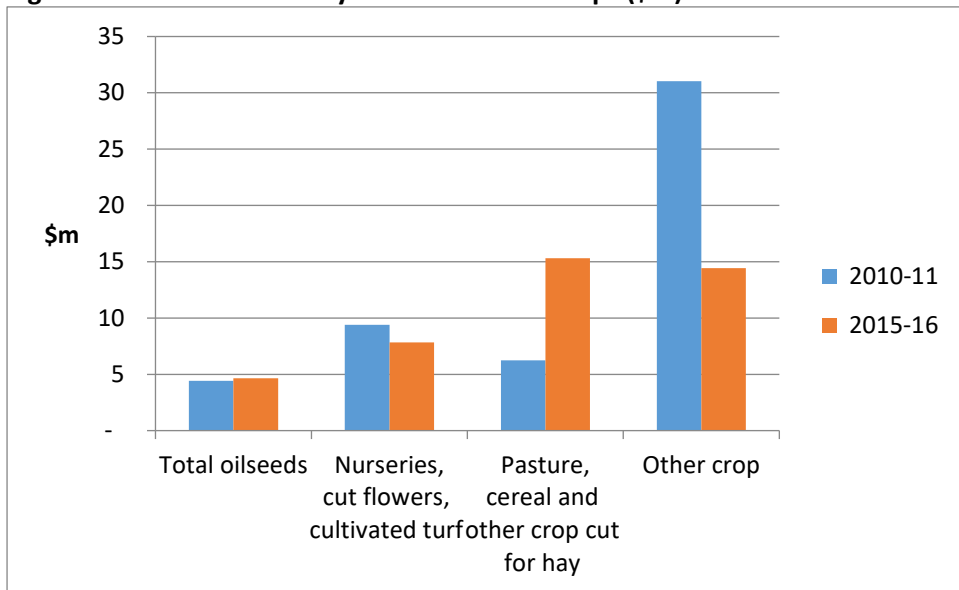
Based on: ABS (Customised report, 2016) and ABS (Customised report, 2018).

### 3.2.4 Other crops

Some small crops, including oil seeds, horticultural crops such as nurseries, cut flowers and cultivated turf, and pasture cereals (such as oats) and other crops cut for hay make up around 10 per cent of all crops (see Figure 6 and Table A.2.4).

Of the three categories in this group of crops, receipts from oilseeds seem rather stagnant, though canola has grown somewhat in the 5 year period. By far the most growth can be seen in the ‘pasture, cereals and other crops cut for hay’ that more than doubled in value between 2010-11 and 2015-16. ‘Other crop’ includes pulses, sugar cane and cotton, where the drop in VACP was mainly due to a large drop in organically-grown cotton.

