

# How are global and Australian sheepmeat producers performing?

Global agri benchmark network results 2019





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# **Global sheep farm profitability**

Globally, sheep enterprises remained highly profitable in 2018 due to strong demand, constrained supply and high prices (Figure 1) – both at the sheep enterprise and whole-farm level.

A vast majority of the 41 *agri benchmark* sheep farms across 16 countries were profitable in 2018 (82% of farms were mediumterm profitable, covering cash costs and depreciation). The main exceptions were in Europe – four farms in the UK, Spain and Germany – reflecting low productivity, high labour costs and high depreciation costs (Figure 1).

The seven typical Australian sheep farms were amongst the most profitable, only exceeded by three farms – in China, Algeria and Jordon. Also, four of Australia's seven sheep farms improved profits in 2018 (and another was stable) due to rising returns and lower feed, machinery, insurance and tax expenses.

This was a good result considering the re-emergence of severe drought, and is due to the high lamb, sheep and wool prices, on the back of strong demand for sheepmeat and wool, especially from China. However, the impact of the drought is likely to be fully apparent in the 2019 profit results, with fewer lambs to sell and higher feed costs (partially offset by record lamb prices).



## Figure 1: Medium-term profitability of the ewe enterprise 2017 and 2018

## What is agri benchmark?

*agri benchmark* is a global, non-profit and non-political network of agricultural experts dedicated to lifting the productivity and viability of agricultural production across the globe through benchmarking farm performance. It is coordinated by the Thünen Institute – the German government rural research body – and has branches covering beef cattle, sheep, dairy, pigs, cash crops, horticulture, organic farming and fish. The sheep branch currently has 17 member countries – covering over 55% of global sheepmeat production.

If you are unfamiliar with agri benchmark, please read the appendix to this report (page 13).

# The price of lambs and sheep

The global FAO export Ovine Price Index for sheepmeat has risen more than any other meat in the past 30 years (Figure 2), as global supply growth has struggled to keep up with the ongoing lift in demand, particularly from Asia. In contrast to sheepmeat (and beef), global poultry and pork prices have fallen appreciably from their respective peaks in the past five years, on the back of increased supplies and slower demand (and import) growth.

The impressive rise in export sheepmeat prices over the last 30 years was composed of four distinct phases - rising in the 1990s, 2000-2004 and 2007-2011, with each jump more rapid than last but with increased volatility. The extraordinary 2011 peak has been followed by a particularly volatile period, commencing with a fall to 2015-2016, followed by a recovery in 2017 and 2018.

The new agri benchmark Global Price Indices<sup>1</sup> for lambs and sheep also remained high in 2018 (Figure 3) – with rises in all agri benchmark countries in 2018 bar Spain and Saudi Arabia. In Australia's case (and New Zealand's), lamb prices peaked higher than the Global Index in 2011 (relative to the 2002-2004 base period) and has generally performed better since, to approach the 2011 record again in 2019 - due to the combination of falling lamb supplies, strong China demand and a devaluing currency.



Source: EAO Food Indices

Figure 3: agri benchmark Global and Australian Lamb Price Indices



Globally, the agri benchmark Lamb Price Index has remained below the 2011 peak, as supplies have responded to the high profits and demand from China has less influence on prices in non-exporting countries (as ~90% of global sheepmeat production is consumed locally rather than being exported).

OECD-FAO expects sheepmeat prices to keep rising (though falling in real terms together with all other meats), given increasing Asian and MENA demand and limited supply response from Australia, New Zealand and China.

## Sheepmeat production

Four main producers represent 46% of global sheepmeat production: China, the EU, Australia and New Zealand (Figure 4). They are followed by a number of similarly sized producers, led by Turkey.

## Figure 4: Global sheep production 2017<sup>2</sup>



Source: agri benchmark calculations based on FAOStat 09.2019

<sup>1</sup> agri benchmark has recently launched global price indices for finished cattle, lambs and lambs and sheep. These represent average on-farm livestock prices collected by agri benchmark from all member countries, weighted using country production to produce global price indices. A short index description is available on the agri benchmark Website at:http://www.agribenchmark.org/agri-benchmark/ news-and-results.html

<sup>2</sup> Excludes goat meat.

