

Grassfed and Organic Wagyu:

Opportunities for unconventional Wagyu in luxury beef niches

A report for



By Sarah Hughes

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Executive Summary

This report investigates the production and marketing of Wagyu to ascertain opportunities in Australia for models other than the long-fed Wagyu model. It also investigates consumers' willingness to buy the different cuts of the carcass.

Red meat contains numerous vitamins and minerals that are good for us, but there is also a concern in recent years that high consumption of red meat can be bad. Along with this has come a growing belief that grassfed beef is better for us than grainfed beef.

Wagyu beef's distinctive marbling quality is the product of an intensive grain diet combined with a genetic potential to marble. However, grassfed Wagyu still produces the distinctive marbling, albeit to a lesser extent than grainfed Wagyu, setting it apart from conventional beef.

The meat from cattle that eat only grass contains two to three times the amount of healthy fats compared with cattle that are largely grainfed. Healthy fats are associated with reduced cancer risk, reduced cardiovascular disease risk, and better cholesterol levels (French et al. 2000). Grassfed beef has also been found to have a healthier ratio of omega-3 to omega-6 fatty acids and often also contains higher levels of antioxidants such as vitamins E and A.

On the author's travels to numerous markets, it was commonplace to hear that grassfed was "sexier" and more in-demand than organic beef, a view strengthened not only by the perceived health benefits of grassfed beef but also by the corporatisation of organic farming, which has led to a perception that organic beef is less natural than grassfed beef. Among others, this was reflected in comments made by key beef importers including George Abrahams in the United Kingdom (UK) and Pilot Foods in the United States of America (USA).

However, from a producer's point of view this study found that, as attractive as the idea is of taking grassfed Wagyu all the way to market, it is probably not commercially viable on a large scale. Although feedlot entry prices have fallen due to increased supply, they are still very strong. Also, the real value of the long-fed Wagyu model lies in its ability to achieve excellent prices for the whole carcass. This is why these carcasses attract huge premiums. Grassfed Wagyu, on the other hand, has a lesser degree and consistency of marbling, with some cuts faring better than others.

Nonetheless, there are niche opportunities born of the fact that, globally, Wagyu is still experiencing rapid growth. Indeed, many potential customers have not even heard of Wagyu beef, let alone tried it. Where there may be an interesting opportunity for grassfed Wagyu in these production systems is with by-products, i.e. cull Wagyu females that have been taken out of the breeding herd for age, type, or pregnancy status reasons.

Beef wholesalers are interested in unique beef brands and love the story behind the brand. There are certainly opportunities for those who are passionate about taking their product all the way to the end consumer. However, to be successful, these brands will need to be consistent in quality, reliable in supply, and offer a niche value proposition.

At Hughes Pastoral, in order to provide a consistently good product, year round production of grassfed Wagyu or organic Wagyu is possible, but not grassfed organic Wagyu, as this would remove too many supplemental feeding options from the toolkit.



Figure 1: Author Sarah Hughes, at Kobe Meat Auction, Japan, 2017

Table of Contents

Executive Summary	iii
List of Figures	vii
Foreword	viii
Acknowledgments	ix
Abbreviations and Terms	x
Objectives	1
Chapter 1: Introduction	2
Chapter 2: Historical Overview of Wagyu Beef Production and Consumption	5
2.1 The breed in Japan.....	5
2.2 Escape of genetics	6
2.3 Best practice production systems	7
2.4 Global consumption and market trends.....	9
Chapter 3: Historical Overview of Organic Beef Production and Consumption	11
3.1 Global consumption and market trends.....	11
3.2 Market overview: USA — the dominant global consumer.....	12
3.3 Market overview: Asia	13
3.4 Market overview: Europe — the protection racket	14
3.5 Production systems — Big-Ag meets hairy armpits	15
3.6 “Natural” v “organic” v “grassfed” and truth-in-labelling.....	15
Chapter 4: Unconventional Wagyu — Case Studies	17
4.1 United Kingdom	17
Natural Wagyu Company, Pembrokeshire	17
.....	18
Daylesford, Gloucestershire.....	18
Highland Wagyu, Perthshire	19
4.2 USA.....	20
Joseph Decuis Farm and Restaurant, Indiana.....	20
Heartbrand Beef, Texas	20
Desert Mountain Meats, Idaho.....	22
Snake River Farms, Idaho.....	23
4.3 New Zealand and Australia.....	24

First Light Foods	24
Robbins Island Wagyu	26
Chapter 5: Organic Wagyu production.....	28
5.1 Supplemental performance feeding.....	28
5.2 Grassfed production	29
5.3 Organic production.....	30
5.4 Geographical location of properties.....	31
Chapter 6: Marketing and Trade.....	33
6.1 Carcase breakdown and destinations	33
Organic v Wagyu v conventional trim.....	33
Organic v Wagyu v conventional forequarter.....	33
Organic v Wagyu v conventional loin cuts.....	34
6.2 Marketing niche luxury proteins	34
Chapter 7: Conclusion	37
Recommendations.....	39
References.....	40
Plain English Compendium Summary	43

List of Figures

Figure 1: Author Sarah Hughes, at Kobe Meat Auction, Japan, 2017	iv
Figure 2: Wagyu cattle grazing on buffel-grass pasture at Tumber Station, Central West Queensland	2
Figure 3: Hughes Pastoral grassfed Wagyu, 2016 (Source: Author)	3
Figure 4: Commercially promoted Australian grassfed rib-fillet, 2018 (Source: Author).....	3
Figure 5: Awareness of types of beef in Australia (Source: MLA Global Consumer Tracker, 2016)	4
Figure 6: Current and projected Australian Wagyu production	7
Figure 7: Organic sectors as a proportion of total exports (tonnes).....	11
Figure 8: Perceived benefits attributed to organic products.....	12
Figure 9: Portion cut of Natural Wagyu eye fillet, 2017 (Source: Author).....	18
Figure 10: Jordan Beeman and author, Sarah Hughes, Bovina Feeders, Texas USA, 2017	21
Figure 11: Akaushi heifers, 15 months of age, Heartbrand Ranch, Texas USA, 2017.....	22
Figure 12: Hughes family with Dr Jerry Reeves, Washington State, USA 2017. L to r: Sarah Hughes, Jerry Reeves, Harry Hughes and Fred Hughes (Source: Author).....	27
Figure 13: Growth response to supplement intake (Source: McClennan, 1997)	29
Figure 14: Cost curves for desired growth response	30
Figure 15: Ideal supplement composition for a desired intake level and growth response ...	31
Figure 16: Casual dining menu example, Brisbane, 2017 (Source: Author)	35

Foreword

I was raised on grassfed beef — Brahman and Charbray — on a cattle property north of Cloncurry in northwest Queensland. Some years on, my husband, Fred, toddler, Harry, and I live on Tumber Station in Central West Queensland where Fred and I background Wagyu steers and marshal them for entry into multiple feedlots on the Darling Downs and in northern New South Wales. But while our livelihood is entwined with grainfed beef, we continue at home to eat, enjoy and indeed prefer the grassfed variety. This has led us to speculate about whether it would ever be commercially viable to take grassfed Wagyu all the way to the consumer.

The five years prior to moving to Tumber we spent living on and managing Lake Nash Station on the Barkly Tableland, Northern Territory. The Lake Nash aggregation is 4.2 million acres with the capacity to run 70,000 head of cattle. It is primarily a breeding operation with the focus increasingly on Purebred Wagyu production.

Fred and I are both fifth-generation cattle producers and passionate custodians of the land. Our vision is to be leading producers of superior quality Wagyu beef (whether conventional grainfed, organic or grassfed) sought after for its capacity to satisfy premium niche markets both nationally and internationally. In striving to achieve this vision, we recognise the value in forging long-term relationships with key partners.

The experiences afforded to me by the Nuffield Scholarship to study and travel have been wonderfully enriching. I was very fortunate that Fred and Harry were able to accompany me on many of my fact-finding adventures, which took us to Asia, Europe, North and South America, and New Zealand.

The main highlights from my Nuffield travels were my gaining a much deeper insight into beef production and marketing around the world and a little more insight into other agricultural sectors.

I strongly believe fat belongs in a healthy diet, and it is my hope that this report provides some insights for Wagyu and wider beef producers.

Acknowledgments

Thank you, Fred, my wonderful husband, my rock, for your unwavering support and encouragement on this exciting journey. And, of course, our toddler Harry, who was 11–16 months old at the time of travel. He won't remember his globetrotting, but he proved a great little traveller, making it very easy for me to focus.

Thank you, Nuffield Australia, for giving me this extraordinary opportunity. At the first event I attended, the 2015 conference in Albury, I recall having goose bumps as I realised what a once-in-a-lifetime opportunity it was.

To my Japan GFP crew — a group of bright and good-hearted chums — thank you for the good times. We look forward to you visiting us in Outback Queensland sometime.

To the countless beef industry people, innovators and progressive farmers around the world who offered their time and insight (and often a delicious meal), your generosity will never be forgotten.

An opportunity such as a Nuffield Scholarship would not have been possible without the support of ANZ and Australian Agricultural Company (AACo), ably represented by Mark Bennett and Donald McGauchie, respectively. I would particularly like to acknowledge Mark's enthusiasm and support along this journey and look forward to a continuing relationship with both companies.

Thank you to my aunty, Monica Chaplain, for offering editorial guidance in the writing of this report.

Becoming a Nuffield Scholar is a privilege and one that has provided me with an experience I will always treasure.