**Figure 6: VACP in different years: total other crops (\$m)**

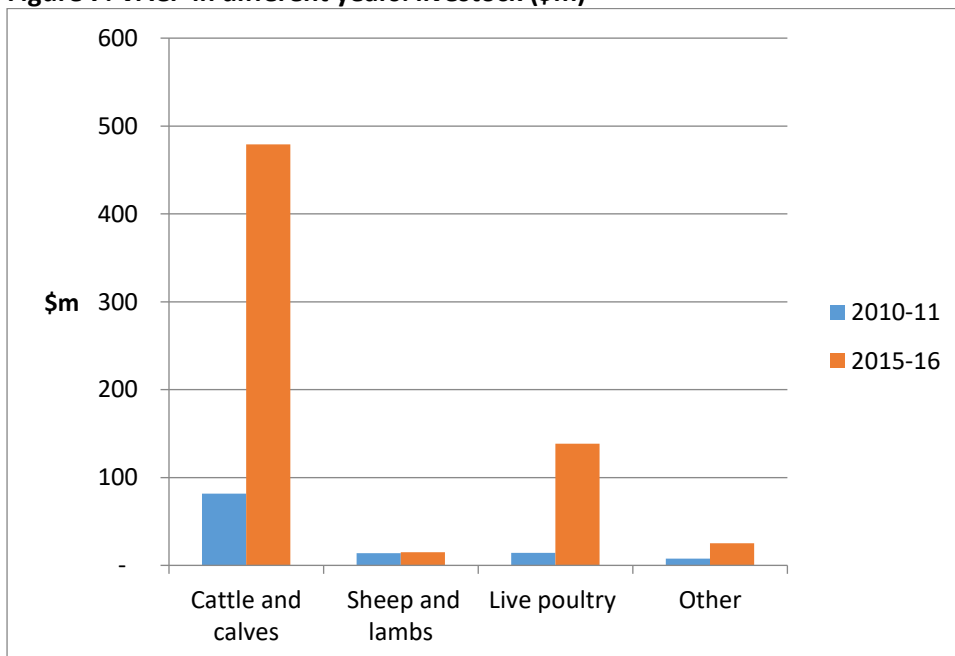


Based on: ABS (Customised report, 2016) and ABS (Customised report, 2018).

### 3.3 Livestock

By far the largest value of the total organic meat sector – two thirds of the total in both 2010-11 and 2015-16 – is ‘cattle and calves’ (that is, beef), with an almost six-fold increase in production in the 5-year period, most in the last 2 years. For values of the livestock sector – see Figure 7 and Table A.2.5.

**Figure 7: VACP in different years: livestock (\$m)**



Based on: ABS (Customised report, 2016) and ABS (Customised report, 2018).

Note: industry figures for organic poultry production in 2015-16 are considerably lower – see text.

As mentioned before, the organic beef sector has expanded mainly due to export opportunities, particularly to the USA but also to many Asian markets, such as South Korea, China, and Hong Kong, and to the Middle East.

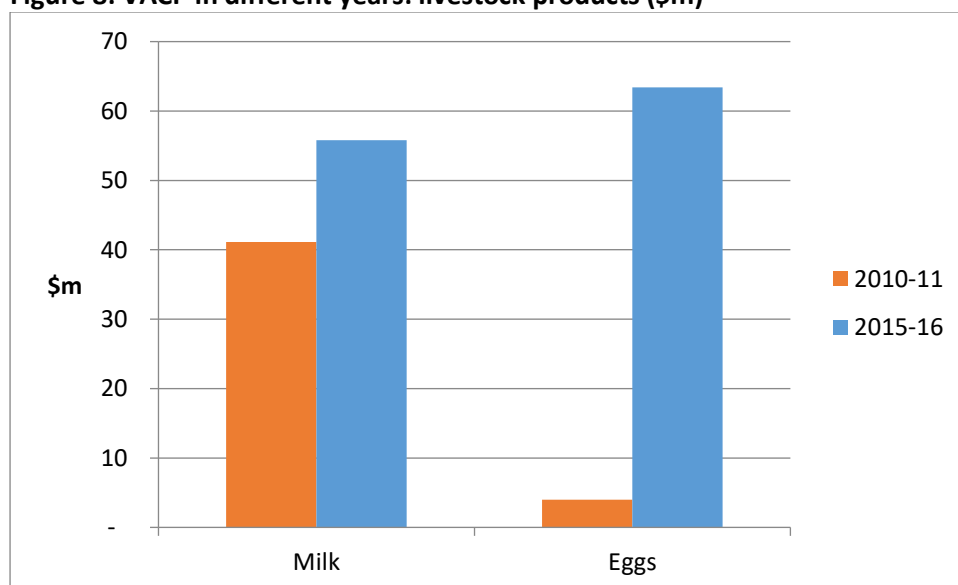
Sheep and lamb are only a very small part of the total organic livestock sector at around \$10–\$15million per year. Since the mid-2010s, the supply of fat lambs has suffered from the long-lasting drought in the whole of eastern Australia. Approximately 60 percent of the organic lambs sold via specialised agents were exported, almost exclusively to the USA. However, part of the organic lambs is sold in the conventional market, as it may accommodate different requirements from producers – such as being able to sell a larger quantity at one time, or less strict weight requirements per animal, while premiums are quite low anyway.