Global sheepmeat production growth slowed in the decade to 2017 (Figure 5), due to land, water and environmental constraints, made worse by severe droughts in key countries, most recently including Australia, South America, Europe (Germany, Austria, France, Ireland and Spain), Africa (notably South Africa and Namibia), and Iran (Figure 6). Land constraints and environmental issues also help to explain the slower production growth in China (2% compared with over 12% two decades earlier), leading to a major opening to imports.

There were notable falls in sheepmeat production in New Zealand (related to the expansion of the dairy industry), South Africa (climatic conditions), Syria (civil war) and India.

The only major producing countries to record faster production growth in the past decade were in the MENA region and Russia.

Global sheepmeat production growth is expected to accelerate in the coming decade (OECD-FAO Agricultural Projections 2019-2028), encouraged by high prices and profits and enabled by intensification of production, especially the increased use of grain and other feed supplements. The pork shortage in China from African Swine Fever may also incentivise increased local sheepmeat production as opportunistic producers, especially those in northern regions seeking alternatives to raising pigs, respond to high prices.



## Figure 5: Annual growth rates of sheep production in selected countries (last 5 decades)

Source: Calculations based on FAOStat 09.2019 Note: Countries and regions are listed in descending order of sheep meat production in 2017



#### Figure 6: World drought map May 2018

Source: Government of Spain, July 2018 Saniago Begueri, a Borja Latorre, Fergus Reig, Serio M.Vicente-Serrano, Peter Carter Climate Change-FoodSecurity.org

# **Sheepmeat demand**

China dominates global sheepmeat consumption and consumption growth. The other major consumers are the EU and India (Figure 7). All three countries have import barriers to sheepmeat – high formal quota/tariff barriers in the EU but mainly informal or technical barriers in the case of China and India.

Figure 7: Total sheepmeat consumption (2016)



Source: agri benchmark calculations based on FAOStat 09.2019

Sheepmeat is generally a premium niche product in consumer diets around the world, with the only major exceptions being in Australia, the Middle East and India, where it still accounts for over 10% of meat consumption.

International demand growth for sheepmeat remains robust, driven by rising per person consumption in China and the Middle East. However, global consumption is expected to be constrained by supply growth, causing prices to remain high.

In individual countries, consumption growth will also be determined by changes in import barriers. China's sheepmeat supply is unlikely to be able to match internal demand growth (food demand being the fastest consumer growth category), causing a need for increased imports or further rises in sheepmeat prices – already amongst the highest in the world. Nor is local supply growth expected to come close to demand growth in the Middle East, again necessitating increased imports to satisfy demand and contain price rises.

With supply expansion in Australia and New Zealand unlikely to meet the growing demand from China and the Middle East, sheepmeat will probably continue to be drawn away from other consuming markets, principally developed country markets, such as the EU.

The 2019 *agri benchmark* Conference highlighted five major elements likely to determine trends in global sheepmeat production, consumption and trade – climate change, China demand/import growth, Middle East demand (to grow but exposed to economic and political risk/uncertainty) and trade barriers (especially the current China/US trade war and Brexit trade outcomes).



# **Global performance of sheep farms**

All except four out of the 41 typical sheep farming systems<sup>3</sup> (across 17 countries) made a profit at the whole farm level in 2018 (Figure 8), although in many countries this was largely dependent on other enterprises or government payments (coupled and decoupled). In Figure 8, profit is shown by the difference between whole farm costs and whole farm returns including government payments. Whole farm returns are separated into market returns and government payments. Most European countries achieve a profit with these payments.

#### Figure 8: Whole farm medium term profitability - sheep



Most sheep farms tend to be mixed farming enterprises (Figure 9), with some exceptions; Germany, Spain and France are predominantly sheep, UK-700 is solely a sheep farm, and China and South Africa also have farms that are solely sheep. The other farms tend to be mixed farms and either cropping and sheep, like parts of Australia and Mexico, or beef and sheep, as in New Zealand, Ireland and the UK, and, therefore, whole farm profitability is not solely reliant on sheep income.