Abbreviations and Terms

Abbreviations

AACO	Australian Agricultural Company
ACO	Australian Certified Organic
AWA	Australian Wagyu Association
BSE	Bovine spongiform encephalopathy
CLA	Conjugated linoleic acid
EU	European Union
FB	Fullblood
F1, F2, F3	First cross, Second cross, Third cross etc.
FLF	First Light Foods
GFC	Global Focus Program
GOTG	Global Organic Trade Guide
MLA	Meat and Livestock Australia
MSA	Meat Standards Australia
PB	Purebred
UK	United Kingdom
USA	United States of America
USDA	United States Department of Agriculture
WTO	World Trade Organization
XB	Crossbred

Terms

backgrounding	Backgrounding is a beef production system that involves maximal use of pasture and forages from the time calves are weaned until they are placed in a feedlot.
bobby calves	Bobby calves are calves surplus to requirements and destined for slaughter.
chiller assessment	Chiller assessment provides a means of classifying beef prior to packing or distribution.
conventional Wagyu	Conventional Wagyu is grainfed, usually in a feedlot for 300–450 days prior to slaughter.
Fullblood Wagyu	Fullblood Wagyu are animals whose entire pedigree can be traced to Japan, i.e. 100% Japanese blood.
grainfed	Grainfed Wagyu cattle are finished on grain. Cattle in Australia have to be fed grain for more than 60 days before they're classified as grainfed (MLA, 2017). The grain may or may not be organic grain.
grassfed	In Australia, most cattle of any breed feed on pastures and then are "finished" in a feedlot. To be certified grassfed by PCAS (Pasturefed Cattle Assurance System), cattle can never be fed grains. They must be fed on grass, hay or forage their whole lives. Grassfed does not necessarily mean organic as it's possible that pesticides were used on the grasses or hay, and it's also possible that cows were given antibiotics or hormones.
grass-finished	Same as grassfed, grass-finished Wagyu cattle are fed on grass, hay and forage until slaughter.
long-fed	Long-fed Wagyu means the Wagyu cattle have been fed grain for a long period (250 days or more).

marbling	This is the name given to the deposits of intramuscular fat in cattle, which make the meat extremely tender and flavoursome. Wagyu beef is particularly renowned for its marbling.
natural Wagyu	Wagyu raised on open pastures are often called “natural”, because this reflects their natural habitat and is less stressful to the cattle, but natural does not necessarily mean organic, nor 100% grassfed.
polled	Polled cattle are born without horns so dehorning is not necessary. A homozygous-polled animal has two polled genes. A heterozygous-polled animal has one horned and one polled gene. When bred together they will produce progeny without horns.
primals	A beef carcass is first divided into primal cuts: chuck, brisket, shank, rib, short plate, loin, flank, and round.
Purebred Wagyu	Purebred is defined as Fourth-cross Wagyu, or at least 93.75% Japanese blood.
organic	To be classified “organic”, Wagyu beef must be certified as such. Certification requires that the meat is grown and produced without synthetic fertilisers, pesticides, growth hormones or antibiotics. Farming standards include ways of protecting soil, air and water quality, as well as working to protect natural habitats. Animals have to be free range, and to have access to pastures and pesticide-free and non-genetically modified food for their whole lives. Like grassfed, anyone can claim that their meat is organic, so to truly know what you’re getting, you need to look out for one of the certified organic logos. ACO is one of the most recognisable.
short-fed	Cattle raised on grass and fed on grain for a short period before slaughter (60–120 days).
terminal cross	Signifies the use of a different breed of bull to the breed of the dam, whereby the intention is to cull the female progeny. No replacement females (breeders) are to be kept from the cross. The idea is to use a

strong maternal line, and cross with a bull that produces desirable carcass traits (i.e. marbling). Terminal cross cattle reliably achieve performance better than the average of their parents due to heterosis (hybrid vigour).

terminal sire

A bull used to produce a terminal cross (see above).

2 tooth

The age of an animal is often referred to by the number of permanent teeth it has in its mouth. An animal with only milk teeth is called a “milk tooth”, whilst an animal with two permanent adult teeth is a “2 tooth”, which generally signifies an age of between 18 and 30 months. A “4 tooth” animal is generally aged between 24 and 36 months, and so on until they have a full set of eight permanent teeth when they are said to be an “8 tooth” or “full mouth” at around 48 months of age.

Objectives

This report investigates organic and grassfed Wagyu production and marketing with a particular focus on the following objectives:

1. To investigate whether a natural, high-quality Wagyu product (grassfed or organic) can be produced all year round.
2. To gain an understanding of the supplemental feeding programs (including cost of grain) required for such production.
3. To investigate whether this is more profitable than conventional long-fed Wagyu production.
4. To investigate the global demand for these two products: grassfed and organic. This involves determining consumers' willingness to buy the different cuts of the carcass.

Chapter 1: Introduction



Figure 2: Wagyu cattle grazing on buffel-grass pasture at Tumbar Station, Central West Queensland

Wagyu is a breed of cattle famous for its highly marbled meat. According to Meat and Livestock Australia (MLA, n.d.) website, any breed of cattle will produce marbled meat if fed the right product for long enough. MLA goes on to state that meat from Wagyu fed for 300 or more days on a grain-based diet will be highly marbled and higher in fat compared with meat from grassfed Wagyu, which will have levels of marbling comparable to other breeds fed similar diets.

However, while it is true that any breed of cattle will produce marbled meat depending on the type and duration of feed, it is also true that Wagyu has a far higher genetic potential to marble. The author contends (based on considerable experience with cattle) that even purely grassfed Wagyu can produce spectacular marbling, much higher than other breeds that have been grainfed. Even traditionally soft British breeds, for example, will never marble as much as Wagyu, whether fed on grain or grass, as the picture below demonstrates.



Figure 3: Hughes Pastoral grassfed Wagyu, 2016 (Source: Author)



Figure 4: Commercially promoted Australian grassfed rib-fillet, 2018 (Source: Author)

While the difference between conventional (non-Wagyu) beef and grainfed Wagyu is greater than the difference between grassfed Wagyu and grassfed conventional beef, grassfed Wagyu beef is nonetheless tenderer and tastier than conventional grassfed beef, and in this author's opinion it is tastier and healthier than grainfed Wagyu. This opinion was confirmed by the author's travels where consumers and importers sung the health benefits of totally grassfed beef. Certainly, there is a high awareness of grassfed beef in Australia, as shown in Figure 5.

Awareness of types of beef



Source: MLA Global Consumer Tracker, 2016

Figure 5: Awareness of types of beef in Australia (Source: MLA Global Consumer Tracker, 2016)

Wagyu beef is premium beef to begin with and when grassfed or organic is added, then it essentially becomes 'double premium'. The question is: are consumers willing to pay for double premium beef?

Chapter 2: Historical Overview of Wagyu Beef Production and Consumption

2.1 The breed in Japan

Wagyu is a Japanese beef-cattle breed, derived originally from native Asian cattle:

The word Wagyu (pronounced wa-gyou) translated literally means Japanese cattle; the “wa” means Japanese or Japanese-style and the “gyu” means cattle (AWA, n.d.).

They are a horned breed and either black or red in colour. In the late 1800s there were infusions of British and European breeds including Angus and Simmental, but the breed was closed to outside genetic infusions in 1910.

Wagyu are renowned for the marbling of their meat (deposits of intramuscular fat), which is enhanced by a prolonged period of high nutrition prior to slaughter, achieved by feeding the cattle large quantities of grain. If grainfed under the same conditions, all cattle of any breed will produce this effect to a small degree, but the effect is far stronger with Wagyu, which have a superior genetic potential to marble.

Wagyu were originally draft animals used in agriculture to plough fields. They were selected for their physical endurance. It is thought that the higher levels of intramuscular fat cells provided a more readily available energy source. The variation of conformation within the Wagyu breed is greater than the variation across British and European breeds (AWA, n.d.). The three major black strains — Tajima, Fujiyoshi and Kedaka — evolved as a result of regional geographical isolation in Japan (AWA, n.d.). Consequently, the national herd comprises 90% black cattle and 10% of the red strains, Kochi and Kumamoto.

Interestingly, for a large part of its history, Japan was officially a vegetarian country. According to Marta Zaraska (2016), the restrictions on beef consumption were supported not only by the national religions of Japan (Buddhism and Shintoism), which encouraged plant-based eating, but also by the acute shortage of arable land in Japan, which made grazing a luxury. The Japanese people’s tendency to eat the cattle that were ploughing their fields for crops meant that a ban had to be placed on beef consumption to protect the agricultural industry. It was Western influence in the 19th century, including the conviction that a diet rich in beef

would make for stronger soldiers, that finally convinced Japan to lift the more than 1000-year old ban. Interesting also is that the ban was not just one ban, but a series of bans imposed over the millennia — because many Japanese people always managed to find a way around the ban (Watanabe, n.d.). The official vegetarian status of Japan was not always reflected in the preferences of Japanese people.

These days Wagyu beef production in Japan is highly regulated and progeny testing is mandatory. There have only ever been 173 live animals exported from Japan (Bennett, 2013). Recognising the value of their unique product, the Japanese Government banned exports in 1998 and declared Wagyu a national treasure (Bennett, 2013).

2.2 Escape of genetics

Pioneers of Wagyu in Australia are, to name a few, Wally Rea, World K, Longford, Takeda, David Blackmore and Sher Wagyu. These groups worked out a loophole to get around the Japanese ban on the export of live animals.

In 1976, before the export ban, the USA imported two Tottori Black Wagyu and two Kumamoto Red Wagyu bulls from Japan. In 1990, Australia received its first Wagyu genetics, a Wagyu female, via the USA. Frozen semen and embryos have been available since 1991 and there have been further imports of live Purebreds from the USA (AWA, n.d.).

The introduction of Wagyu cattle to Australia has been a costly, long-term project as there has been no protocol with Japan for direct imports (AWA, n.d.). Initially, the Australian herd was greatly influenced by a shipment of five Fullblood animals exported from Japan to the USA in 1993. These included two bulls, Michifuku and Haruki II, and three cows, Suzutani, Rikitani and Okutani. The most significant importation of live cattle took place in 1997 when the first live Fullbloods came into Australia via the USA.

The Wagyu breed is gaining strength and popularity as Australian beef producers realise there is significant demand for high-quality carcasses that derive marbling from Japanese genetics. Australia is in the unique position of having the best accumulation of Wagyu genetic material outside of Japan in a country free of the diseases that restrict exports from other countries (AWA, n.d.). The AWA is projecting Wagyu production to more than double from 2017 to 2021 (see Figure 6 below).

