

Production Expenses and Profitability of Vegetable Farms in Australia and the USA – a Comparison

Introduction

This paper examines the production costs of vegetable farms in the USA and makes comparisons with the costs incurred by vegetable farms in Australia. It also tries to draw some idea of the comparative profitability of vegetable farms in Australia and the USA.

The source of the US data is an article on the Production Expenses of Specialised Vegetable and Melon Farms published by the US Department of Agriculture in December 2009. The most recent data covers the period 2004-06. Farms defined as specialised vegetable farms are those in which vegetables and melons account for at least 50% of the total value of farm production. Such farms accounted for almost 90% of the value of vegetable production in 2004-06.

Australian data is from the annual survey of vegetable farms conducted by the Australian Bureau of Agriculture and Resource Economics (ABARE) on behalf of the Australian vegetable industry over the period 2006-08. The definition of vegetable farms is similar to that of the US, with farms surveyed having a high proportion of their total output derived from vegetable growing classified under the Australian and New Zealand Standard Industrial Classification code (ANZSIC).

The cost breakdowns are expressed as percentages of total costs in order to overcome this timing difference and to avoid the impact that changes in currency exchange rates, sometimes of significant magnitude, can have on cost comparisons between countries over different time periods. The cost categories of the Australian data are more detailed than the US figures so the Australian statistics are re-arranged to fit the broader US categories in order to permit more accurate comparisons.

Production Expenses of Vegetable Farms in the USA

The biggest component of the production expenses of US vegetable farms is labour, which accounted for 30% of total costs during 2004-06. The labour cost component varies depending on the type of vegetable produced. Labour costs involved in growing fresh-market vegetables such as tomatoes, capsicums and broccoli, are much higher than the labour costs of farms producing vegetables for the processing sector because of the need for skilled labour. The former require delicate handling for operations such as thinning, cultivation, irrigating and harvesting, in contrast to vegetables for processing, such as sweet corn, green beans and green peas, the harvesting of which is largely mechanised.

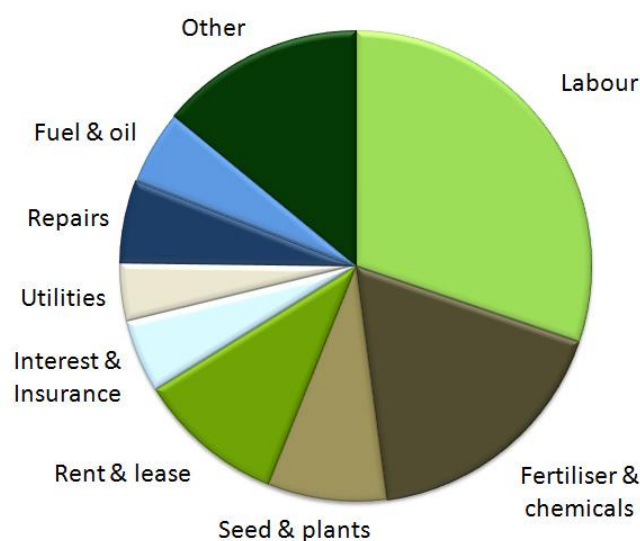
This factor is responsible for significant differences in labour costs between different geographic regions of the US. In the South where vegetable farms mainly supply the fresh market, labour costs account for over 36% of total costs. In contrast, in the Midwest where vegetable farms are much more focused on producing vegetables for processing, labour costs are much lower at 28% of the total.

Size also impacts on labour costs. In the US over 70% of vegetable farms have a value of production of less than US\$40,000 but they only produce 1% of total vegetable supplies. In marked contrast, the largest farms (production exceeding US\$1,000,000) account for only 8% of the number of farms, but produce 88% of the value of vegetable production. Labour's share of total expenses varies widely, ranging from 9% of total cash costs on the smallest farms to 31% on the largest ones. This big difference is largely due to the farm operator and family providing a much greater share of unpaid labour on small farms than on larger ones.

Almost 18% of total expenditure is on fertiliser and chemicals, with rent and lease payments accounting for 10% of total costs. These two categories together with labour costs account for 58% of the total expenses of vegetable farms.