Australia's 'typical' sheep farms were the most profitable (in US\$ terms) on a whole farm profit basis (medium-term profitability) for 2018 (Figure 8), which they have achieved since 2014. This is predominantly due to their scale and incomes received from other enterprises (crops and beef). The WA-2000 farm in Western Australia<sup>4</sup> was the most profitable in 2018, having had an exceptional year for the cropping enterprise due to above-average grain prices, driven by domestic demand, and above-average seasonal conditions, and the sheep enterprise, like all the Australian farms, achieved sound medium-term profitability (Figure 1).

Despite the re-emergence of severe drought, four of Australia's seven sheep farms improved profits in 2018 (and another was stable) – due to rising returns and lower machinery, insurance and tax expenses. This improvement was supported by higher lamb, sheep and wool prices, on the back of strong demand for sheepmeat and wool, especially from China.

<sup>&</sup>lt;sup>3</sup> agri benchmark's 'typical' farms are actual or engineered farms which are deemed to be representative of the most common production systems in the main production regions of each country.

<sup>&</sup>lt;sup>4</sup> Within *agri benchmark*, sheep farms are identified using the country code (e.g. AU for Australia) followed by the number of breeding ewes on the farm, e.g. AU\_2000. In this report, the country code for all Australian farms has been replaced with the State name to allow the reader to easily identify the state the farm is in.



## Figure 9: Return Structure – percentage composition

# How efficient are Australian sheep producers?

Examining the returns specific to the sheep enterprise in Figure 10 it is apparent which countries have a more diversified income from sheep due to the wool revenue component.

Australian sheep producers are generally more profitable than their global counterparts, in part because they have larger more diversified businesses, in which grain is a significant (and complementary) source of income. They also have larger more diversified sheep enterprises, and wool is generally a significant part of the revenue – like South Africa, four of the seven Australian farms receive over 50% of their revenue from wool sales (Figure 10). Other countries where wool contributes over 20% to revenue are China and Uruguay, and for one farm in Brazil. Government payments contribute to European countries' revenue in the form of either whole farm payments (UK), livestock payments or a combination of the two (all other EU countries) and ranges from 71% on one German farm to 4% on a UK farm.

#### Figure 10 Total sheep enterprise returns



There is a large variation in total returns (revenue) per 100kg live weight (lwt) sold across the countries. Jordan and Algeria sheep systems have lamb finishing enterprises (other returns) and although they have high returns, they also have significant costs due to grains/concentrates and forage feeding requirements (Figure 11). Feed and machinery are the dominant non-factor costs in Europe, with feed costs predominating everywhere else, except Australia, China, Uruguay and Namibia. The feed costs in all but two Australian farms were higher in 2018 compared to 2017 due to the dry year, with an increased need for supplementary feeding.

The other inputs to the ewe enterprise are directly allocated cash costs, such as enterprise-specific wages (shearing, marking etc), and these represent major costs to the Australian system. Animal purchase costs are higher in NSW-1500 and NSW-1250 because they are both 100% prime lamb production systems and need to purchase their replacement ewes. Generally, however, Australian farms have lower cost of production in comparison to most other countries represented, except one farm in China, Uruguay, Brazil and Namibia.



#### Figure 11: Cash costs<sup>5</sup> for ewe enterprise

Short-term profitability is achieved when the farm can generate enough income to pay for the cash-costs, ideally with a surplus to pay for machinery & infrastructure replacement (i.e. depreciation on machinery and buildings), therefore achieving medium-term profitability. Generating a surplus after paying for depreciation means the farm is starting to achieve long-term profitability and have the ability to invest in expansion or long-term investment requirements for the farm. Returns from the ewe enterprise minus cash costs is short-term profit and, when depreciation is included as part of the costs, this shows medium-term profit



<sup>5</sup> The cash or non-factor costs represent largely variable costs directly associated with the enterprise.

## **Comparing productivity measures**

Productivity drives profitability and in the ewe enterprise the key measures are production per hectare, weaning percentages, lamb growth rates and total live weight sold.

Low levels of production per hectare tend to come from regions with lower rainfall and rangelands environments (China, Brazil, Jordan, Namibia, South Africa and low rainfall parts of Australia). Moderate-to-high productivity occurs in higher rainfall regions across Europe and Australia. Very high land productivity occurs in systems in Mexico and Tunisia, where animals are housed.

