Labour use in Australian agriculture

Analysis of survey results, 2021–22

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Acknowledgement of Country

We acknowledge the Traditional Custodians of Australia and their continuing connection to land and sea, waters, environment and community. We pay our respects to the Traditional Custodians of the lands we live and work on, their culture, and their Elders past and present.
Contents

Summary ......................................................................................................................................................... iv
Introduction ..................................................................................................................................................... 1
Horticulture farm labour use ....................................................................................................................... 2
  Horticulture labour use has declined over the last 3 years ................................................................. 2
  Production increased despite declining labour use .............................................................................. 2
  More than half of all farms had difficulty recruiting .......................................................................... 4
  Large farms accounted for most of the decline in labour use ............................................................ 5
Broadacre and dairy farm labour use ...................................................................................................... 7
References .................................................................................................................................................... 8

Tables
  Table 1 Horticulture farm labour use, by farm size, Australia, 2021–22 ............................................. 6

Figures
  Figure 1 Overseas workers in Australia, January 2020 to September 2022....................................... 3
Summary

Horticulture farm labour use has declined over the last 3 years
The total number of workers used by Australian horticulture farms decreased by 20% (29,300 workers) over the last 3 years, decreasing from a monthly average of 146,200 workers in 2019–20 to 116,900 workers in 2021–22. This decrease was largely driven by a 66% decrease (23,900 workers) in overseas contract workers, mostly working holiday makers.

Horticulture production increased despite declining labour use
Despite the decline in total labour use (monthly average number of workers), Australian horticulture production increased by around 3% over the last 3 years on the back of favourable seasonal conditions, reaching a record high in 2020–21 (ABARES 2022). Horticulture farms have adapted to constrained labour supply by adjusting production systems and management practices, effectively reducing their demand for labour and maximising the use of available workers. Adaptations included substituting capital for labour, increasing hours worked by employees and increasing labour productivity.

More than half of all horticulture farms had difficulty recruiting in 2021–22
Around 57% of Australian horticulture farms had difficulty recruiting in 2021–22, with 41% of farms experiencing lots of difficulty and 16% experiencing some difficulty. Victoria had the highest percentage of farms experiencing recruitment difficulty (70%) and South Australia had the lowest percentage (48%). The decline in labour use over the last 3 years reflects widespread recruitment difficulty across Australia, largely due to constraints on accessing overseas labour because of COVID-19 border closures but also tightening labour markets in general.

Large horticulture farms accounted for almost all of the decline in labour use
The largest horticulture farms (those in the top 25th percentile of total labour use) accounted for almost all of the decrease in labour use over the last 3 years (28,100 workers or 96% of the total decrease of 29,300 workers). The largest farms also had the most difficulty recruiting (82% of farms), reflecting the number of contract workers required by larger farms to maintain production and greater reliance on overseas workers during peak labour use periods.

Labour use increased on broadacre farms and decreased on dairy farms
Australian broadacre farms used a total of 196,700 workers during the peak labour use month in 2020–21, increasing from 178,300 workers in 2018–19. The largest broadacre farms (those earning receipts more than $1 million) accounted for 90% of this increase in workers. Improved seasonal conditions and higher production were the key drivers of increased labour use on broadacre farms between 2018–19 and 2020–21. Broadacre farms include sheep, beef, cropping and mixed farms, accounting for around 57% of Australian farm businesses.

Australian dairy farms used a total of 22,000 workers at peak labour use in 2020–21, decreasing from 26,200 workers in 2018–19. This was mainly due to a decrease in the number of operating farms, a decrease in the number of domestic workers per farm (driven by an increase in the wages required to attract Australian workers and competitive labour markets), and a reduction in the availability of overseas workers over this period.
Introduction

Labour is a key input to Australian agriculture and there is significant interest in understanding whether labour markets are meeting the needs of the Australian farm sector. This interest has recently been heightened by the COVID-19 pandemic, which resulted in a reduction in the availability of farm workers from overseas and placed restrictions on the movement of people within Australia.

The Australian Bureau of Statistics 2021 Census of Population and Housing (Census) indicates that the Australian agriculture sector employed 239,000 people in 2021, with the horticulture and broadacre (livestock and cropping) industries accounting for most workers (more than 75%). The Census includes data about temporary residents and their workforce status on census night, but only for a single point in time. Given that overseas farm labour is typically seasonal or short-term in nature, the Census data underestimates total agricultural employment due to the significant number of overseas workers employed on farms each year. Other publicly available data sources also have limitations on coverage and detail, as outlined in Australian agricultural workforce: Stocktake of data sources.