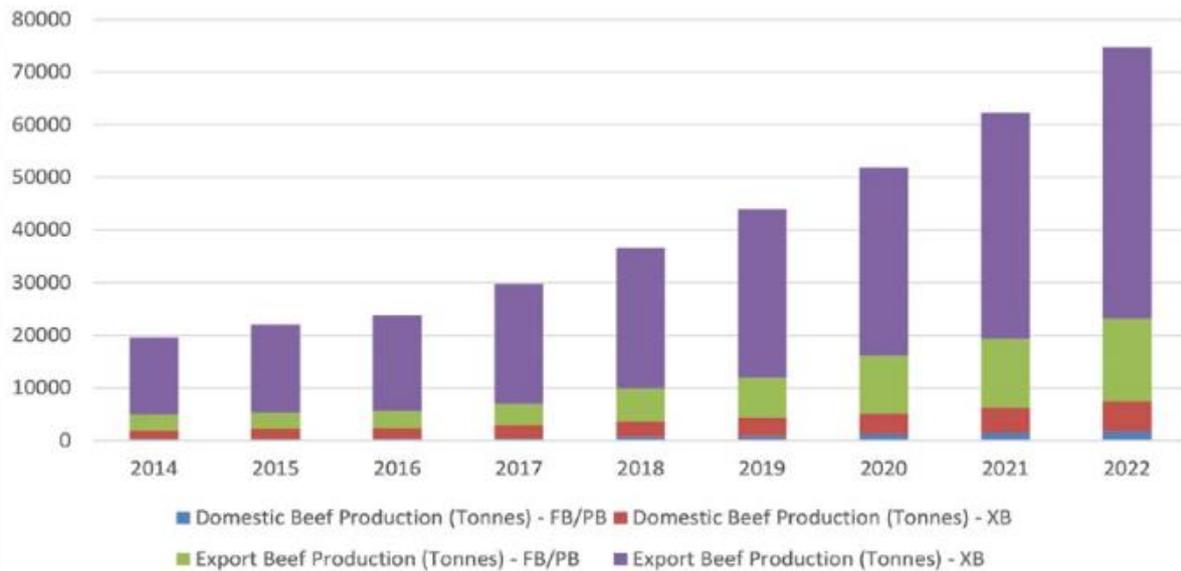


Figure 6: Current and projected Australian Wagyu production
 (Source: MLA Snapshot, 2017)

Note: FB = Fullblood; PB = Purebred; XB = Crossbred

2.3 Best practice production systems

The conventional Wagyu feeder market in Australia can be split into two subsections: F1 (first cross) and Fullblood/Purebred.

Fullblood is defined as animals whose entire pedigree can be traced to Japan, i.e. 100% Japanese blood, whereas Purebred is defined as Fourth-cross Wagyu, or at least 93.75% Japanese blood. Some markets will pay high premiums for Fullblood animals and meat; however, most are moving towards qualitative remuneration, whereby the amount and fineness of marbling is more important than whether the animal’s great-great-great-great-grandsire was born in Japan.

Many large Wagyu producers in Australia (and particularly in more extensive operations in the north) are pursuing polled (non-horned) Wagyu for the many animal health and welfare, as well as commercial, benefits. Polled Wagyu is regarded as preferable because it means the calves do not have to be subjected to the stressful dehorning process, and the cost savings to producers of eliminating this stage are significant (Hamblin, 2017).

As there are no Fullblood animals outside Japan that carry the poll gene, this necessitates using an Angus base. The first Purebred homozygous-polled bull was sold in Australia in 2017.

Given that no Purebred cow can by definition have a Fullblood calf — and given the attractiveness of bringing Purebred Wagyu polled genetics back in across Fullblood herds — it is the author’s opinion that the number of Fullbloods relative to the number of Purebreds will fall. It is demonstrative that AACo, the world’s largest producer of Wagyu cattle, makes no distinction between Purebreds and Fullbloods when marketing their beef, and in fact Greg Gibbons, the General Manager of South East Queensland Wagyu and Feedlots, refers to all of them in the feedlot system as “Pure-bloods” (personal communication, 2017).

Purebred and Fullblood animals follow a similar production and feeding regime. With these herds, the genetics must be balanced, because concentration on a single trait — marbling — will produce very small animals with no milking ability. Calves are often crib-fed, which means they have free access to grain pellets whilst still suckling the cow and are kept on a rising plane of nutrition until slaughter. According to Dr Darío Colombatto, a prominent bovine nutrition scientist based at the University of Buenos Aires, there is much evidence to suggest that a weight gain of 0.4 kg per head per day is required throughout the entire lifecycle to optimise marbling performance (personal communication, 2017). There is also research to suggest that pre-natal nutrition is key to laying down enough preadipocytes, which are the intramuscular cells that, with the right nutrition, develop into fat cells. Dr Colombatto explained this very well. Post-weaning, the calves require highly improved pasture, supplemental feeding, or a combination of both. These cattle are then backgrounded until they hit a feedlot-entry weight of between 300 and 450 kg, at which point they are lot fed for 350 to 500 days.

First-cross Wagyu cattle predominately use an Angus cow to deliver weight for age and maternal traits, and a terminal Wagyu sire that provides marbling at the expense of all other selection traits. The other major class of F1 cattle are produced as a by-product of the dairy industry. Wagyu semen is used across a certain proportion of the lesser-quality cows as a terminal cross, with the resulting calves being considerably more valuable than non-replacement bobby calves. Again, marbling is singularly targeted, with the Holsteins and Friesians providing weight for age. These cattle are backgrounded until 350–500 kg and are then lot fed for 270 to 350 days. The better weight for age performance of these F1 cattle make them far more suitable for the EU market where significant advantages accrue for cattle that are 2 tooth or less.

Whether F1 or “Pureblood”, the feeding regime is critically important. The animals are started on a “cool” (predominately straw and silage) ration, and then the energy and amount of grain is increased over time. White grains, with their absence of beta-carotenes, have been proven to give better marbling and carcass performance (Gorocica-Buenfil et al., 2007). The use of shade is also critically important in feed-yards. Hughes Pastoral kill data suggests that severe heat events can drop the mob average by one to two marble scores for cattle killed in the following weeks.

When grazing and feeding cattle, it is important to remember that 1 kg of fat takes the same amount of energy to produce as 5 kg of muscle. Also, the animal lays down muscle first, then the intermuscular fat, and only lastly does it produce the intramuscular fat or marbling.

When it comes to processing, almost all Wagyu kills in the USA and Australia are done on a Friday, with chiller assessment and boning taking place the following Monday. This greater time over the weekend allows the carcass to completely stabilise in temperatures of 4–7°C, making every fleck of intramuscular fat visible to the naked eye. This can improve the Ausmeat-assessed marble score by up to half a point, as well as improve the accuracy of marbling assessment.

As more and more Wagyu cattle are feeding into the system, bottlenecks are emerging for these Friday kills. It is hoped that with the move towards objective assessment using cameras and DEXA (dual-energy X-ray absorptiometry), which are able to assess the marbling better than the unaided eye, the advantage of the longer chill will be removed and hence the bottleneck.

2.4 Global consumption and market trends

Approximately 70% of Australia’s Wagyu production is exported and thus relative Australian dollar values are vital to industry profitability (<https://australianwagyuforum.com.au>). Leading up to 2013, the high Australian dollar meant difficult times for Australian agricultural exporters; the currency decline over the previous four years has helped but is currently causing difficulties at its present level of approximately USD0.80.

Traveling around the world, it became apparent that people are prepared to pay for luxury Wagyu beef. As with any premium food, the fortunes of Wagyu beef are linked to global affluence. The International Monetary Fund (IMF, 2018) has just raised its global growth

forecast to 3.9%, mainly due to the sweeping tax reforms recently passed by the Trump administration in the USA.

In traditional markets, such as the USA and Japan, beef value share remains steady as prices have increased. Maintaining value share, and limiting decline in volume, remains a challenge (MLA, n.d.).

On the other hand, Australian consumers are increasingly cautious and price-sensitive. Disposable income has not kept pace with inflation, with wage growth stagnating. Growth in food sales, including in the meat category, is largely driven by population growth and price inflation (MLA, n.d.).

The Wagyu breed is unsurpassed for its marbling and ability to improve meat quality in crossbreeding programs. This has been important in improving the capacity of Australia's exports to Japan to grade higher and achieve increased value.

Chapter 3: Historical Overview of Organic Beef Production and Consumption

3.1 Global consumption and market trends

In 2015, the size of the global market for organics was estimated to be US\$81.6b, a 10% increase from 2014, and a 400% increase from 2000 (Australian Organic, 2017). In 2016, beef was Australia’s top organic export by tonnage, representing 20% of all exports (see Figure 7).

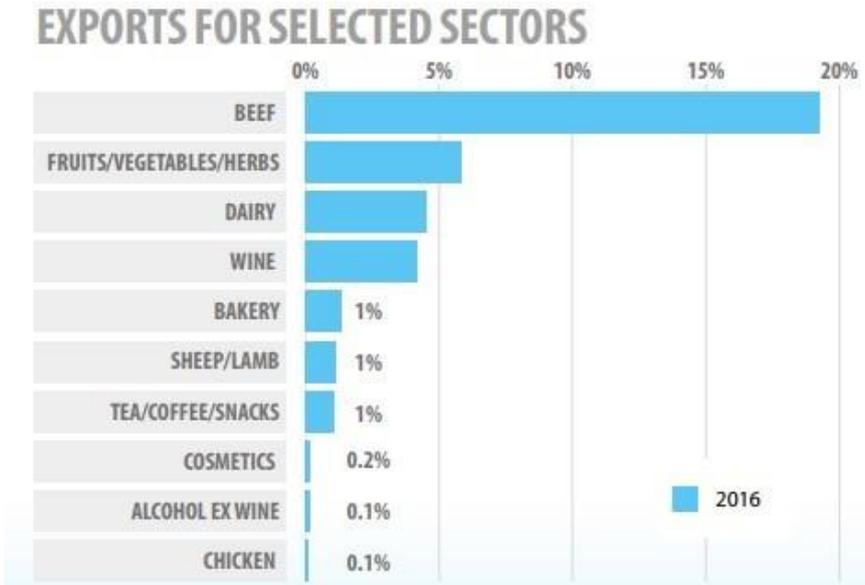


Figure 7: Organic sectors as a proportion of total exports (tonnes)
 (Source: Australian Organic, 2017)

Land area under organic management continues to increase, and sales value continues to grow globally. As consumer wealth increases, so does consumers’ discretionary spending on food. This extra spending is either on greater volume of food (if coming from a low income), or better quality food. Greater quality can mean greater perceived health benefits, animal welfare, food safety, or simply eating quality. These traits are all considered benefits of organic produce. Australian consumers’ top three reasons for purchasing organic food is that it is chemical-free, additive-free and environmentally friendly (see the Top 20 benefits for 2014 and 2016 listed in Figure 8 below).

