HOW SUSTAINABLE IS CHICKEN FARMING?

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With all agricultural industries across Australia looking at how they can operate more sustainably and considering whether, and when, a carbon neutral future may be possible, it is timely to reflect on what the chicken industry's environmental impact is and celebrate its unique achievements.

It's a fact that most commercial chicken meat production today is farmed intensively, but did you know that this helps to contribute to its very modest environmental impacts. In fact, chicken has the lowest environmental footprint of any meat.

Let me explain why this is the case…

- One of the biggest determinants of how much energy is used, and greenhouse gasses created, in the production of livestock products (like chicken and other meats and dairy products) is how efficiently the animals convert feed into edible product. This is because feed represents the biggest source of these impacts. The good news is that chickens are the most efficient converters of feed into meat of all land-based livestock species.
- The way we rear most chickens today, where they are housed in large sheds or barns that have been designed so that they provide, as closely as is possible, their ideal climatic conditions, where food and water are laid on continuously and the birds are fed a diet which very precisely matches their ideal dietary nutrient profile for each stage of growth, all means that we can optimise the flocks' growth and minimise the amount of feed the birds require to grow. In these farming systems we can also reduce the amount of energy that the chickens themselves need to put into maintaining their body temperature and in finding food and water.
- All this translates to more efficient use of feed, energy and water to produce each kg of chicken meat – and less greenhouse gas emissions created.
- The above also applies for free range production systems, where the chickens are also housed in large sheds, but also have access to an outdoor range area during daylight hours once they have reached an age where they are relatively safe from predation and can better cope with variable outside temperatures.

Am I just making this up, or is there actual hard evidence of this? In fact, there is abundant evidence to support what I have said. Most of this has come from studies using Life Cycle Assessmentmethodologies.

Life cycle assessment (LCA) is a tool which is being used worldwide to estimate the environmental impacts associated with producing a particular product from 'cradle-to-grave', taking into account all the environmental impacts involved in producing the product, including those generated in creating the inputs into a particular product, for example, the impacts associated with producing the grains that are fed to the chickens, or in generating the energy that might be used on farm or in the processing plant.

Research conducted on the environmental impacts of Australian chicken meat have confirmed that chicken meat production generates low levels of greenhouse gas emissions and results in modest levels of energy and water use. Click here to listen to Stephen Wiedemann, the Agricultural Scientist who worked on this research, talking about chicken meat production and its environmental impact. The report on this research, "Using Life Cycle Assessment to Quantify the Environmental Impact of Chicken Meat Production", is available here. The results from the Australian LCA are broadly consistent with a significant body of overseas research that confirms that poultry production is the most environmentally sustainable (land-based) way to produce quality animal protein for human consumption.

What about waste?

In terms of waste…there is virtually no wastage from chicken meat production!

For a start, as I've described above, chickens are amazingly efficient converters of feed into meat. On average, a meat chicken on a typical Australian commercial farm will consume about 1.6 kg of feed for every kg of body weight it puts on…and this ratio (kg of feed in : kg of body weight produced) is reducing all the time, due to superior bird genetics, better bird nutrition and improved bird health, husbandry practices and management. The more efficiently the chickens convert their feed (which is mostly grains) into meat, the less nutrients that get deposited in their manure. As I've said above, the way we grow chickens in Australia today maximises this efficiency.

Used litter being prepared for reuse

But what of the nutrients that do end up on the shed floor? Well, the used litter (the bird's bedding

plus manure which remains on the floor of the chicken shed after a batch of chickens has been collected to be processed) is taken out of the shed, loaded into trailers and trucked off, generally for use in composts or in organic fertiliser for a range of different applications, such as horticulture, viticulture, broadacre farming, pasture and turf farms. (click here to listen to Stephen Wiedemann).

Even better, the use of chicken litter as fertiliser reduces the amount of artificial or inorganic fertilisers, like urea and superphosphate (which require significant amounts of energy to produce), that need to be used across Australia to produce a diverse range of other food products and it also contributes valuable organic matter to soils. Chicken litter is therefore not a waste product… it's a valuable resource used in the production chain of other crops and foods.

At the chicken processing plant, there is virtually no waste either! As a rough guide, a bit over two thirds of the weight of the live chicken that leaves the farm ends up in products for human consumption. What doesn't end up in products for human consumption mostly ends up in a range of rendered or fresh products used in animal and pet foods.

What about water use?

Chickens drinking water

Because there is a very close relationship between how much an animal eats and how much it drinks (in the case of chickens, it's about 2 litres of water for every kg of feed consumed), this means that the more efficiently an animal converts feed into product, the more efficiently it uses drinking water also…so modern poultry production wins again!

The area of commercial chicken meat production where most water is used is in the processing plant, where water is a critical input for the carcase cleaning and chilling processes. However, chicken processing companies have, over the past ten years, invested a significant amount of time, money and effort into finding and implementing new ways of reducing water usage in their plants, without compromising food safety. This has resulted in massive reductions in the amount of water used to process each chicken. Indeed, industry initiatives in this area have been recognised nationally. For example, in 2010 Inghams Enterprises was recognised with the Prime Minister's Water Wise Award for its adoption of advanced water treatment technologies which enabled the company's Brisbane plant to treat wastewater from the poultry processing plant to drinking water quality, thereby reducing its reliance on mains water by 70 per cent.

To put things into perspective, the Life Cycle Assessment conducted for Australian chicken meat (referred to above) concluded that the average 1.7 kg whole chicken requires less water to produce throughout the whole supply chain (up to the point that it leaves the plant for retail sale and ultimate cooking) than an average 4-minute shower.

Add this to the finding that the total greenhouse gas emissions associated with producing that chicken would be equivalent to the emissions that would be generated by driving a car to collect the same chicken from the local supermarket or chicken shop, and I think the case for the environmental sustainability of modern chicken meat production clearly stacks up!