The second largest group shown in Table 7 is live poultry, which - according to ABS figures - also has grown considerably over the last five years. However, industry insiders estimate the total value of the organic poultry sector considerably lower, with figures possibly lower than half of ABS data. This could be due to the fact that producers of organic poultry may also produce free-range and conventional animals. However, ABS data does not record these differences (see also Section 3.4.2 for eggs).

### 3.4 Livestock products

Organic livestock products include milk and dairy products and eggs. Wool, if produced as organic, is rarely sold as such, as few opportunities for premiums exist. It is therefore not included here.

**Figure 8: VACP in different years: livestock products (\$m)**



Based on: ABS (Customised report, 2016) and ABS (Customised report, 2018).  
 Note: industry figures for organic egg production in 2015-16 are lower – see text.

#### 3.4.1 Milk

The VACP from milk increased by 36 per cent between 2010-11 and 2015-16, up from \$41m to \$56m (see Figure 8 and Table A.2.6). Expansion in this time was relatively slow. However, due to recent large changes in the conventional dairy sector and to dairy companies actively encouraging organic dairy production, it is expected that there will be big changes in the organic dairy sector. A doubling of organic production in 2019 from 2017 figures is predicted by industry insiders.



### **3.4.2 Eggs**

ABS data indicate a total value of eggs produced on organic farms of \$165m. In 2015-16 ABS recorded the total, and also the number of eggs produced by caged birds and by free-range birds. Almost two thirds of the total eggs were produced by caged chickens, which by definition are not organic. Of the rest - \$63m - all are free-range eggs, but not necessarily organic. In fact, industry estimates that approximately half of those are organic which, if correct, would put organic egg production at just over \$30m.

## 4 Area of production

As discussed in Section 2, the largest part of the Australian certified organic area is in unimproved pasture, which was 26.4m ha in 2015-16 – or 94 per cent of the total under organic management, up from 10.4m ha in 2010-11, when it accounted for 88 per cent of the total.

However, in the same period the total area in crops under organic management decreased by 13 per cent, from 0.20m to 0.17m ha (see Table 3). Looking at cropping on organic properties, we see that land used for cropping in 2015-16 was less (by 16 per cent) than in 2010-11. At the same time, we see that returns from cropping went up (see Section 3).

**Table 3: Area in crop in different years**

	2010-11	2015-16	2015-16 minus 2010-11	2015-16 minus 2010-11
	ha	ha	ha	% change
Area mainly used for crop	200,197	169,087	- 31,110	- 16
Crops - total	109,583	94,981	- 14,602	- 13
Crops - broadacre	95,010	64,866	- 30,144	- 32
Crops - cereal	70,955			
- Wheat	44,366	24,759	- 19,606	- 44
- Oats	8,013	8,319	306	4
- Barley	10,505	8,215	- 2,290	- 22
Fruit – excl. grapes	4,093	4,567	473	12
Grapes - total	4,079	5,783	1,704	42
- Grapes - wine	3,970	4,895	925	23
- Grapes - other	110	888	779	711
Vegetables	2,779	3,902	1,123	40

Based on: ABS (Customised report, 2016) and ABS (Customised report, 2018).

Returns from cropping depend not only on area cropped and total production, but also on prices paid to organic producers, both for changes in the base-price (conventional) and changes in premiums for the organic part of the product. To determine growth in the market it is therefore important to discuss not only area, but also production and the development of prices – which are shown in Sections 5 and 6.

Note that, in Australia, weather conditions can vary greatly from year to year, and a change in quantities produced and value of production do not necessarily mean an overall growth or decline of

the industry. Not even a change in area of production necessarily indicates this, as producers may adapt their planting to yearly weather conditions.

Of the area under broad-acre crops, wheat – the main cereal crop – decreased most, to a bit over half of that in 2010-11. Also, barley (the second most important cereal crop) decreased its acreage – by almost a quarter – while area under oats increased marginally. The decrease in area under these crops is partly due to the fact that 2015-16 was a dry year, but grain producers also struggle with production due to issues such as nutrients and weeds. Mostly not irrigators, grain farmers will react more to adverse weather conditions than many growers of fruit and vegetables.