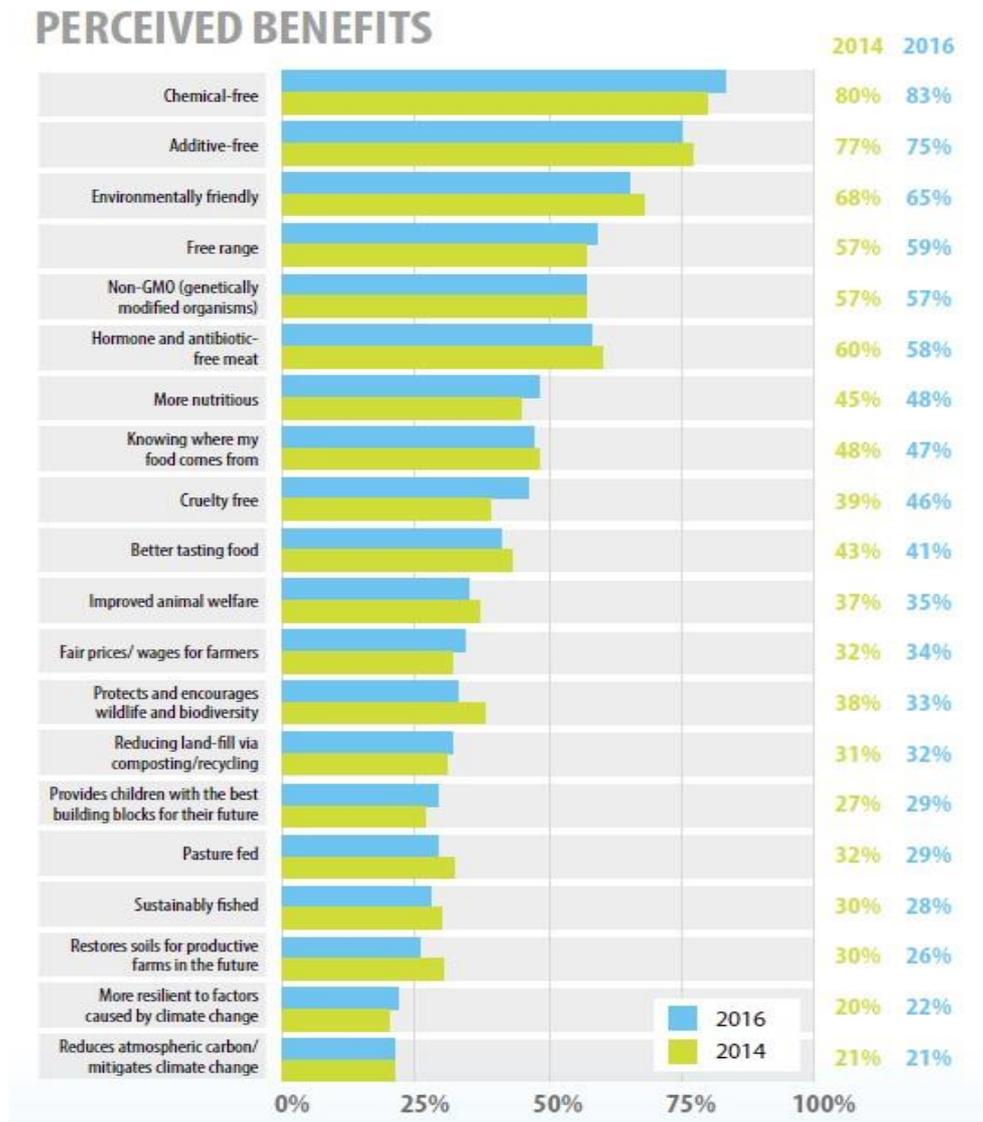


Figure 8: Perceived benefits attributed to organic products
 (Source: Australian Organic, 2017)

3.2 Market overview: USA — the dominant global consumer

The USA now accounts for 53% of global sales of organic food and beverages, growing by 11% to US\$43.3b in 2015 (Australian Organic, 2017). Organic produce in the USA currently accounts for 5% of total food sales, making it the USA’s fastest growing sector in retail food. Shoppers in the USA are reported to be the sixth largest spenders per capita on organic packaged food — US\$45.6 per capita in 2016 (GOTG, n.d.). The USA accounts for 96% of Australian organic beef exports, which represents 56% of the total tonnage of organic exports from Australia.

3.3 Market overview: Asia

Asia is increasing its share of the world organic consumer market, partly driven by food scares in China. The Chinese Communist Party has added organics to its national planning policies, further increasing this trend. Currently, the Chinese spend, on average, is US\$1.20 per capita on organic packaged food, which ranks them as the 30th highest per capita (GOTG, n.d.). This consumption is dominated by organic milk, which makes up 95% of value. It is estimated that the total market will grow at around 16% per year from 2015 to 2020 (GOTG, n.d.).

This insatiable appetite for organic milk — specifically, organic baby formula — has shown itself in “daigou” shopping in many supermarkets throughout Sydney and Melbourne. Daigou, which in Mandarin means “shopping on behalf of someone else”, refers to the practice of Australian Chinese purchasing goods at Australian supermarkets and then shipping them to Chinese consumers, often presenting at checkout counters with trolley loads of one product. Many supermarkets now place bag limits on these in-demand items (Kohler, 2017).

South Korea and Japan are two vitally important markets for conventional Australian beef, as well as high-end Wagyu beef. Currently, there is little organic penetration in these very large, wealthy and mature markets, with just US\$3.3 and US\$3.6 spent on organic food per capita (GOTG, n.d.). Charlie Ko, MLA’s South Korean Manager, told the author that they are just starting to see some organic beef penetrate the market, and there is a real push towards healthier choices (personal communication, 2017).

Marg Will of Organic Systems & Solutions believes that the greatest demand currently is for organic premium beef, dairy and grain. According to Will, a second wellness wave has started in South Korea, which sets the trend for most of South East Asia, and the potential for Australian farmers is immense.

Warren Pensini of Blackwood Valley Beef in southern Western Australia first established the business in 1976. Pensini saw organics as an opportunity to value-add their beef. Substantial premiums formerly available to organic beef producers have virtually disappeared in the last 18 months. Pensini believes that the failure to supply beef with a high eating quality could explain the closing price gap between organic and conventional beef. Blackwood Valley Beef exports 10% of its beef products to Singapore and sees this increasing to 50% in the next 12–18 months (Australian Organic, 2017).

3.4 Market overview: Europe — the protection racket

The overall organic market share in the European Union (EU) experienced strong growth of 13% between 2014 and 2015 — the first time it has exceeded 10% since the global financial crisis (Australian Organic, 2017). There has been even higher growth in Spain, Ireland, Sweden, Belgium, Norway, Italy and France, while in some select EU member states, market share of organics is close to double digits (Australian Organic, 2017). The area under organic management has increased 8.2% year on year; however, this is slower than the increase in demand.

Europe accounts for the four largest consumers per capita of organic produce: Switzerland, Denmark, Luxembourg and Sweden (Australian Organic, 2017). Unfortunately, Australian beef producers are yet to participate in this huge organic market, due to an unfavourable market-access environment. According to Josh Anderson, MLA Market Manager – Europe, the current quota settings are the problem (personal communication, 2017). These are as follows:

Grainfed:

In Quota 0% Tariff; Out of Quota 141.4-304.1Euro/100 kg; requires 0–2 teeth feedlot for a minimum of 100 days on a high-energy ration. A total of 48,200 tonnes are available (12,050 tonne per quarter), with this usually being filled a month before the end of the quarter. This quota was established for the USA after a World Trade Organization (WTO) dispute. Although the WTO cannot create quotas that stipulate country of origin, the specifications were written to suit the American production system. As this is such an attractive quota, however, it has been heavily targeted by Australia and South American countries, and currently the USA only contributes about one-third of the total tonnage. There are formal discussions between the USA and EU occurring currently, which could remove our ability to supply into this 0% tariff quota.

Hilton:¹

In Quota 20% Tariff, Out of Quota 141.4–304.1Euro/100 kg: This is an Australian-specific quota of 7,150 tonnes and covers all imports that cannot enter under the much more desirable Grainfed quota (see above). As this demonstrates, conventional 100-

¹ 'Hilton' is the informal name given to the European Union quota open only to Australia. It is also known informally as 'ribs and loins' quota'.

day grainfed beef has a significant advantage over both grassfed and organic beef, as well as traditional long-fed Wagyu (as it is very difficult to hit significant carcass weights and marbling scores with the 0–2 teeth constraint).

3.5 Production systems — Big-Ag meets hairy armpits

Organic farming in many ways has become a victim of its own success. Traditional organic principles and consumer buy-in has led to burgeoning demand and high prices. This has naturally attracted the interest of large food businesses and led to the corporatisation of organic farming. Organic farmers' markets will always have their place, as will large corporate organic brands; however, this corporatisation has led many importers in the UK and USA to suggest that grassfed is a "hotter" claim — many people are just starting to realise that "organic" does allow the use of organic grain (Glassman, 2017).

3.6 "Natural" v "organic" v "grassfed" and truth-in-labelling

In many countries, "grassfed" and "natural" claims are just that — claims. At least in organic production, there are several large well-established and recognised certifying bodies that ensure truth-in-labelling. Many grassfed labels in the USA are actually pasture-raised and grain-finished — how this isn't just considered grainfed is anyone's guess. Truth-in-labelling is becoming a larger concern for consumers, with most Australian shoppers aware that certification marks are used on organic products as a "guarantee" of authenticity. This awareness has increased over time from 42% in 2010 to 59% in 2016 (Australian Organic, 2017).

On the flip side, there is no real policing on what "natural" or "grassfed" means, although there are quite a few voluntary certifying bodies. Nonetheless, there is certainly research (and widespread consumer perception) suggesting that grassfed beef is healthier.

The meat from cattle that eat only grass contains two to three times the amount of conjugated linoleic acids (CLAs) compared with grain-finished beef. CLAs are healthy fats associated with reduced cancer risk, reduced cardiovascular disease risk, and better cholesterol levels (French et al., 2000). Grassfed beef has also been found to have a healthier ratio of omega-3 to omega-6 fatty acids and often contains higher levels of antioxidants such as vitamins E and A. Most, but not all, organic cattle are finished on grass.