Comparatively, Australian farms found in the lower rainfall zones of WA have productivity similar to Uruguay, China, and parts of Europe (Spain and Germany). The higher rainfall farms found in south west WA, western Victoria and central NSW have comparable land productivity to European and UK systems.

The number of weaned lambs per 100 ewes (Figure 12) per year range as high as 160 in the UK and as low as 64 in South Africa. Although both are grazing systems, they have very different environments – one is an intensive livestock system compared to the more extensive South African system.

Australia's number of lambs weaned is relatively low in comparison to the 112 average across all farms – again a consequence of the more extensive broadacre farming practices and environment.

Also, the European farms tend to use more prolific breeds (a trait not associated with the Merino breed used on all but one of the typical Australian farms), in addition to higher nutrition (supplementary feeding) or multiple lambing's per ewe (as they do in France and Spain).



#### Figure 12: Weaned lambs per 100 ewes and year

Production system: G = grazing; GC&F = Grains + concentrates + forages; GF = grazing + forages; F = Forages

## Live weight sold per ewe<sup>6</sup>

Source: agri benchmark

The average live weight sold per ewe across all 41 farms is 41kg (Table 1) and the average slaughter lamb weight is 28kg. However, the range varies due to the variety of farming systems. Australian farms are considered grazing systems, despite feeding supplementary grain to meet the autumn-summer feed gap, because they are grazing for most of the year.

As the Australian farms cover both the extensive grazing and more intensive prime lamb enterprises, the productivity performance on this measure also varies widely, but is generally above-average. The Australian farms NSW-1250 and NSW-1500, with a prime lamb focus, had the highest average live weight sold per ewe of all 41 global farms, with the other prime lamb farm, VIC-3000, ranked sixth. Even the low rainfall extensive WA and NSW farms performed creditably on this measure against similar extensive systems, generally producing close to or above the global average of 41kg live weight per ewe.

<sup>6</sup> Total live weight sold per ewe is generally dominated by the sale of slaughter lambs in most production systems, although a few exceptions exist where there are substantial returns from weaned lambs sold to finishing enterprises (UK, Spain, Algeria and Tunisia).

#### Table 1: Average live weight sold per ewe

	Total live weight sold per ewe (kg)	Slaughter lambs (kg)	Cull animals (kg)	Breeding animals (kg)	Lambs s/going to finishing (kg)	Adults s/going to finishing (kg)
Total average	41	28	10	4	13	
Grazing average	44	30	12	3	14	7
Grazing and forages average	40	32	6		5	
Grains/conc and forages	32	18	6	6	16	
Forage	46	40	6			

Source: agri benchmark

## Figure 13: Total liveweight sold per ewe





## Lamb growth rates

## Growth rates birth to weaning grams/head/day

Productivity and efficiency rely on good lamb growth rates, enabling the lambs to reach market sooner, reducing feed and animal health costs, and lowering the risk of losses. Australian farms, except NSW-1600, have lamb growth rates (g/hd/day) from birth to weaning above the average for all countries, which is 245g/hd/day.

Weaning weights vary between 30 and 40kg per head lwt across the Australian farms but are as low as 10 kg in Brazil. The global average is 28kg lwt at an average weaning age of 108 days from birth, but ranging between 45 and 180 days. The countries that tend to wean early are Spain at 45-60 days and France 65-90 days, whereas Germany's on-farm lamb finishing and weaning is later at 180 days. Australia farms range from 151 days for the NSW-1600 and 112 days on VIC-3000, but 120 days is the most common period for weaning. The weaning weights for the second flock<sup>7</sup> on the Australian farms are lower because they are merino lambs bred for replacement ewes and wool production.



Figure 14: Growth rates and weaning weights for store lambs

azing; GC&F = = Eorad

## Lamb sale weights

Australian lamb sale weights varied from under 20kg lwt on two WA farms and NSW-1600 to 67kg lwt for NSW-1250, a 100% prime lamb production system. This variation mainly reflects the differences in breeds and feed between the wool-based Merino sheep systems on drier extensive pastures and the more-intensive higher-rainfall British breed-based prime lamb production systems.