ABARES regularly surveys farmers about their labour use (including Australian residents and overseas workers). In 2022, data describing the use of labour on Australian horticulture farms and the profile of farm workers were collected through the ABARES Horticulture Survey. The labour information was collected between May and August 2022 through telephone surveys, conducted on behalf of ABARES by Lighthouse Data Collection. The survey results for 2021–22 are based on a weighted sample of 2,363 horticulture farms across Australia (including fruit, nut and vegetable growers), selected by region and farm size to be representative of the total population of 9,763 farms. Surveyed nursery and floriculture producers are excluded from these results to allow for direct comparison with previous surveys.

Survey results for broadacre and dairy farms are based on data collected in face-to-face farm interviews by ABARES in 2019 and 2021. The survey results for 2020–21 are based on a weighted sample of 1,182 farms, selected at the state and industry level to be representative of the total combined population of 55,071 farms.

Results from ABARES labour surveys are presented in this publication using a data visualisation product. Users can select from a range of region options to observe trends in horticulture farm labour use and workforce characteristics from 2019–20 to 2021–22, and a range of industry and farm size options for broadacre and dairy farm labour use for 2018–19 and 2020–21.
Horticulture farm labour use

Horticulture labour use has declined over the last 3 years
ABARES survey data indicates that the total number of workers used by Australian horticulture farms has decreased by 20% (29,300 workers) over the last 3 years, decreasing from a monthly average of 146,200 workers in 2019–20 to 116,900 workers in 2021–22. This decrease in total labour use (monthly average number of workers) was largely driven by a 66% decrease (23,900 workers) in overseas contract workers, mostly from the Working Holiday Maker (WHM) program and some from the Temporary Skills Shortage Visa. Permanent labour use (excluding family workers) also decreased by 31% (10,000 workers).

Total horticulture farm labour use varied during 2021–22, from a low of 107,400 workers in October 2021 to a peak of 125,200 workers in March 2022. The seasonal variation in total labour use reflects the timing of labour-intensive farm operations, such as planting and harvest of horticultural crops, and was driven by changes in the use of contract workers (often known as seasonal workers).

The composition of the seasonal horticulture workforce shifted in 2021–22 to a greater proportion of Australian resident and Pacific Australia Labour Mobility (PALM) contract workers, increasing from a combined 58% of all contract workers in 2019–20 to a combined 82% in 2021–22. The total number of PALM contract workers used on farms increased by 50% (4,300 workers) from 2019–20 to 2021–22 and the number of Australian contract workers increased by 6% (2,500 workers). However, the relatively small increase in these workers only partially offset the significant overall decrease in overseas contract workers.

Horticulture producers faced significant workforce challenges in 2021–22, as constraints on large-scale international travel and migration to Australia persisted. There were several government labour market initiatives to improve the availability of workers in horticulture, including increasing the number of PALM workers able to enter Australia and expanding measures to encourage greater participation in agriculture by local Australian workers.

The decrease in overseas WHMs and increase in PALM workers observed in the horticulture survey data is consistent with the trend in overall labour availability from these programs. From February 2020 to March 2022, the number of WHMs in Australia declined by 87% from 143,000 workers to 18,600 workers (Figure 1). Around 25–30% of all WHMs were estimated to have been employed in horticulture before COVID-19.

Production increased despite declining labour use
Despite the decline in labour use, Australian horticulture production increased by around 3% from 2019–20 to 2021–22 on the back of favourable seasonal conditions, reaching a record high in 2020–21 (ABARES 2022). Horticulture farms have adapted to constrained labour supply by adjusting production systems and management practices, effectively reducing their demand for labour and maximising the use of available workers. For example, some farms have streamlined labour roles and increased labour productivity, while others have altered crop plantings to lengthen the peak harvest period. Many of the farm-level adaptations to reduced worker availability may not be sustainable into the future, such as delaying pruning and maintenance.

ABARES
Labour use in Australian agriculture

Figure 1 Overseas workers in Australia, January 2020 to September 2022

Note: Not all Working Holiday Makers (WHMs) are employed and not all work in horticulture. ABARES estimates that before COVID-19 around 25–30% of WHMs were employed on horticulture farms (based on Single Touch Payroll data). Around 75% of Pacific Australia Labour Mobility (PALM) workers are typically employed on horticulture farms.