These perceived health benefits of grassfed cattle, along with the corporatisation of organic farming, has meant that quite a few importers suggest that grassfed is “sexier” and more in-demand than organic. Among others, this was reflected in comments made by George Abrahams in the UK and Pilot Foods in the USA.

Chapter 4: Unconventional Wagyu — Case Studies

This chapter highlights what is going on in the world of natural Wagyu in places where the author visited.

4.1 United Kingdom

Natural Wagyu Company, Pembrokeshire

Will Prichard, a Welsh Nuffield Scholar in 1998, has developed the Natural Wagyu Company from his home in Pembrokeshire on the Welsh Coast. In partnership with his parents, Will milks 1,200 cows across three dairies.

Will was looking for a way to value-add a by-product of his dairy business, his bobby calves. Will and friend, Rob Cumine, a food supply chain expert and supermarket executive, tasted a grassfed Wagyu steak and were hooked — and thus the business was born.

Natural Wagyu predominately sells into high-end retailers and now supplies Wholefoods UK. The animals are killed locally and then further processed into retail-ready packs (see Figure 9). Will and Rob grass-fatten dairy x Wagyu steers and heifers and can net approximately GBP 1,600 (AUD 2,860) per steer carcass, a premium of around 50% above the conventional market. They are primarily breeding and backgrounding their own cattle but are looking to outsource and grow the business through contract breeding and fattening. Pembrokeshire has an abundance of dairies and this fits in well with the Natural Wagyu business plan.

Given the harsh winters, cattle in Pembrokeshire do not spend all their lives in the paddock but are shedded for the winter. The specific claim on their product is that all cattle are grazed on pasture for at least 210 days per year, and that during the winter they feed on hay and silage, of which at least 80% is grown on the farm.



Figure 9: Portion cut of Natural Wagyu eye fillet, 2017 (Source: Author)

Daylesford, Gloucestershire

Daylesford is the most recognisable organic brand in the UK. Lady Carole Bamford persuaded her family to turn their sprawling estate in the Cotswolds over to organic production around 35 years ago. In 2002, the iconic farm shop near Kingham was opened, and has led to the opening of a further three stores in London. The business was originally thought to be simply a diversion for the wife of a wealthy industrialist (the Bamford Family own and manage J.C. Bamford Excavators Limited, known as JCB), but has proven to be highly successful in its own right, winning more than 60 national and international awards over the past few years for its delicious food, sustainable practices and the farm shop café.

Richard Smith manages the agricultural enterprise, which is a complex operation, given that Daylesford now grows over 300 varieties of seasonal organic fruit, vegetables, salad leaves and herbs on the farm, including many unusual and heritage varieties. The award-winning meat comes from animals that roam freely on their organic pastures. Daylesford also champions heritage breeds, such as Gloucester cattle.

When Richard started selling produce through the farm shop, this only accounted for about 10% of the farm's output. However, now 100% of the produce from the estates goes through the Daylesford farm shops (including the ones in London). Richard proposes that in five years Daylesford farms will only produce 20% of what is sold through the shops. He foresees their growth to come through distribution and branding, as there is a limit to what he can produce, and land acquisition is strongly capital intensive. Currently, he can buy organic eggs at GBP 3.50 and sell under the Daylesford brand for GBP 5.50 (or AUD 9.93), and he sees that this is the way to leverage the fantastic brand that has been created.

Richard benchmarks all his livestock and small crop production and claims that these all sit in the top 10% of UK production figures. This he attributes to the crop and livestock rotations, which optimise soil health — for example, a paddock might produce a grain crop, then be sowed to a clover ley grazed by lambs or cattle for two years, then be intensively grazed by free-range pigs or chickens, and then used to grow brassica vegetables.

Highland Wagyu, Perthshire

Initiated in 2011, Highland Wagyu is the brainchild of Mohsin Altajir and Martine Chapman. Mohsin is the son of billionaire Mohamed Madhi Altajir, who owns the Highland Springs bottled water company in Perthshire, Scotland, and the family has a close affiliation with the Dubai royal family. The family purchased the 25,000-acre estate in 1979 for its water. Since then the company has grown to be the largest bottled water company in the UK.

Relative newcomers to the beef industry, Mohsin and Martine have done an exceptional job of marketing their product. What started out as a hobby to produce Wagyu meat for their own use has grown into a successful business. The couple is very well connected with chefs and high-end restaurants throughout the UK, with Mohsin claiming that some of his carcasses sell for up to GBP 30,000 (AUD 53,655). The meat is marketed through their own butcher shops and top-end restaurants. Highland Wagyu uses genetics sourced primarily from David Blackmore, one of Australia's premier Wagyu producers.

Mohsin and Martine raise their cattle on organic pasture; however, the animals are not organic due to their confinement in feedlots and their access to large quantities of inorganic inputs post-weaning. Mohsin is happy to feed his cattle for 600 days or more and won't slaughter an animal until the meat is fully sold.

Mohsin and Martine are excellent marketers, passionate about their product, and have done a great job in maintaining the exclusivity of their brand.

4.2 USA

Joseph Decuis Farm and Restaurant, Indiana

The quaint and charming town of Roanoke, Indiana, is where you will find the Joseph Decuis fine-dining restaurant. Proprietors Pete and Alice Eshelman first tasted Wagyu in Australia and are the only fine-dining restaurateurs in the USA to breed their own Wagyu. Their operation is vertically integrated from farm to fork with the restaurant menu featuring seasonal dishes prepared with food almost wholly raised on their farm or nearby in Indiana.

The Eshelmans run approximately 400 Wagyu cows, both Fullblood and F1, on their 400 acres. Both herds almost always exceed the United States Department of Agriculture (USDA) highest grade of Prime. While less than 2% of all beef raised in the USA meets the USDA quality of “Prime”, virtually 100% of Wagyu raised on the Joseph Decuis farm exceeds “Prime” due to the high marbling of Wagyu.

The Eshelmans have a small feedlot where progeny is fed through to bullocks. For these Fullblood animals, one carcass translates into USD 30,000 (AUD 42,319) worth of meat once broken down and sold through the restaurant. Nothing is wasted; the tables are even adorned with candles made from Wagyu fat, into which you dip your pre-dinner bread roll.

Joseph Decuis is a wonderfully strong brand that has a tribe of culinary followers. It is a destination restaurant with Wagyu aficionados prepared to travel for a weekend of agri-tourism and country hospitality. The Eshelmans host farm tours and many community events on farm throughout the year. According to their website, *“While the consumer may pay more, authentic Wagyu is the choice of beef connoisseurs and is best enjoyed in small servings like one would enjoy a fine wine. Joseph Decuis Wagyu is a world-class culinary experience”* (<http://josephdecuis.com/>).

Heartbrand Beef, Texas

Jordon Beeman is the president of Heartbrand Beef, the largest producer of Akaushi (Red Wagyu) cattle outside of Japan. The Beemans purchased the assets of Heartbrand Beef in 2006

when the family moved upstream from a background in meat processing. Ronald Beeman, Jordon's father and chairman of Heartbrand Beef, had grown Eddy Packing Company into one of the US's largest further-processing facilities, before selling to private equity in 2012.



Figure 10: Jordan Beeman and author, Sarah Hughes, Bovina Feeders, Texas USA, 2017

The Heartbrand Akaushi cattle are well suited to the USA market (see Figure 11). Jordon claims that F1s produced by using Akaushi over traditional US-type Angus cattle greatly increase the number of carcasses that grade Choice and Prime (usually a 50–50 split) under the USDA system and virtually eliminates the chance of a carcass falling into the Select grade. Akaushi are more muscular cattle with better weight gain than black Wagyu, but don't produce the same degree of intramuscular fat (although much more than other non-Japanese breeds). Phenotypically, they are an easier "sell" to graziers who dislike the look of black Wagyu cattle.

The business produces bulls to sell to cow-calf operators and then buying the progeny back. Heartbrand Beef custom-feeds and then custom-kills these F1 Akaushi for its own beef brand. This is quite a common model in the Wagyu industry, as it gives both the feeder/marketer and breeder more confidence in the genetics and relationship. However, people who buy the Heartbrand bulls are not locked in to sell the progeny back to Heartbrand, and indeed the author met one breeder who sold their calf crop to Snake River in 2017.



Figure 11: Akaushi heifers, 15 months of age, Heartbrand Ranch, Texas USA, 2017

Traditionally, Heartbrand has to pay about 10% above the Angus feeder price to secure the F1 progeny. The beef business is very much a domestic one, with exports accounting for only 10% of sales — which is mainly an order for chuck rolls going into South Korea. Akaushi perform quite well in the feed yard, with an F1 Angus cross having a cost of gain of USD 0.80 per kg (AUD 1.00/kg). Buying back the F1 feeder steer and feeding for 300 days costs approximately USD 1,800 (AUD 2,250).

Bull sales account for only 10% of turnover, with the meat sales contributing the vast majority of revenue. Heartbrand kill and market some 40,000 head per year. About 80% of Heartbrand Beef is food service, 15% retail, and the remainder sold through their website. In the author's opinion there is a strong case for incorporating some Akaushi genetics to increase weight-gains in an organic or grassfed Wagyu production system.

Desert Mountain Meats, Idaho

Established by Bob and Pam Howard, Desert Mountain meats is effectively a ranching and meat-selling co-operative based near Boise in Idaho. The producers all use Heartbrand Akaushi bulls. It is a co-operative arrangement with 30 producers, who breed and grass-finish F1s for

sale into Wholefoods and other high-end retailers and restaurants in the surrounding area. The cattle spend the summer in the luscious Idaho Mountains, and are brought down into the lowlands (desert) for the winter, where the climate is far milder.

In the Boise Wholefoods store visited, the product was labelled “Grassfed Prime” rather than Wagyu or Akaushi. Rib fillets were trading at about a 30% premium to (already pricey) conventional Wholefoods beef.

Snake River Farms, Idaho

The late Robert Rebholtz Snr purchased Snake River Cattle Feeders in 1968. After completing an MBA at Stamford University and managing a ranch in Nevada for five years, he approached First Security Bank who had foreclosed on a 4,000-head feedlot in American Falls. Robert didn't have the money to buy Snake River Feedlot, but the bank decided to finance him after he pitched his business plan. The trust was well placed, with the operation flourishing over the years to have a feedlot capacity of 170,000 head across five feedlots in the Pacific Northwest region of the USA. In 2015, AgriBeef (Snake River Farms' parent company) employed 1,200 people and its revenue passed USD 1bn (AUD 1.25bn) for the first time.