Seed and plants are the next most important item, accounting for about 8% of total costs, followed by repairs, fuel and oil, interest and insurance, and utilities (mainly electricity) with each of these categories accounting for 4-6% of the total. A range of smaller expenditure items, including machine hire, property taxes, transportation, storage, and general business costs are grouped together as 'other variable expenses', which comprise 14% of total costs.

Vegetable Farm Costs in the USA



Source
USA: US Department of Agriculture; figures are for 2004-06

Changes in input costs over time.

Data is available in the US for two earlier time periods, 1998-2000 and 2001-03 so some comparison of changes in costs over time is possible. The US study reveals that average input prices of items used by vegetable farms rose by 25% between 1998-2000 and 2004-06, well ahead of a 15% increase in prices in the overall economy over

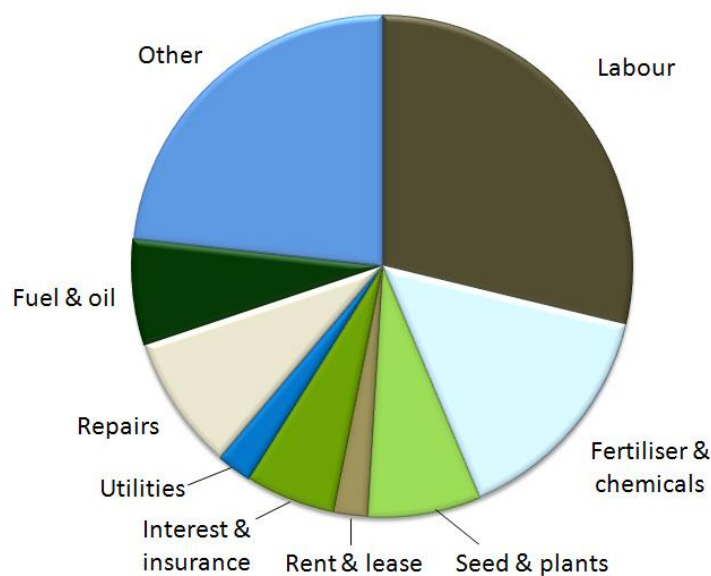
the same period. The biggest increase in input prices paid by vegetable growers was for fuel and oil, which more than doubled, rising by 108% between 1998-2000 and 2004-06. Prices of seed and plants rose by 53% over this period and the cost of repairs and maintenance by 31%. The prices of many other items, including fertiliser and chemicals, insurance premiums, and rent and lease payments, rose by 25-29%, while interest payments were the only significant item to register a decline, falling by 14% over this reporting period.

Shorter-term comparisons of average input prices show very different patterns in price changes between the earlier period between 1998-2000 and 2001-03, and the more recent period between 2001-03 and 2004-06. Cost pressures were most acute in the earlier period. Total cash expenses, which rose by 30% in the first period, subsequently fell by almost 4% between 2001-03 and 2004-06. The cost of utilities declined by 35% and interest payments by 16% in the most recent comparison. Expenses relating to most other categories also declined, the main exceptions being fuel and oil, which rose by 46%, and repairs and maintenance, up by 5%.

Production Expenses of Vegetable Farms in Australia

The biggest cash cost of vegetable farms in Australia is also labour, with expenditure on hired labour and contracts accounting for 29% of total cash costs in 2006-08. The next largest item is fertiliser and chemicals, which accounted for 15% of total cash costs in 2006-08, followed by repairs and maintenance (8.7%), seed and plants (7.3%), fuel and oil (6.8%), and interest (5.8%).

Vegetable Farm Costs in Australia



Source
Australia: ABARE; figures are for 2006-08

Total cash costs averaged \$404,000 per farm in Australia in 2007-08, but there were significant variations according to geographical location. Average cash costs per farm were significantly higher than the national average in Queensland, (\$552,000 in 2007-08) and Victoria (\$473,000), and slightly above the national average in Western Australia (\$424,000) and Tasmania (\$409,000). Below average costs were incurred by vegetable farms in New South Wales (\$185,000), Northern Territory (\$249,000), and South Australia (\$354,000).