Sources: Department of Employment and Workplace Relations; Department of Home Affairs

While total horticulture production has increased over the last 3 years, production on some farms was negatively impacted by constrained labour availability. Around 17% of Australian horticulture farms that experienced crop loss in 2021–22 reported that a lack of labour was one of the primary causes for the loss. However, most farms that lost crops in 2021–22 (82%) indicated that environmental factors were the primary cause, with most of this loss occurring pre-harvest and largely outside of their control. Crop loss refers to primary production outputs that were intended for human use but ended up either not being harvested, disposed of, or were recovered for alternative uses.

In response to reduced labour availability, around 40% of Australian horticulture farms used advanced machinery to reduce their demand for labour in 2021–22. Examples of advanced machinery include automatic fruit picking machines, driverless tractors and more efficient machinery in general.

Another adjustment made by farms in response to the lack of labour available in 2021–22 was increasing the hours worked by the existing workforce. Around 27% of Australian horticulture farms in 2021–22 had their employees working longer hours on average compared to previous years, with these farms employing 35% of the Australian horticulture workforce.

Farm managers were able to improve labour productivity by using the same seasonal workers from previous years. ABARES research found that the productivity of returning seasonal workers was 15% higher on average compared to first-time workers (Zhao et al. 2018). Results from the previous ABARES horticulture survey in 2020–21 showed that around half of all PALM workers on horticulture farms were returning workers. This productivity pathway was supported by several government labour market initiatives, such as extending seasonal worker visas, reopening the programs under the PALM scheme and committing to double the number of Pacific workers in Australia by March 2022.
The shifting composition of seasonal contract workers used on horticulture farms towards a greater proportion of PALM workers may also be providing productivity benefits. ABARES research found that the productivity of overseas seasonal workers was 20% higher on average compared to working holiday makers, based on fruit picking tasks (Zhao et al. 2018).

**Overseas workers are a critical source of labour for the horticulture sector**
The availability of workers for short periods during the year is critical for labour-intensive operations (such as planting and harvest) on many horticulture farms. Horticulture crops are often harvested only once a year and, in some regions, harvest operations occur only over a few weeks. These relatively brief periods when labour-intensive operations occur fits well with the availability of many overseas workers, which is often short-term rather than year-round. Reliance on overseas contract workers is greatest in regions with high volumes of horticultural production and a range of seasonal crop types.

**Regional differences in horticulture labour use**
The decline in labour use from 2019–20 to 2021–22 was spread across Australia, with the highest rate of decline occurring in Western Australia (26%), followed by New South Wales (23%), Victoria (22%), Queensland (22%), South Australia (13%) and Tasmania (6%). Labour use increased by 10% in the Northern Territory, but this increase was relatively small compared to the overall decrease in horticulture workers nationally.

Peak labour use periods varied across Australia between 2019–20 and 2021–22, reflecting differences in seasonal conditions and the types of horticultural crops grown. Total horticulture labour use peaked in different months for each state and territory: New South Wales (December), Victoria (February and March), Queensland (August and September), South Australia (March and July), Western Australia (July), Tasmania (January) and the Northern Territory (October).

There are many reasons for regional differences in labour use, such as structural changes in the horticulture sector, the rate of adoption of labour-reducing technologies, and the planting and harvest patterns for different types of crops. There are also one-off and seasonal factors, such as constrained interstate worker mobility in some areas because of COVID-19 restrictions, and variations in seasonal conditions. For example, the impact of Cyclone Niran in Queensland in 2020–21 and localised flooding along the east coast of Australia in 2021–22 significantly reduced crop production for some farms, with fewer workers than usual required to harvest crops in these areas.

**More than half of all farms had difficulty recruiting**
The decline in labour use from 2019–20 to 2021–22 reflects the widespread recruitment difficulty experienced by farms across Australia. Around 57% of Australian horticulture farms had difficulty recruiting workers in 2021–22, with 41% of farms experiencing lots of difficulty and 16% experiencing some difficulty. Victoria had the highest percentage of farms experiencing recruitment difficulty (70%) and South Australia had the lowest percentage (48%).

Many factors contributed to the recruitment difficulty, such as constraints on accessing overseas labour and a significant fall in temporary visa holders after international border closures, restrictions on interstate movement of farm workers, high labour costs due to COVID-19 quarantine requirements, and a general tightening of labour markets.
When looking ahead to 2022–23, around 68% of Australian horticulture farms are expecting no change to the number of workers used on farm. Around 22% of farms are expecting to use more workers and 10% are expecting to use fewer workers.