Robert Rebholtz Snr was a much-loved figure who was passionate about ranching and fiercely loyal to his employees, in the process building a very successful business. He was an innovator. After forming AgriBeef in 1978 as a partnership with Rich Hormachea, he purchased an IBM computer to automate data-tracking entry of feedlot activities and selective breeding. According to his son, Robert Rebholtz Jnr, this was the first computerised system used in the beef industry. The computer was massive, taking up an entire room and necessitating the building of a third floor of the company headquarters in Boise, Idaho.

During a business trip to Japan in the late 1980s, Robert Snr discovered Kobe beef, and a wealthy population crying out for more product. He felt he could produce a similar product for much less, and so purchased his first Wagyu genetics in 1988, which led to the Snake River Farms division. Because of the slowdown in the Japanese economy during the early 1990s the project was unprofitable for the first ten years, according to Rob Rebholtz Jnr, before starting to hit its straps. Then with the Bovine spongiform encephalopathy (BSE) outbreak in 2003 — better known as “mad cow disease” — and subsequent closure of the Japanese market to USA beef, Snake River Farms scrambled to find domestic customers. The company quickly found

influential chefs, including Wolfgang Puck and Thomas Keller, to sing the praises of their product. Soon Americans got the taste for highly marbled beef, and very quickly the USA became a net importer of high-quality Wagyu beef.

Rob Jnr didn't have plans to join his father at AgriBeef; however, in 1996 Rebholtz Snr was diagnosed with lung cancer and died nine months later at the age of 57. Rebholtz Jnr agreed to take over the family firm at the age of just 32.

Five years after his father passed away, Rob took the daunting step of purchasing the Washington Beef packing plant in Toppenish and entered the packing business. Today AgriBeef operates divisions covering ranching, lot feeding, food processing, food sales and marketing, and nutrition and marketing, mirroring Rebholtz Snr's vision of touching every phase of the beef industry.

Snake River Farms uses Fullblood Wagyu bulls, which it sells or leases to cow-calf operators. It then agrees to buy back the F1 progeny, with prices generally sitting about 10% above the Angus feeder price. As with many other Wagyu supply chains, this bull breeding and purchase back of progeny gives Snake River Farms confidence in the cattle it is feeding.

Snake River Farms enjoys strong brand equity and awareness and can be found in many fine-dining restaurants across the USA. A small portion of beef is exported into Korea and Japan, while 90% of sales of high-quality Wagyu beef stay in the USA.

4.3 New Zealand and Australia

First Light Foods

First Light Foods (FLF) began in the South Island of New Zealand with a vision to connect farmers, transparently and directly, with the people who eat beef.

Founder Gerard Hickey started with venison and later added beef, commencing with an F2-F3 Wagyu feedlot. However, this coincided with the 2007–08 global financial crisis and so he was forced to change direction. Gerard's dream was not to compete with traditional Wagyu markets but to produce the finest grassfed beef, which just so happened to be Wagyu.

FLF provides bulls to farmers on a progeny buy-back agreement. They also engage farmers to background animals on a \$/kg agreement. They work hand in glove with the dairy industry by

putting Wagyu genetics over New Zealand dairy cows — a composite of Holstein, Friesian and Jersey genetics.

Whilst 80% of FLF's throughput is dairy F1 cross, 20% is a Wagyu–Angus F1 cross. The target weight is 580 kg at around 18–24 months. A 290 kg carcass is affordable for retailers and so FLF doesn't aim for the high marbling that would be achieved from an older/heavier animal. Dairy cross F1s are achieving 5.2 marble score average and Wagyu–Angus 4.8 marble score. First Light is able to support an F1 feeder steer price well above the conventional market but not as good as the price for Wagyu cattle being sold into Australian feedlots.

FLF strives to pay the farmer 50% more than the conventional beef market pays. A price is agreed upon between FLF and the producer at the start of the year and they are paid 85% at time of slaughter. Producers are also shareholders of the business and receive an adjusted settlement at the end of each year.

For anyone starting out in the meat-marketing game, Gerard generously shared the following advice, born of his experience (personal communication, 2017):

- Work out your risk profile and how far you want to maintain ownership.
- Work out how much money you wish to risk and what proportion of your business you want to hit the market with.
- Start small — maybe buy back only some of the cuts to market yourself.
- Do everything with e-commerce in mind.
- Maintain control over pricing and branding. The retailer can replace you much more easily if you aren't branded. They also have greater power to cut your margin.
- Accumulate a mailing list through giveaways, charity raffles etc.
- Appoint an expert in fast-moving consumer goods.
- Branding is not so important in the early days — finding the big customer is first and foremost.
- The bigger and better the brand the less important your accreditations are — but they are important in the early days.

- Use your industry marketing body for funding and support.
- Bring in partners with different skill sets, e.g. processing, logistics, as you may not be able to afford to pay them.

Robbins Island Wagyu

The Hammond Brothers, John and Keith, have been breeding Wagyu on Robbins Island and the Tasmanian mainland since the early 1990s. They are leading Wagyu producers in Australia. Some are likely to have viewed footage of the Hammond's iconic cattle drives across ocean channels to the mainland, which have been featured on TV programs such as *Australian Story* and *60 Minutes*.

The Hammonds developed a branded beef program whereby they breed and background Wagyu on Robbins Island, then custom-feed for at least 400 days in Victoria before processing via the Greenham's Smithton abattoir in north-west Tasmania. This is the premium offering in the Greenham's stable of brands, which also includes the very successful Cape Grim.

In the early 2010s, the Hammonds decided to investigate and target the emerging demand for grassfed beef. They had all of the ingredients: a great story and brand awareness with the marvellous footage of their salt water cattle drives and beautiful Tasmanian rolling green hills. Whilst the Hammond Family continued putting their Purebred and Fullblood steers through the feedlot, they used their cull heifers for the grassfed program, and the resulting Wagyu product was championed by renowned chefs Tetsuya Wakuda and Neil Perry.

The problem the Hammonds found, however, was an inconsistency of marbling throughout the entire carcass, which ultimately led them to drop the project. They had no problem selling their loin cuts at attractive rates, but they could not achieve optimal prices for non-loin primals. This again emphasises the real value of the long-fed Wagyu model: its ability to achieve excellent prices for the whole carcass.



Figure 12: Hughes family with Dr Jerry Reeves, Washington State, USA 2017. L to r: Sarah Hughes, Jerry Reeves, Harry Hughes and Fred Hughes (Source: Author)

The Hammonds have also been instrumental in developing polled Wagyu genetics in Australia. In partnership with Washington State-based Dr Jerry Reeves (who is generally considered the father of the breed in the USA), (See Figure 12) they imported Purebred polled semen and used it across their entire herd. They also had a number of their own Purebred Wagyu cows (bred up from Angus base cows) that carried the poll gene. In 2017, the Hammonds joined forces with two other highly respected Wagyu breeders, Darren Hamblin and Scott De Bruin, and commenced selling both Heterozygous and Homozygous Polled Purebred Wagyu bulls. This is a very important milestone in the evolution of the Wagyu breed in northern Australia, as the author believes that polled genetics will be central to a social licence to operate.

Chapter 5: Organic Wagyu production

5.1 Supplemental performance feeding

When talking to importers and distributors, the importance of having continuity of supply all year round was regularly stressed. It was often referred to as a necessity, rather than a selling point. This goes hand in hand with the necessity of maintaining a positive weight gain of at least 0.4 kg live-weight per day to ensure marbling performance.

Given the seasonal pattern in Central West Queensland, with summer dominant grasses (predominantly buffel grass on improved brigalow scrub country) and a propensity for frost, the only way to achieve this is through supplemental performance feeding. Any supplemental feeding program comes down to cost per additional kilogram gained, and is a function of energy, protein and phosphorous, in that order (provided that the underlying country is not deficient in calcium or other trace elements). At Hughes Pastoral, in order to provide a consistently good product all year round, production of grassfed Wagyu or organic Wagyu was possible, but not grassfed organic Wagyu, as this removed too many supplemental feeding options from the toolkit.

Detailed research between the then Department of Primary Industries and the University of Queensland resulted in the report *“Developing profitable strategies for increasing growth rates of cattle grazing tropical pastures”* (McClennan, 1997). The graphs below are taken from that report. They show the additional live-weight gain for different levels of supplementation that can be expected for Brahman-cross steers on dry season pulled brigalow buffel-grass country. The research demonstrates that the most cost-effective supplement is cottonseed meal (CSM); however, this is excluded in both organic and grassfed production systems. CSM has a curvilinear relationship, resulting in a “bigger bang for your first buck”, whilst the other supplements have linear relationships.

Growth response to supplement

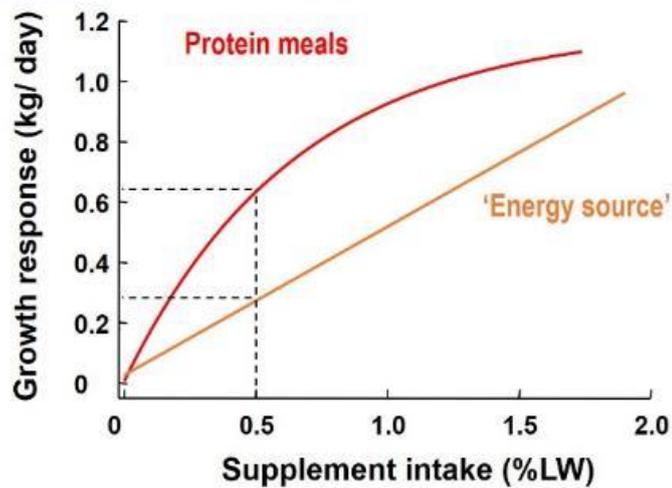


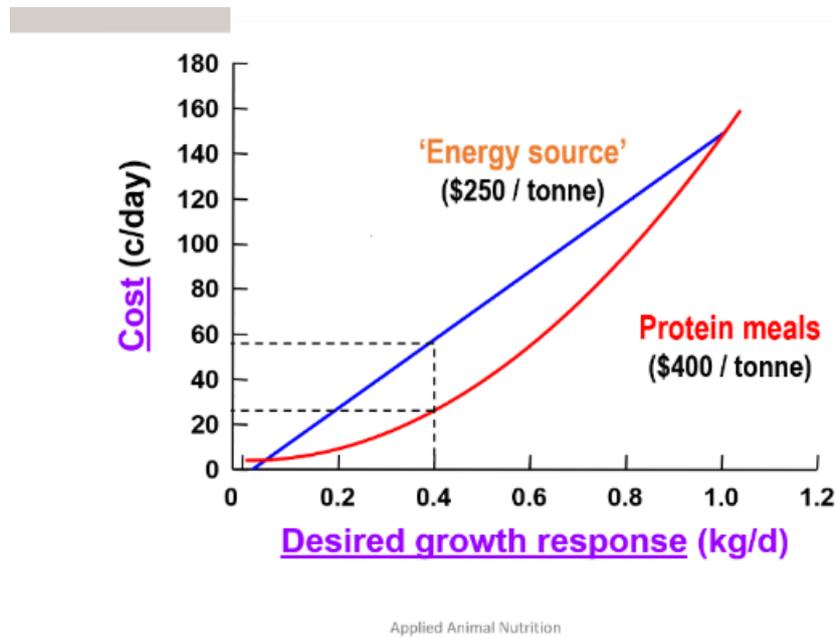
Figure 13: Growth response to supplement intake (Source: McClennan, 1997)