Area in fruit other than grapes did increase somewhat (12 per cent), but the area on properties with mainly vegetables grew most – by 40 per cent.

## 5 Volumes of production

Turning to the quantity produced of some of the commodities between the two years of comparison, we see that the change is negative in some commodities (Table 4).

**Table 4: Production of some selected commodities in different years**

		2010-11	2015-16	2015-16 minus 2010-11	% change
Wheat	tonne	79,707	37,864	-41,843	-52
Barley	tonne	18,204	17,024	-1,180	-6
Oats	tonne	12,392	7,108	-5,284	-43
Grapes for wine	tonne	48,743	56,140	7,397.6	15.2
Cattle - meat	no.	340,387	803,140	462,753	136
Sheep and lamb	no.	859,823	725,180	-134,643	-16
Dairy cattle	no.	12,554	15,394	2,840	23

Based on: ABS (Customised report, 2016) and ABS (Customised report, 2018).

The decrease in the production of wheat between 2010-11 and 2015-16 is quite in line with the decrease in area in wheat. For barley, however, almost as much barley was produced in 2015-16 as in 2010-11 despite the decrease of almost one quarter of the area under barley. And for oats it was a bad year with a decrease of 22 per cent in production with a similar area in this crop in the two years.

In the livestock sector, the measure is not in production of that year, but production capacity (that is, stock on the farm in that year) – which is, of course, related to production.

The biggest development in livestock is that of beef, where numbers increased by 136 per cent as compared with 2010-11.

The only decrease was shown in sheep and lamb production – by 16 per cent.

Organic dairy grew moderately by standards of beef but showed still a 23 per cent increase in numbers of milkers and dry cows. A substantially larger growth is expected in the following years, due to encouragements from at least one processor trying to recruit more organic farmers.

## 6 Product prices

The value of production is price multiplied by quantity. In some cases, an increase in prices can explain all the increase in value without any increase in the quantity produced.

An increase in (conventional) product prices, or an increase in organic premiums between the two years of comparison, can give rise to the perception of a growth in the organic sector – even when there is no growth in production. Table 5 shows changes in conventional prices over the five years.

**Table 5: Conventional price index for different crops**

	<b>2010-11</b>	<b>2015-16</b>	<b>Growth 2010-11 to 2015-16</b>
<b>Total crops</b>	<b>122</b>	<b>128</b>	<b>5</b>
- Cereals for grain	126	142	13
- Vegetables	167	173	4
- Fruit	182	162	- 11
<b>Total livestock</b>	<b>176</b>	<b>228</b>	<b>30</b>
- Cattle and calves	173	253	46
- Lambs	255	236	- 7
- Poultry	110	127	15
<b>Total livestock products</b>			
- Milk	144	148	3
- Eggs	104	113	9

Sources: Conventional price index: ABARES (2018), 1997-98 = 100

In crops, the price index shows little change in conventional prices between the two years (5 percentage points), although there is a rather large difference between grain (13 percentage points increase) and fruit (11 percentage points decrease). 2015-16 was a rather dry year, so that cereals may have been relatively scarce also in the conventional market, with resulting conventional price increases. Increasing premiums for organic grain would have resulted from a scarcity of the organic grain in the market, which resulted not only from dry weather conditions but also from a decrease in number of grain farmers.

In other words, the rather low proportion of VACP for grain in the total crop package (see Figure 3) would have been even lower if changes in conventional prices and premiums would have stayed the same in 2015-16 as they were in 2010-11 – as they did for most other products.

This contrasts with the contributions of vegetables, which would have remained similar, with only small conventional price increases, and small premium increases. This, of course, is only true for the group of vegetables as a whole, and possibly not so for individual kinds of vegetables. For fruit, the decrease in conventional prices is more or less neutralised by the increase in organic premiums.