Changes in input costs over time.

Vegetable farm surveys have only been conducted in Australia since 2005-06 so analysis of changes in farm cash costs is confined to a shorter period than in the US study. Australian vegetable growers have been under significant cost pressure. Average cash costs rose by 33% in cumulative terms between 2005-06 and 2007-08. The biggest increases over this period were in contracts paid and interest payments, which both doubled over two years. The cost of repairs and maintenance of buildings jumped by 65% over this period, while repairs of vehicles rose by 33%. Rates increased by 57%, the cost of hired labour by 43%, and expenditure on fertiliser and chemicals by 36%. Smaller than average rises were recorded by seed and plants (15%) and fuel and oil (13.5%). Packing materials and packing charges rose by just 5%, while freight costs are reported to have fallen sharply although this component is subject to a much larger-than-usual margin of error.

However, there was significant variation around the country with big differences in the average cumulative increase in total cash costs between 2005-06 and 2007-08 between the individual states. Average cash costs per farm rose sharply between 2005-06 and 2007-08 in Tasmania (88%) and Western Australia (81%), with Queensland (41%) also exceeding the national average increase of 33%. In contrast, cumulative increases in farm costs were below the national average in Victoria (25%) and New South Wales (13%), while costs fell by 10% and 38% respectively in South Australia and the Northern Territory between 2005-06 and 2007-08.

Cost comparisons between US and Australian Vegetable Farms

The comparisons show that the cost structures of US and Australian vegetable farms are very similar in many respects:

- Labour is the main component with its share of total costs close to 30% in both countries.
- Spending on fertiliser and chemicals is the second most important item in both countries, with the share of total spending of 17.7% in the US, slightly above the Australian equivalent figure of about 15%.
- Spending on seed and plants is very similar, accounting for about 7% of the total in Australia, slightly below the corresponding US figure of 8%.
- Labour costs together with spending on fertiliser and chemicals, and seed and plants, accounted for 51% of total cash costs in Australia in 2006-08, compared to 56% in the US in 2004-06.
- In both countries production costs vary significantly between regions and over time.

There are also some significant differences:

- Rent and lease payments with a 10% share in the US are much higher than in Australia where these costs account for only about 2% of the total because there are very few Australian vegetable growers on leased land.
- Spending on fuel and oil accounts for only 5% of total spending in the USA compared with almost 7% in Australia, with lower US taxation on fuel probably largely responsible for this difference.
- There is also a significant difference in the cost of repairs and maintenance, which account for almost 9% of total expenditure in Australia, well above the US equivalent of less than 6%.

Vegetable Farm Costs in the USA and Australia

Cost Category	USA (% of total)	Australia (% of total)
Labour	30.2	28.8
Fertiliser & chemicals	17.7	14.9
Seed & plants	8.2	7.3
Rent & lease	10.1	2.2
Interest & insurance	5.0	5.8
Utilities	4.0	2.3
Repairs	5.7	8.7
Fuel & oil	5.1	6.8
Other	14.0	23.3
TOTAL	100.0	100.0

Sources

USA: US Department of Agriculture; figures are for 2004-06

Australia: ABARE; figures are for 2006-08

Farm Cash Income and Business Profit in the US

Over the period 2004-06 total cash receipts per vegetable farm averaged US\$372,000 per farm while cash costs averaged US\$289,000. The US report calculates a cash expenses ratio, which shows total cash expenses as a proportion of total cash farm income. This ratio averaged 77.5% for all US farms over this period, but there were significant differences in the ratio depending on the size of the farm and its location. The ratio shows that the largest farms incurred about \$75 of cash income for every \$100 of income produced, while the smallest farms were spending almost \$120 for every \$100 of income.