5.2 Grassfed production

In a grassfed production system, the thoughts at Hughes Pastoral for supplemental feeding revolve around the use of molasses (which is not organic), fortified with urea, in the form of M4U and M8U. This product is very high in energy, with around 8MJ of metabolizable energy (on an as-fed basis), and provides urea as a non-protein nitrogen, which is used as the building blocks for the production of protein by rumen microbes. This use of urea is a very cost-effective form of providing protein and is widely used throughout the northern cattle industry (Laing, 2017).

The intake of M8U can be limited through the use of an ionophore such as Rumensin or other additives (which also increase performance); otherwise cattle will eat 1–2% of bodyweight per day, as pasture quality declines. A general M8U mix can be landed in Central West Queensland at about \$360 per tonne. If intakes are limited to 1 kg per head per day, then this equates to a cost of supplementation of roughly 50 cents per head per day when considering the cost of storage and distribution. For the period between June and when the season breaks, it is apparent that this supplementation creates additional weight gain of between 0.3 and 0.5 kg per day, giving a cost of gain of between 90 cents and \$1.50. With live-weight prices of cattle greatly exceeding this cost of gain, M8U makes an effective supplement, provided the grass is available, as it results in more pasture being consumed (Laing, 2017).

Figure 14 shows greater cost effectiveness from feeding protein meal than energy (molasses or grain) depending on the desired weight gain.



Applied Animal Nutrition
Figure 14: Cost curves for desired growth response
(Source: McClennan, 1997)

5.3 Organic production

In an organic Wagyu production system, both urea and molasses are taken out of the equation. Urea is synthetic, and there is no reliable source of organic molasses in Australia. The only way to supplement energy and protein is through the use of organic grains. This would have to be restricted in its availability given the high cost, although again the feeding regime will be a function of cost of gain versus live-weight price achieved, so it may be that unrestricted access (2% of body weight) is desirable. Figure 15 shows the additional growth rates achievable during the dry season on Central West Queensland buffel grass.

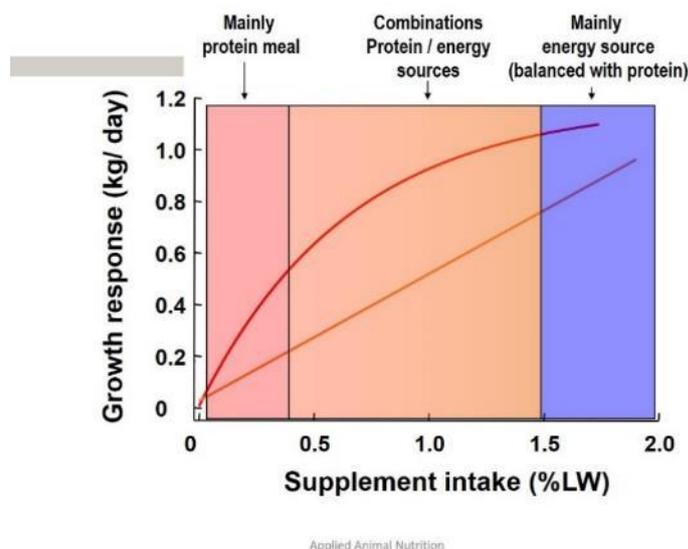


Figure 15: Ideal supplement composition for a desired intake level and growth response (Source: McClennan, 1997)

Organic weaner pellets can be delivered to Central West Queensland for roughly \$750 per tonne, with 12MJ of metabolizable energy and 24% protein. This would give better performance than the M8U above and would be fed out in paddock feeders that restrict the intake.

The cost of a self-feeder is about \$100 per head and therefore represents a large capital outlay, and the cost of grain is close to double that of the inorganic M8U or conventional grain-based weaner pellets. This greater cost would have to be recouped from greater carcass pricing, demonstrating that an organic production system would be more expensive than a grassfed (or conventional) one.

One large benefit of feeding true protein (grain) over molasses + urea is that grain supplements cause a greater depression in hay (grass) intake than molasses (McClennan, 1997). Effective urea supplementation can actually increase animal feed intakes by up to 50% (Smith, 2017).

5.4 Geographical location of properties

One alternative to a large supplement program is to use a mix of different properties that fall in different climatic zones to give year-round growth. The New England region, in particular, with its reliable rainfall and ability to produce kilograms all year round, has attracted a lot of interest from Wagyu producers, with some properties recently changing hands for close to

\$8,000 per hectare. The author found that this high rainfall, highly productive country is not as well suited to organic production, because of its greater parasite and weed burden, and the need for fertilizer. Paddock and parasite-control treatments, however, would not preclude the country from grassfed production. Purchase of additional land is, of course, capital intensive, but agistment and leasing are viable alternatives.

Chapter 6: Marketing and Trade

6.1 Carcase breakdown and destinations

For high-value Wagyu carcasses, conversations with various importers and exporters highlighted the following flows: part full-sets (primals less the loin cuts) go into Japan, Korea and China. Due to the difficulty and cost of EU certification, EU-eligible carcasses that come in on the 0% tariff usually go as full-sets to Europe. A good proportion of rumps and trim stay in Australia. Loin cuts go wherever the money is: Australia, EU, UK, USA, Middle East. A small proportion of organic beef stays in the domestic market, while 97% of organic exports go to the USA. This can be further broken down into the relative pricing of cuts and their target markets.

Organic v Wagyu v conventional trim

Trim is largely driven by the USA burger market. Wagyu trim actually trades at a discount to organic trim. A major reason for this is the abundance of fat in Wagyu trim, and the difficulty in producing 85 cl (chemically lean). On the other hand, organic trim is driven by the large appetite for organic burgers in the USA. Customers who are after organic beef are more likely to consume burgers given the more attractive price point, as well as the often higher cost and lower eating quality of organic loin cuts as compared to conventional beef. While many people scoff at the idea of Wagyu trim being a higher quality proposition, many consumers (author included!) find a much deeper and richer flavour flows through from the Wagyu fat, which enhances any dish incorporating ground beef.

Organic v Wagyu v conventional forequarter

Forequarter cuts are driven by the trim market for organics and lower quality conventional beef. For conventional grainfed beef, and Wagyu animals, a large proportion of forequarters goes into Asian markets at a very substantial premium compared to what forequarters would trade for in Western countries. What this underscores is that the huge premium attached to the Wagyu carcase is because of the ability of the entire carcase to eat very well.

There would certainly be a market for organic Wagyu burgers or grassfed Wagyu burgers; however, the price able to be extracted for these probably would not be enough to justify

sending many primals through the grinder, as is the case for many conventional organic carcasses. According to Charlie Ko, MLA's South Korean Manager, the majority of the non-loin cuts would need Asian consumers for hot-pot type dishes, because if Asians perceive quality, they are willing to pay better money than are Westerners.

Organic v Wagyu v conventional loin cuts

Prices in high-end restaurants for top-quality organic beef can approach Wagyu levels, but the price of Wagyu steak is much higher. These don't primarily go to Asian consumers but instead to Westerners. Asians realise that Wagyu briskets, chucks, blades and other forequarter cuts eat just as well as their rib fillets. That said, Western-style steak restaurants are gaining in popularity in Japan, South Korea and other rich Asian countries.

6.2 Marketing niche luxury proteins

The most common piece of advice offered was to *"go slow"*, drip feed onto the market and don't over produce. One way to start small would be to buy back certain cuts to market rather than trying to find a home for the whole carcass from the outset. The second most common recommendation was to *"know your end customer first"* and prioritise the consumer, not product.

Delivering full-sets is a great way to start a program, but to extract greatest value, each cut needs to be sold to the highest-paying customer. Markets value cuts differently and it makes sense to take advantage of this.

Really tell the story. It is easy to forget what a wonderful story grassfed and organic beef production has in Australia. On the author's travels, in every country visited, importers and consumers were amazed by the images and stories from the Australian bush.

Using brand spokespeople — such as chefs Neil Perry and Tetsuya Wakuda and their support of Robbins Island Wagyu can be a very successful strategy. One of the strengths of the Blackmore Wagyu brand has been that David Blackmore himself has been the face of the brand in the market, which consumers can readily relate to given he is also the producer.

AAco, the world's largest producer of Wagyu, has recently embarked on a rebranding strategy, interestingly, with less reliance on the word *"Wagyu"* (Condon, 2017). According to AAco's market research, consumer insights have shown features such as the company's heritage and

longevity, scale of land and vertical integration were considerably more important than previous descriptors used, like “Fullblood Wagyu”.

The word ‘Wagyu’ is often misunderstood and misused on menus, devaluing the breed and the eating quality of Wagyu when non-Wagyu meat is used for those items. Figure 16 is an actual menu excerpt from a gold-class cinema in Brisbane using Angus beef in a burger patty but marketing it as Wagyu.



Figure 16: Casual dining menu example, Brisbane, 2017 (Source: Author)

This emphasises the need for a brand to not be built solely on the Wagyu breed but to make its own unique claims that are meaningful to the consumer. Most consumers do not understand the product specifications that many steak restaurant menus carry, such as marble score, breed, and days on grain, so learning about consumer preferences becomes of utmost importance to a brand’s success.