**Fewer workers were paid using piece rates in 2021–22**
The percentage of Australian horticulture workers paid using piece rates in 2021–22 was 24% and the remaining 76% of workers were paid using hourly wages. This is a fall from the 33% of workers estimated to have been paid using piece rates in 2019–20.

Workers on piece rates are paid based on the amount of horticulture products a worker has picked, packed, pruned or made. Tasmania had the highest percentage of workers paid using piece rates (40%) in 2021–22. Employee payment arrangements vary between regions, reflecting the types of crops produced and regional labour market conditions.

The decrease in workers paid using piece rates from 2019–20 to 2021–22 partially reflects changes made to piece rate arrangements under the Horticulture Award, which came into effect in late April 2022 and included a new minimum wage guarantee for each day. The full impact of the piece rate decision will be evident in the 2022–23 survey data.

**Large farms accounted for most of the decline in labour use**
Table 1 shows Australian horticulture farm labour use and workforce characteristics in 2021–22 by farm size (measured by total labour use for the year). The largest horticulture farms (those in the top 25th percentile of total labour use) accounted for almost all of the total decrease in labour use from 2019–20 to 2021–22 (28,100 workers or 96% of the total decrease of 29,400 workers), reflecting a greater reliance on overseas contract workers during peak labour use periods. In contrast, small farms primarily rely on family and permanent workers for farm labour, with this labour pool being less affected by the measures put in place to control the spread of COVID-19 compared to the availability of contract workers.

The largest farms accounted for around 64% of total labour use in 2021–22 and 86% of overseas contract labour use. Due to the large number of workers required to maintain production, the largest horticulture farms also had the highest labour costs per farm (46% of total operating expenditure). Across all farms, horticulture farm labour costs (35% of total operating expenditure) are typically much higher than other agricultural industries, such as broadacre (12% of total farm cash costs in 2020–21) and dairy (13% of total farm cash costs in 2020–21).

Large horticulture farms faced significant workforce challenges in 2021–22, as constraints on large-scale international travel and migration to Australia persisted. Most of the largest farms (82%) had difficulty recruiting workers in 2021–22, compared to only 33% of the smallest farms. This difference reflects the number of workers required by larger farms to maintain production and a greater reliance on overseas workers.

In response to recruitment difficulty, both the largest and smallest farms had a relatively high percentage of farms that used advanced machinery to reduce their demand for labour (44% and 43% of farms, respectively). Additionally, 39% of workers on the largest farms worked longer hours on average compared to previous years, compared to 23% of workers on smallest farms.
The number of workers used by horticulture farms (particularly overseas workers) is expected to increase in 2022–23, following the significant decline over the last 3 years. Around 29% of the largest farms are expecting to use more workers in 2022–23 and only 9% are expecting to use fewer workers (with the remaining 62% expecting no change). Given that large farms accounted for most of the decline in labour use, these farms are also likely to account for most of the expected increase in labour use in 2022–23. This would be consistent with the recent increase in WHMs entering Australia since borders reopened in February 2022 (Figure 1), with those employed in the horticulture industry mostly working on large farms.

Due to their large seasonal workforce, the largest horticulture farms had the highest percentage of farms that provided on-farm accommodation (27%) and the highest percentage of workers staying on farm (7%). The largest farms also had the highest percentage of workers paid using piece rates (28%), reflecting the composition of workers typically used by large farms.