Average farm cash income was US\$84,000 and farm business profit which is calculated after allowing for non-cash items such as depreciation and imputed expenses such as unpaid labour was calculated at US\$47,000. The economic expense ratio which includes both cash and non-cash items as a proportion of gross farm income was calculated at 88%. There was an even bigger difference in this measure than the cash expense ratio when examined in terms of the size of the farm, with the biggest farms recording an average ratio of 81% in 2004-06. On average the largest vegetable farms were clearly profitable delivering good rates of return. In contrast the smallest farms were incurring total economic costs in excess of income and on purely

economic grounds were non-viable. There was, as was the case for costs, considerable variation across the country. The report breaks down the cash expense and economic expense ratios by the location of the farm. The cash expense ratio during 2004-06 was lowest in the West and Midwest at 76.5% and highest in the Northeast at 89%. The economic expense ratio was lowest in the West at 84% and highest in the Northeast at 113%.

The US data shows improving profitability over time. In 1998-2000 average cash income per farm was US\$47,000 and farm business profit was only US\$10,000. In 2001-03 average cash income was US\$75,000 and farm business profit averaged US\$19,500. By 2004-06 average cash income rose a further 12% to US\$84,000 while business profit rose to US\$47,000.

Farm Cash Income and Business Profit in Australia

Average total cash receipts of Australian vegetable farms were \$570,000 in both 2006-07 and 2007-08. Cash costs rose slightly from \$398,000 to \$404,000. Average farm cash income which was \$172,000 in 2006-07 declined to \$166,000 in 2007-08. Despite the decline in average farm cash income in 2007-08, the number of Australian vegetable farms reporting negative farm cash income fell from 17% in 2006-07 to 13% in 2007-08.

A breakdown of financial results by individual states reveals some significant differences. Queensland and South Australia were the only states to experience lower farm cash income in 2007-08 with declines of 27% and 11% respectively, much steeper falls than the national average decline of 3.4%. The most striking result was a surge in farm cash income in Tasmania from less than \$20,000 per farm in 2006-07 to \$109,000 in 2007-08. The remaining states recorded increases in farm cash income in a range of 8-11% in 2007-08 from the previous year, while farms in the Northern Territory reported a modest increase of 2.6%. Western Australia overtook Queensland to record the highest farm cash income, with an average of \$217,000 per farm in 2007-08, ahead of Queensland (\$201,000), Victoria (\$182,000) and the Northern Territory (\$180,000). States with farm cash income below the national average are South Australia (\$153,000), New South Wales (\$119,000) and Tasmania (\$109,000).

The average business profit of Australian vegetable farms, which takes account of depreciation, changes in trading stocks, and the cost of imputed labour, was \$82,000 in 2006-07. As with farm cash income, farm business profit declined in 2007-08, falling by 9% to average \$75,000 per farm. 56% of farms reported negative business profit in 2007-08, down slightly from 59% in 2006-07.

Once again there were significant differences between the individual states. Average profit of Tasmania farms was \$32,000 in 2007-08, a major turnaround from losses averaging \$55,000 per farm in 2006-07. Profits of farms in Victoria rose by 55% in the latest year, while farm profits in Western Australia increased by 20%. Farm profits in the other states declined in 2007-08, with falls ranging from 13% in New South Wales to 40% in Queensland. Average profits of \$123,000 per farm in Western Australia in 2007-08 are the highest in Australia, well above the national average of \$75,000. Average business profits in Queensland (\$100,000), Northern Territory

(\$92,000) and Victoria (\$80,000) are also above the national average. States with farm business profit below the national average are South Australia (\$67,000), Tasmania (\$32,000) and New South Wales (\$29,000).

Comparisons of Income, Costs and Profits on US and Australian Vegetable Farms

The latest US figures for 2004-06 have been converted into Australian dollars for purposes of comparison using average exchange rates for 2004-06. The US figures are compared with the latest Australian figures, which are an average of financial years 2006-07 and 2007-08.

The table below provides a basis for comparing profitability of vegetable farming in the US and Australia. The figures are averages across farm and do not indicate the income, costs and profitability of individual growers. In reality there are significant differences in profitability across the industry due to factors such as types of vegetables grown, geographic region, size of farm and other factors.