By far the greatest effect of these two forces is on beef, for which the conventional price index indicated a price increase of 46 percentage points, while the percentage of premium stayed similar (which means that it also increased substantially in absolute terms). This means that a large part of the increase in VACP was due to increases both in conventional price and in organic premiums. This

can be gleaned from the differences in growth of the VACP (which, in 2015-16, was almost five times as high as in 2010-11), while the number of animals on the farm was only 2.5 times as high in the same time period.

Movements in both the conventional prices and organic premiums were small for other commodities in 2015-16, so they didn't change the general picture for productivity or otherwise.

## 7 Real growth in the organic market?

Looking at Figure 1 and Table A.2.1 it is tempting to conclude that there is growth in organic production between 2010-11 and 2015-16. A growth in VACP from \$446m to \$1,149m is considerable in 5 years. However, how much of the apparent increase is due to different factors that make up the VACP?

First, we looked at the **value of production** – calculated by ABS with conventional market prices. Those figures are the results of the quantities produced times the conventional market prices. That was then adjusted for organic premiums – as shown in Section 3. As there is growth in each sector, one could say that, yes, there is growth. Or can that not be concluded? Are such figures capable of verifying growth – or lack thereof – of organic agriculture in Australia? It is then useful to split the analysis of growth in different categories, such as area, quantities produced and prices received.

For example, can one say that there is a growth in the industry when the **area under organic production** has not grown? In Australia's case, that is perhaps not so relevant, as the increase between 2010-11 and 2015-16 in area under organic certification has been enormous. But it is also true that that is due totally to producers taking up the opportunity to market their produce – beef – as organic. In contrast, the area under organic cropping has decreased between the two years under consideration. If we treat the whole of the organic market as one category, the increase in farm-gate value of organic production sold in the organic market was 2.6 times as high in 2015-16 as it was in 2010-11, which is an annual compound growth rate of 21 per cent.

But what would happen if we took the beef sector out of the equation? As mentioned before, this is not such a bad idea anyway, since the increase in organic beef sales is mainly due to the availability of organic markets, not a change in management system. If we decide to treat the **VACP** results as belonging in two categories we see that the first category – beef – has grown from \$81m to \$488m, a six-fold increase between the 2 years – which is an annual compound growth rate of 43 per cent. In that case, the value of the second category, of more intensive organic cropping and stocking, would then have almost doubled in the five years of this study from \$364m to \$670m, which is a 13 per cent annual compound growth rate instead of an overall 21 per cent.

So, can one say that an industry is in decline when lower **quantities** of organic products have been produced? As production is very dependent on the weather in the two years of comparison, a weather-wise poor last year may show low yields, but does not necessarily indicate a decrease in productivity over the years. This is especially relevant in Australia's case, with such large variations in weather conditions between years. For some crops – such as grains – the volume of production decreased.

Another issue is **variability in prices**. This can make the farm-gate value of the final year of comparison (that is, 2015-16) look better than the initial year, even when this is due to an increase in conventional prices and/or an increase in the percentage of premium – especially relevant in years of low production. In the two years under consideration, an increase in both conventional prices and organic premiums was the case – especially with grains, and to an even larger degree with beef. For the grain sector, without especially the large increase in premium, there would have been a decrease in farm-gate value instead of an increase between the two years under consideration.

In crops in general, the price index shows little change in conventional prices between the two years (5 per cent), although there is a rather large difference between grain (13 per cent increase) and fruit (11 per cent decrease). This decrease in conventional prices in fruit is, however, more or less neutralised by the increase in organic premiums. This contrasts with the influence of prices on the VACP of vegetables, with only small conventional price and small premium increases. This, of course, is only true for the group of vegetables as a whole, and possibly not so for individual kinds of vegetables.

By far the greatest effect of the price index changes is on beef, for which the conventional price index indicated a price increase of 46 per cent, while the percentage of premium stayed similar (which means that it also increased substantially in absolute terms). This means that a large part of the increase in VACP for beef was due to increases both in conventional price and in organic premiums. This can also be gleaned from the differences in growth of the VACP (which, in 2015-16, was almost five times as high as in 2010-11), while the number of animals on the farm was only 2.5 times as high in the same time period. Movements in both the conventional prices and organic premiums were small for other commodities in 2015-16, so they didn't change the general picture for productivity or otherwise.