Table 1 Horticulture farm labour use, by farm size, Australia, 2021–22

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Unit</th>
<th>Farm size quartile 1</th>
<th>Farm size quartile 2</th>
<th>Farm size quartile 3</th>
<th>Farm size quartile 4</th>
<th>All farms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of farms</td>
<td>no.</td>
<td>2,824</td>
<td>2,544</td>
<td>2,348</td>
<td>2,047</td>
<td>9,763</td>
</tr>
<tr>
<td>Total labour use</td>
<td>no. workers</td>
<td>6,800</td>
<td>12,900</td>
<td>21,900</td>
<td>75,200</td>
<td>116,800</td>
</tr>
<tr>
<td>Total overseas contract labour use</td>
<td>no. workers</td>
<td>200</td>
<td>700</td>
<td>2,600</td>
<td>21,500</td>
<td>24,900</td>
</tr>
<tr>
<td>Average per farm labour use</td>
<td>no. workers</td>
<td>2</td>
<td>5</td>
<td>9</td>
<td>37</td>
<td>12</td>
</tr>
<tr>
<td>Average overseas contract labour use</td>
<td>no. workers</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>Labour costs per farm (% of total operating expenditure)</td>
<td>%</td>
<td>23</td>
<td>35</td>
<td>43</td>
<td>46</td>
<td>35</td>
</tr>
<tr>
<td>Difficulty with recruiting</td>
<td>% farms</td>
<td>33</td>
<td>52</td>
<td>68</td>
<td>82</td>
<td>57</td>
</tr>
<tr>
<td>Used advanced machinery to reduce demand for labour</td>
<td>% farms</td>
<td>43</td>
<td>36</td>
<td>37</td>
<td>44</td>
<td>40</td>
</tr>
<tr>
<td>Worked longer hours compared to previous years</td>
<td>% workers</td>
<td>23</td>
<td>23</td>
<td>30</td>
<td>39</td>
<td>35</td>
</tr>
<tr>
<td>Expecting to use more workers in 2022–23</td>
<td>% farms</td>
<td>16</td>
<td>22</td>
<td>24</td>
<td>29</td>
<td>22</td>
</tr>
<tr>
<td>Expecting to use fewer workers in 2022–23</td>
<td>% farms</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Provided on-farm accommodation</td>
<td>% farms</td>
<td>4</td>
<td>9</td>
<td>16</td>
<td>27</td>
<td>13</td>
</tr>
<tr>
<td>Used on-farm accommodation at peak labour use</td>
<td>% workers</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Paid using piece rates</td>
<td>% workers</td>
<td>11</td>
<td>13</td>
<td>18</td>
<td>28</td>
<td>24</td>
</tr>
</tbody>
</table>

Note: Farm size quartiles are measured by total labour use (monthly average number of workers). Totals may not sum exactly due to rounding.
Source: ABARES Horticulture Survey 2022
Broadacre and dairy farm labour use

Broadacre farms are the largest employers in Australian agriculture. ABARES survey data indicates that broadacre farms used a total of 196,700 workers at peak labour use in 2020–21, increasing from 178,300 workers in 2018–19. The largest broadacre farms (those earning receipts more than $1 million) accounted for 90% of this increase in workers.

Most workers used on broadacre farms at peak labour use in 2020–21 were high-skilled workers (38%), managers (24%) or machine operators (16%), with the remainder occupying semi-skilled, unskilled, administrative or professional roles such as lawyers and tradespeople. Broadacre farms include sheep, beef, cropping and mixed farms, totalling around 57% of Australian farm businesses.

Labour use on broadacre farms tends to be relatively stable from year to year compared with horticulture farms, reflecting the structure of these businesses and the roles typically performed by workers. Broadacre farms make greater use of family members and local workers who are typically employed as full time or part time workers throughout the year and employ relatively few contractors and casual staff. The wide geographical spread of the broadacre sector across Australia also means peak labour use periods such as crop sowing and harvest are more variable than in the horticulture sector.

Australian dairy farms used a total of 22,000 workers at peak labour use in 2020–21, decreasing from 26,200 workers in 2018–19. This was mainly due to a decrease in the number of operating farms, a decrease in the number of domestic workers per farm (driven by an increase in the wages required to attract Australian workers and competitive labour markets), and a reduction in the availability of overseas workers over this period.

Most workers used on dairy farms during peak periods in 2020–21 were skilled workers (43%), managers (32%) or machine operators (19%). Dairy farms employ mostly Australian workers and total labour use is relatively consistent, with minimal monthly variation compared to broadacre and horticulture farms.

Improved seasonal conditions led to increased labour use

Improved seasonal conditions and higher production were key drivers of Australian broadacre farms using more workers in 2020–21 compared to 2018–19. Over this period, the average number of workers per farm (at peak labour use) increased or remained the same for all broadacre industries.

The impacts of COVID-19 on labour markets were less visible in the broadacre and dairy sectors (compared to the horticulture sector) because these farms typically use far fewer overseas workers. However, all farming industries have been affected by a general tightening of labour markets in Australia, with strong competition across the economy for Australian resident workers. ABARES survey data indicates that the percentage of overseas workers (excluding New Zealand residents) used on Australian broadacre and dairy farms at peak labour use in 2020–21 was minimal, decreasing from 3% in 2018–19. This remains well below the estimate for horticulture farms (around 28% or 40,300 overseas workers at peak in December 2020).
References

ABARES 2022, Agricultural Commodities: December quarter 2022, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra, December.