When compared with similar systems in other countries, the sale weights on Australian farms are relatively high, with one farm, NSW-1250, having the highest of all farms and the other two Australian prime lamb systems also amongst the highest.

However, the poor seasonal conditions have impacted on the number of lambs weaned per ewe and the lighter weight animals being sold for slaughter on the more extensive farms. For example, the NSW-1600 lamb sale weights (kg/ewe) were unusually low in 2018 due to severe drought conditions and more lambs were sold as stores, going into a finishing system.

Market demand also influences lamb sale weights - in Western Australia there is an increasing trend towards supplying the air freight market to the Middle East which is seeking carcase weights between 16 and 18kg, whereas the US market, which the NSW farms target, prefers a heavier weight animal and in the UK weights less than 21.5kg cwt are preferred to meet consumer demand. The typical farms from Ireland and one from the UK produced lambs with similar weights to the Australian prime lamb production farms.

<sup>7</sup> On some Australian farms the flock is split in two for this analysis: into Flock 1 where ewes are mated to terminal sires for prime lamb production and Flock 2 where ewes mated to Merino rams for wool and replacement ewes.



#### Figure 15 Lamb sale weights per ewe<sup>8</sup>

## Total cost of sheepmeat production

Australian sheep farms' total cost of sheepmeat production (US\$/100kg lwt) is relatively low in comparison to global counterparts. Non-factor, or cash costs, contribute the most to the total costs. Other countries that have similar cost structures are Brazil, Uruguay, Namibia, China and Mexico.

For most countries, the non-factor costs are the most significant part of the cost structure – generally between 50 and 60%, with a few countries above and below this. Labour costs in European countries also contribute a large proportion to total costs, despite the cost of labour per hour generally being lower than Australian cost of labour.

Australia has the highest cost of labour at US\$24/hour on average – the same as in 2017 but this has declined since 2013 in US dollar terms. The opportunity cost of family labour has also remained the same as in 2017, at US\$29/hour. European countries range from \$US23/hour (Germany) to \$8/hour (Portugal). China, South America and African countries' labour costs are \$2 to \$3/hour.

In reality, however, Australian labour costs are some of the lowest in US\$ per 100 kg lwt produced because of the size and scale of the farms. Other more extensive farming systems, such as Namibia and South Africa, are similar in overall total labour costs, but the hourly rates are \$1/hour – with 9 hours per ewe per year in South Africa compared to 0.9 hours per ewe per year in Australia.



## Figure 16 Total costs of sheepmeat production

<sup>8</sup> The countries with missing data sell their lambs into a separate finishing system.

## In summary, Australian sheep systems:

Australian sheep farms, in comparison to most countries represented in *agri benchmark*, are large and diversified businesses. They are sometimes impacted by dry seasonal conditions but they generally performed well again in 2018.

Four of the seven Australian farms improved their medium-term profit in 2018 compared to 2017 – WA-2000 had the most improvement, but large fluctuations in performance are typical for this farm due to the variable seasonal conditions (and the importance of grain harvests on a whole-farm basis).

The NSW-1500 and NSW-1600 farms' medium-term profit was lower in 2018 compared to 2017 largely due to the dry conditions in 2018. They were also the only two Australian farms not to achieve long-term profitability in 2018. Other countries that achieved long-term profitability were Uruguay, China, Algeria, Jordan and one out of the two farms in Namibia and one farm in Spain.

Sheep enterprises globally are profitable, primarily achieved through scale, good management and low costs of production, or in systems such as Jordan and Algeria where returns are high.

Australian sheep farmers are using their management skills to achieve internationally competitive labour productivity, growth rates, weaning weights and sale weights to achieve their medium-term and long-term profitability.