If we, on top of the division of the two sectors adjusted the data for the more intensive sector for the value of grapes for wine, and for poultry meat and eggs - which is likely to be overestimated by the ABS data - the increase in VACP for the organic sector is more likely to be around 56 per cent over the five years under consideration, or 9 per cent annual growth. This increase was mainly due to increases in fruit and vegetables, apart from the poultry and egg sectors which did grow over the five years also if ABS estimates are substituted with industry estimates.

In summary, including the beef sector the organic industry in Australia grew from \$446m to \$1,149m between 2010-11 and 2015-16, or 158 per cent over the whole of the period, or an annual compound growth rate of 21 per cent.

Splitting the organic market in two categories, then the extensive sector (beef), grew by a spectacular annual compound growth rate of 43 per cent. In the more intensive sector, the farm-gate value then increases from \$364m in 2010-11 to \$669m in 2015-16, which is an annual compound growth rate of 13 per cent.

However, when the ABS values for three sectors that create problems for accurate measurements of organic production by ABS (grapes for wine, poultry and egg production) are replaced with rough estimates from the industry, then the figures are further reduced – to \$364m and \$551m in 2010-11 and 2015-16, respectively. This is a 9 per cent annual compound growth rate.

In other words, it is clear that there was growth in organic agriculture in Australia in the first half of the 2010s – though there is a large difference between the commodities. Yes, there is more **total area** under certified organic management, but less under **organic cropping** (or more-intensive industries than what is the case on pastoral properties). And yes, the **total value** of organic production has increased (even excluding the beef industry), mainly due to vegetables and fruit, and to poultry and egg production.



## 8 Some final thoughts

This paper was written partly to try to get some sensible production data into the Australian market place. A second objective was to get some idea of how the ABS data compared with some information that can be gathered by industries themselves. That is, how does ABS data serve the organic part of Australian agriculture? Could certain changes (within ABS constraints) make the data more useful for the organic industries? What are the aspects that the organic industry can do better itself, or perhaps in partnership with ABS? ABS data collection is obviously suitable for the conventional market – but what adaptations need to be made to make it more useful for organic agriculture?

First of all, the organic industry will need to decide whether it is interested in data that ABS can generate, and whether it would like ABS to continue with data collection. ABS needs a long lead-in time to be able to include relevant material in its census and survey. Apart from the time factor, ABS also charges for inclusion of questions, and also for the provision of data.

And there are other issues to consider. One is that the VACP is calculated with conventional prices instead of the organic prices for products. This problem can be overcome reasonably easily by using premium prices in the process of determining values for organic products. To do it properly, perhaps the organic industry can set up a system of collection and registering premiums for different products in different parts of the country (state-based?) in each year.

Another issue is that of only a part of the farm being under organic management. This is not likely to be a problem for a reliable analysis of most industries, but it may be for some, such as grapes for wine, and poultry for meat and eggs. Are there better ways to collect – and publish – data for those industries, either by the ABS or in other ways?

A further issue is the percentage of the product sold in the organic market. Or is the organic industry happy to know just what is produced as organic, and not necessarily what is in the market?

All these issues lead to the conclusion that the organic industry needs to articulate what it is that they want data for, that is: who needs which data and in what shape? Perhaps that also will then answer the question who is willing to pay for its collection, keeping of records, and analysis?

It would perhaps also be beneficial for the organic industry to have a liaison person with ABS – so that issues that crop up – such as problems with identification of being organic, or peculiarities of particular industries – can be discussed without major efforts.

And no doubt there will be other issues that will crop up over time. Perhaps the organic industry is in a good position to handle these issues now and in the future?

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## **Appendix 1: Adjustments for the organic market**

### **A.1.1 VACP and organic premiums**

The ABS VACP data are calculated by multiplying quantities of commodities produced with the conventional market price.