Vegetable Farm Income and Profit in the USA and Australia

Average per farm (All figures in Australian dollars except where stated)	USA 2004-06	Australia 2006-08
Total cash receipts	493,805	569,819
Total cash costs	382,699	400,774
Costs as % of receipts	77.5	70.3
Farm cash income	111,106	169,045
Farm business profit	61,884	78,591

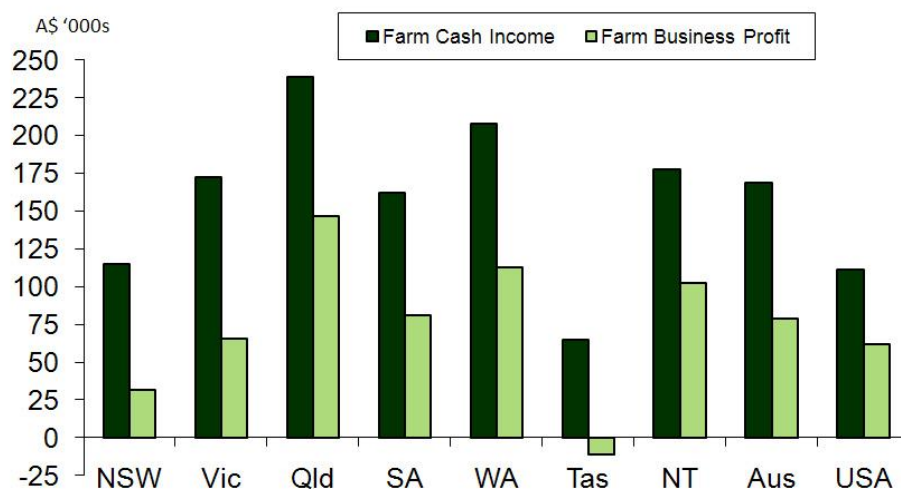
Sources

USA: US Department of Agriculture; figures are for 2004-06
Australia: ABARE; figures are for 2006-08

Both receipts and costs are higher on Australian vegetable farms. Average total cash receipts per farm in Australia in 2006-08 were 15.4% above the equivalent US figures for 2004-06, while Australian cash costs exceeded US costs by 4.7%. As a result, the cash expense ratio, which measures total cash costs as a percentage of total cash receipts, averaged 70.3% in Australia over the period 2006-08 compared to 77.5% on US vegetable farms over 2004-06.

Average farm cash income in Australia in 2006-08 exceeded that of US farms in 2004-06 by 52% and farm business profit was, on average, 27% higher than in the USA. The gap implies greater non-cash costs on Australian vegetable farms. This may be due to higher imputed values for own and family labour on Australian farms than in the US.

Farm Cash Income & Business Profit



Sources

USA: US Department of Agriculture; figures are for 2004-06

Australia: ABARE; figures are for 2006-08

In short vegetable growing over the period studied appears to have been more profitable in Australia than in the US. This may have something to do with size, with the US appearing to have a larger number of small uneconomic vegetable farms than in Australia.

There are similar features in respect to rates of return on vegetable farms in the two countries. Research in both countries indicates that there are a large number of small vegetable growers who are clearly non-viable on purely economic criteria. This does not mean that small vegetable farms are non-profitable. What it suggests is that a number of small growers remain in the industry for reasons other than achieving economic rates of return on their labour. It also suggests that these growers rely on other sources of income, either in other agricultural pursuits or off-farm income, in order to survive.

Conclusions

- The biggest component of the production expenses of vegetable farms in both the US and Australia is labour.
- The cost structures of US and Australian vegetable farms are very similar in many respects, such as the levels of spending on labour, fertiliser & chemicals, and seed & plants.
- There are some significant cost differences, such as much higher rent and lease payments in the US, and lower fuel costs in the US.
- There are substantial differences in the profitability of farms in both Australia and the US between different geographic locations.
- In both the US and Australia there are a number of vegetable growers who are clearly non-viable based on rates of return from vegetable growing. In both

countries this appears to be related to size, with the US appearing to have a longer tail than in Australia.

- Australian vegetable farms in 2006-08 were, on average, 27% more profitable than US vegetable farms in 2004-06.