## Australia's sheepmeat industry

<ul> <li>Strengths</li> <li>Low cost of production</li> <li>Large scale of production and land area</li> <li>High labour productivity</li> <li>Achieve long-term profitability</li> <li>Diversified business income, whole farm and sheep enterprise</li> </ul>	<ul> <li><b>Opportunitiess</b></li> <li>Improve number of lambs weaned per ewe per year</li> <li>Improve drought preparedness for farmers managing livestock feed and water requirements</li> <li>Improved market access, especially into the UK and EU</li> </ul>
<ul> <li>Weaknesses</li> <li>Highly variable and generally dry climate</li> <li>In 2018, poor seasonal conditions with low pasture growth rates, increased costs and decreased liveweight sold</li> </ul>	<ul> <li>Threats</li> <li>Market disturbance: <ul> <li>Market access to UK and EU post Brexit</li> <li>China/US trade war</li> <li>Instability in the Middle East</li> <li>Public concern and perception of animal welfare practices on farm and across the supply chain</li> <li>Seasonal conditions – drought and low availability of water and feed</li> </ul> </li> </ul>



# **Appendix 1**

# What is agri benchmark?<sup>1</sup>

*agri benchmark* is a global, non-profit and non-political network of agricultural economists, advisors, producers and specialists in key sectors of agricultural value chains. It is operated as an international network of research partners coordinated by the Thunen Institute – the German government rural research body.

*agri benchmark* has branches covering beef cattle, sheep, dairy, pigs, cash crops, horticulture, organic farming and fish. The sheep network has 17 member countries, covering 55% of world sheepmeat production and has been producing the results of comparative analysis over the last 8 years.

The core competence of the network is in analysing production systems, their economics, drivers and perspectives.

agri benchmark aims to assist:

- · producers to better align future production through analysis of comparative performance and positioning;
- non-profit organisations (NGOs, international organisations) to monitor global agricultural challenges;
- public and industry institutions to better plan research, farm policy and programs and make their case
- · agri-businesses to operate successfully through in-depth understanding of markets and customers.

The *agri benchmark* sheep network covers breeding and finishing enterprises (ewes and lamb/sheep finishing). It is also unique in being able to separately measure the performance of the breeding and finishing operations even on joint breeding/finishing farms. Furthermore, it measures sheep enterprise performance separately from (and together with) other outputs where the farm business is diversified (in Australia typically with some cropping, but often also other enterprises such as cattle).

### Figure A1: Countries in the agri benchmark beef and sheep network



Source: agri benchmark

Sheep enterprises are also often divided into those based on grazing; grazing and forages; grains, concentrates and forages; and forages alone.

The farm-level results in this report are drawn from the collection of 'typical farm' data in each country, and subsequent analysis and research efforts of all member countries culminating in the 17<sup>th</sup> Annual *agri benchmark* Conference in Windhoek, Namibia, 6-12 June 2019.

A 'typical farm<sup>9</sup>' can be based on data for an actual farm judged to be typical of a main production system in a key region<sup>10</sup>, or 'engineered' by local producers and experts to be typical (using annual data drawn from farms in the key production regions). In Australia, data was collected for seven typical sheep farms NSW, Victoria and WA.

## Table 1: Australian agri benchmark typical sheep farms

Held (ewes)	Farm make-up
AU 1250s	(1250 ewes) – NSW slopes; Border Leicester X Merino ewes, Dorset rams; sheep + crops
AU 1600s	NSW Northern Tablelands; Merino ewes, Dorset & Merino rams; sheep + wool + cattle
AU 1500s	NSW south western plains; Merino ewes, White Suffolk rams; sheep + crops
AU 2000s	WA low rainfall; Merino ewes, Merino & Poll Dorset rams; sheep + crops
AU 3000s	Western VIC; Coopworth X Dorset self-replacing
AU 4800s	WA medium rainfall; Merino ewes, Merino & Poll Dorset rams; sheep + crops
AU 7800s	WA high rainfall; Merino ewes, Merino & Poll Dorset rams; sheep + crops

## Figure A2: Location of Australian agri benchmark typical sheep farms and sheep density



#### Source: ABS and agri benchmark

<sup>9</sup> A preferred method compared to compiling data from a group of individual farms and ranking them according to the average, or above- or below- average which is argued as a futile exercise in farm business management economics (Sefton and Cox,2005; Ferris and Malcolm, 1999; Mauldon & Schapper 1970).

<sup>10</sup> Such individual farm data is further 'typified' where necessary by replacing farm individual particularities by prevailing characteristics, figures, technologies and procedures.

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