In order to estimate the value of the organic production, the VACP data for the organic sector was calculated by multiplying the ABS data with organic premiums. These necessarily need be estimates, as no published data exists. This was done with the help of experienced producers and traders.

The matter can be complicated as farmers in the same industry may receive different premiums. Especially in the fruit and vegetable markets it is difficult to adopt 'one organic price', as so many different quantities of each product are traded in so many different markets (local and regional markets and sold to wholesalers and retailers and customers). Perhaps the easiest sector to estimate is the meat sector, where few agents handle large quantities, and work with similar prices for many producers.

### **A.1.2 VACP and percentage organic area**

Not all producers use the whole area of the property for organic production, yet ABS does not differentiate between VACP from organic and from conventional production.

In an analysis of data from one of the major certifiers (not published), it was observed that for many farmers who had less than 95 per cent of their property certified as organic, most considered that still their whole, or close to their whole, VACP was due to organic production.

However, there are some industries where this may not be the case – such as for grapes for wine and poultry meat and eggs. In such cases estimates have been included where this difference is taken into account.

### **A.1.3 VACP and percentage of product sold in organic market**

For some industries all organically-grown products are sold in the organic market, and for others this is not the case, such as for lamb. Estimates have been made – with the aid of experienced producers and traders – of percentages of total production sold in the organic market.

## Appendix 2: VACP TABLES

Table A.2.1: VACP and growth rate in different years: main organic sectors

Commodity	VACP	VACP	VACP	Change	Annual growth rate
	2010-11	2012-13	2015-16	2010-11 to 2015-16	2010-11 to 2015-16
	\$m	\$m	\$m	%	%
<b>Total crops</b>	<b>283</b>	<b>303</b>	<b>372</b>	<b>31</b>	<b>6</b>
- Cereals for grain	38	34	51	34	6
- Vegetables	63	47	91	44	8
- Fruit (incl. grapes for wine)	130	152	188	44	8
- Other	51	71	42	-17	-4
<b>Total livestock</b>	<b>118</b>	<b>145</b>	<b>658</b>	<b>459</b>	<b>41</b>
- Cattle and calves	81	90	479	488	43
- Sheep and lambs	14	8	15	7	1
- Poultry	14	44	139	864	57
- Other	8	3	25	221	26
<b>Total livestock products</b>	<b>45</b>	<b>106</b>	<b>119</b>	<b>164</b>	<b>21</b>
- Milk	41	63	56	36	6
- Eggs	4	43	63	1498	74
<b>TOTAL CROPS AND LIVESTOCK</b>	<b>446</b>	<b>555</b>	<b>1,149</b>	<b>158</b>	<b>21</b>

Based on: ABS (Customised report, 2016) and ABS (Customised report, 2018).

Table A.2.2: VACP and growth rate in Australia in different years: main organic cereals

Commodity	VACP	VACP	VACP	Change	Annual growth rate
	2010-11	2012-13	2015-16	2010-11 to 2015-16	2010-11 to 2015-16
	\$m	\$m	\$m	%	%
<b>Total cereals for grain</b>	<b>37.9</b>	<b>71.3</b>	<b>50.7</b>	<b>34</b>	<b>6</b>
- Wheat	23.5	54.3	28.5	21	4
- Oats	2.9	7.0	4.0	36	6
- Barley	4.7	2.8	8.2	75	12
- Sorghum	0.5	1.7	7.4	1459	73
- Maize	1.3	1.3	1.0	-22	-5
- Rice	3.6	1.0	1.0	-74	-23
- Triticale	0.35	0.2	0.25	-28	-6
- Other	1.0	2.9	0.4	-58	-16

Based on: ABS (Customised report, 2016) and ABS (Customised report, 2018).

**Table A.2.3: VACP and growth rate in different years: organic fruit and vegetables**

Commodity	VACP	VACP	VACP	Change	Annual growth rate
	2010-11	2012-13	2015-16	2010-11 to 2015-16	2010-11 to 2015-16
	\$m	\$m	\$m	%	%
<b>Total fruit (incl. grapes for wine)</b>	<b>130.5</b>	<b>151.8</b>	<b>187.6</b>	<b>43.8</b>	<b>7.5</b>
- Grapes: for wine	35.4	10.1	34.5	-2.4	-0.5
<b>Total fruit (excl. grapes for wine)</b>	<b>95.1</b>	<b>141.7</b>	<b>153.1</b>	<b>60.9</b>	<b>10.0</b>
- Pome fruit	39.5		42.9	8.8	1.7
- Stone fruit	7.6		2.9	- 62.0	-17.6
- Citrus	7.0		14.6	109.4	15.9
- Nuts	5.5	5.2	12.9	135.5	18.7
<b>Total vegetables</b>	<b>63.4</b>	<b>46.6</b>	<b>91.1</b>	<b>43.7</b>	<b>7.5</b>
- Beans + peas	20.6		24.3	18.3	3.4
- Potatoes	6.3		5.4	- 14.4	-3.1
- Pumpkins, sweetcorn	5.8		3.6	- 38.1	-9.1
- Herbs and mushrooms	3.5		9.8	177.9	22.7
- Brassicas	2.9		2.0	- 32.7	-7.6
- Lettuce	1.6		10.0	519.2	44.0
- Capsicum	0.5		6.8	1,173.1	66.3

Based on: ABS (Customised report, 2016) and ABS (Customised report, 2018).

**Table A.2.4: VACP and growth rate in different years: other organic crops**

Commodity	VACP	VACP	VACP	Change	Annual growth rate
	2010-11	2012-13	2015-16	2010-11 to 2015-16	2010-11 to 2015-16
	\$m	\$m	\$m	%	%
<b>Total oilseeds</b>	<b>4.4</b>	<b>5.9</b>	<b>4.7</b>	<b>6</b>	<b>1.1</b>
- Canola	1.8	2.3	2.5	37	6.5
- Other oilseeds	2.6	3.6	2.1	-17	-3.6
<b>Nurseries, cut flowers, cultivated turf</b>	<b>9.4</b>	<b>8.5</b>	<b>7.8</b>	<b>-17</b>	<b>-3.6</b>
<b>Pasture, cereal and other crop cut for hay</b>	<b>6.2</b>	<b>6.1</b>	<b>15.3</b>	<b>145</b>	<b>19.6</b>
<b>Other crop</b>	<b>31.0</b>	<b>50.6</b>	<b>14.4</b>	<b>-54</b>	<b>-14.2</b>
<b>Total other crops</b>	<b>51.1</b>	<b>71.1</b>	<b>42.2</b>	<b>39.1</b>	<b>-4</b>

Based on: ABS (Customised report, 2016) and ABS (Customised report, 2018).

**Table A.2.5: VACP and growth rate in different years: organic livestock**

Commodity	VACP	VACP	VACP	Change	Annual growth rate
	2010-11	2012-13	2015-16	2010-11 to 2015-16	2010-11 to 2015-16
	\$m	\$m	\$m	%	%
<b>Total livestock</b>	<b>117.7</b>	<b>145.1</b>	<b>657.7</b>	<b>947</b>	<b>41.1</b>
- Cattle and calves	81.5	90.3	479.0	488	42.5
- Sheep and lambs	14.0	7.9	14.9	7	1.3
- Live poultry	14.4	44.3	138.6	864	57.3
- Other	7.8	2.6	25.1	352	26.3

Based on: ABS (Customised report, 2016) and ABS (Customised report, 2018).

**Table A.2.6: VACP and growth rate in different years: organic livestock products**

Commodity	VACP	VACP	VACP	Change	Annual growth rate
	2010-11	2012-13	2015-16	2010-11 to 2015-16	2010-11 to 2015-16
	\$m	\$m	\$m	%	%
<b>Total livestock products</b>	<b>45.1</b>	<b>106.3</b>	<b>119.2</b>	<b>164</b>	<b>21.5</b>
- Milk	41.1	43.3	55.8	36	6.3
- Eggs	4.0	63.0	63.4	1498	74.1

Based on: ABS (Customised report, 2016) and ABS (Customised report, 2018).