Today’s consumer is looking for a whole lot more in a premium beef offer — such as careful and responsible stewardship of the land, and the eating quality and flavour profile of the product. As consumers take more interest in the provenance of food, the story of those who raise the food becomes more interesting and can be an important part of branding that builds consumer trust.

Eating quality standards are immensely variable within and between countries. In Australia, meat is exported under the AUS-MEAT trade language to provide a consistent set of specifications to work from; however, these specifications are based on animal type and cut rather than eating quality. The use of Meat Standards Australia (MSA) grading is still in its infancy within the Wagyu breed but may have a role to play in building strong eating quality

standards for brands and ultimately in improving the consumer eating experience. MSA research has demonstrated that consumers are willing to pay more for beef when they can expect a consistent eating quality rather than an eating quality that varies from one purchase to the next.

Bringing the brand to the consumer is a fundamentally important part of marketing beef. This approach will differ based on whether the brand is retail focused or food service focused. The traditional nature of the beef industry is that beef products often change hands multiple times before reaching the consumer, and branded cartons or primal cuts are often re-packed into non-branded packaging, or packaging that represents the end seller's brand rather than the producer's brand and story. This means that finding the right partners in-market is critical to success.

Chapter 7: Conclusion

This report has investigated whether a natural, high-quality Wagyu product (grassfed or organic) can be produced all year round in Australia, what would be involved in this (i.e. supplemental feeding programs), and whether unconventional Wagyu production can be as profitable as conventional long-fed Wagyu production.

The research has found that it is certainly possible to take a grassfed Wagyu product to the market all year round. Grassfed Wagyu, however, has a lesser degree and consistency of marbling, with some cuts faring better than others. Organic Wagyu is possibly a more interesting alternative production system than grassfed because it has the potential to maintain a greater consistency of marbling. It does, however, have a correspondingly higher cost of production.

It would be difficult to provide a consistently high-quality Wagyu product all year round whilst maintaining both grassfed and organic accreditation because this would remove too many supplemental feeding options from the toolkit.

As attractive as it would be to take either of these two products to market, it is unlikely to be the most profitable course of action at this time. It may be unrealistic to expect sufficient numbers of consumers to pay for what is essentially a double premium. Feedlot entry prices are still very strong, and the long-fed Wagyu model achieves excellent prices for the whole carcass.

In a basket of organic foods, or even conventionally produced foods for that matter, animal protein is by far the most expensive component — the centre of the plate. While organic and/or grassfed accreditation is a great tool to extract higher value for lower-priced goods, and return better earnings to the producer, it could prove difficult to take a product (such as Wagyu) that is already attracting very large premiums and try to obtain an even higher price.

This report has also investigated the global demand for these two products — grassfed and organic — which involved determining consumers' willingness to buy the different cuts of the carcass.

There is a great opportunity for organic or grassfed producers to trade up in terms of meat quality and extract 30% to 40% better prices (with a 10% loss in weight gain) by using a

terminal F1 herd. This would not necessitate any significant change in production techniques. There could also be a real opportunity for grass-finishers in the next couple of years, given the marked increase in lesser-quality conventional cattle (high Brahman content) that have been joined to Wagyu bulls. This has led to an oversupply in the F1 market (for feedlot entry), and a grassfed producer could access these surplus cattle at attractive rates to kick-start a branded beef program. The author believes that the Wagyu breed will be a highly influential breed like the Brahman breed was in the 1970s. Most composite breeds of the future will include a percentage of Wagyu blood, depending on the target market.

For producers already on the path of Fullblood or Purebred production, the author does not foresee additional premiums available that would compensate for the substantial increase in production costs and/or loss of marbling consistency. Although feedlot entry prices have fallen due to increased supply, they are still very strong. Interestingly, the author's study found affluent customers who had not even heard of Wagyu beef, let alone tried it. The global market for Wagyu beef is not mature; it is still experiencing rapid growth. Where there may be an interesting opportunity for grassfed Wagyu in these production systems is with the by-products, i.e. cull Wagyu females that have been taken out of the breeding herd for age, type, or pregnancy status reasons.

Beef wholesalers are very interested in unique beef brands, and love the story of Australian, family-owned-and-run grassfed production. There are certainly opportunities for those who are passionate about taking their product all the way to the end consumer. To be successful, these brands will need to be consistent, reliable, and offer a niche value proposition. Luxury beef can offer exceptional value at premium prices, if it is of unparalleled quality — that is, cannot be found anywhere else.

Recommendations

These recommendations are for producers who are considering grassfed or organic Wagyu production.

1. Investigate the performance of a trial of grass-finished Purebred and F1 Wagyu steers. This should be analysed against the returns of selling the steers to a feedlot at 350–450 kg.
2. Ground truth the costs and benefits of the different supplemental feeding regimes outlined in Chapter 5 by running a trial on a property.
3. Investigate the carcass performance of full-mouthed cull Wagyu cows.
4. Align with like-minded producers and processors in formal supply chains to create authentic brands that provide value. This is the best way to align interests and ensure all parties are profitable and not seeking to profit at each other's expense.
5. Fiercely defend Australia's clean green image. Australia will never be a low-cost producer but does have an international reputation for producing high quality beef, which must be safeguarded and augmented.
6. When starting a premium-branded beef product, start small. Maintain scarcity rather than over-supply. The necessary factors to achieve are consistency and year-round supply.
7. To ensure year-round supply, consider agistment and leasing options, as purchasing additional land in different climatic zones may be financially prohibitive.
8. Tell a story. Consumers today want to know the provenance of the food they eat. Extensive beef production in Australia has a wonderful story to tell.
9. Prioritise customers, not product ideas.

References

- Anderson, J. (1 July 2017). Personal communication. MLA Market Manager – Europe. London, UK.
- Australian Organic. (2017). *Market Report 2017*. Brisbane, Queensland. Retrieved from <http://austorganic.com/ao-market-report/>.
- AWA (Australian Wagyu Association). (n.d.). *Wagyu in Australia*. University of New England, Armidale. Retrieved from: <http://www.wagyu.org.au/wagyu-in-australia/>.
- Bennett, Steve. (2013). *Wagyu around the world: USA*. Retrieved from http://www.wagyuinternational.com/global_USA.php.
- Colombatto, D. (4 April 2017). Personal communication. University of Buenos Aires.
- Condon, J. (2017). AA Co's grand brand plan adopts a new approach to beef marketing. Retrieved from <https://www.beefcentral.com/trade/aa-cos-grand-brand-plan-adopts-new-approach-to-beef-marketing/>
- French, P., Stanton, C., Lawless, F., O'Riordan, E.G., Monahan, F.J., Caffrey, P.J., & Moloney, A.P. (2000). Fatty acid composition, including conjugated linoleic acid, of intramuscular fat from steers offered grazed grass, grass silage, or concentrate-based diets. *Journal of Animal Science* 78:2849-2855.
- Gibbons, G. (15 November 2016). Personal communication. General Manager, South East Queensland Wagyu and Feedlots, AAco, Toowoomba.
- GOTC (Global Organic Trade Guide). (n.d.). Retrieved from <http://globalorganictrade.com/>.
- Glassman, K. (2017). *Grassfed Beef vs. organic beef: Which is healthier?* Retrieved from <https://nutritiouslife.com/eat-empowered/grassfed-beef-organic-beef-healthier/>.
- Gorocica-Buenfil, M.A., Fluharty, F.L., Reynolds, C.K., & Loerch, S.C. (2007). Effect of dietary vitamin A restriction on marbling and conjugated linoleic acid content in Holstein steers. *Journal of Animal Science* 85:2243–2255. doi:10.2527/jas.2006–781.
- Hamblin, D. (2017). *Outstanding Wagyu, with the poll advantage*. Retrieved from <http://www.pollwagyu.com/about-poll-wagyu/why-poll-wagyu/>.

- Hickey, G. (20 April 2017). Personal communication. Founder of First Light Foods. Taupo, New Zealand.
- IMF (International Monetary Fund). (2018). *World Economic Outlook Update*. Retrieved from <http://www.imf.org/en/Publications/WEO/Issues/2018/01/11/world-economic-outlook-update-january-2018>.
- Ko, C. (2 November 2017). Personal communication. MLA's South Korean Manager. Seoul, South Korea.
- Kohler, A. 2017. *Daigou shoppers ring up the sales*. Retrieved from <https://www.theaustralian.com.au/business/opinion/alan-kohler/shopping-with-chinese-characteristics/news-story/b47d79581c3deef6a4b2493c854a0e16?login=1>
- Laing, A. (2017). *Molasses supplementation*. Retrieved from <https://futurebeef.com.au/knowledge-centre/molasses-supplementation/>
- Layton, V. (2016). *Ethical beef: Grain fed, grass fed and organic*. Retrieved from <http://blog.hellocharlie.com.au/ethical-beef-grainfed-grassfed-and-organic/>
- McLennan, S. (1997). *Developing profitable strategies for increasing growth rates of cattle grazing tropical pastures*. Meat and Livestock Australia.
- MLA (Meat and Livestock Australia) (2017). Market snapshot: Beef, February. PDF retrieved from <https://www.mla.com.au/globalassets/mla-corporate/prices--markets/documents/os-markets/red-meat-market-snapshots/mla-global-snapshot-beef-2017.pdf>.
- MLA (n.d.). *What is the difference between grassfed and grainfed beef?* Retrieved from <https://www.mlahealthymeals.com.au/meat-nutrition/grassfed-and-grainfed/>.
- Smith, P. (2017). *Protein and urea supplementation*. Future Beef, Australia. Retrieved from <https://futurebeef.com.au/knowledge-centre/protein-and-urea-supplementation>.
- Watanabe, Z. (n.d.). *Removal of the ban on meat: The meat-eating culture of Japan at the beginning of Westernization*. PDF retrieved from https://www.kikkoman.co.jp/kiifc/foodculture/pdf_09/e_002_008.pdf.

Zaraska, M. (2016). How Japan went from being an almost entirely vegetarian country to a huge consumer of meat, *Business Insider Australia*, March. <https://www.businessinsider.com.au/how-japan-became-hooked-on-meat-2016-3?r=US&IR=T>.

Plain English Compendium Summary

Project Title:	Grassfed and Organic Wagyu: Opportunities for Unconventional Wagyu in Luxury Beef Niches
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Scholar:	Sarah Hughes
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Objectives	This report investigates whether a natural, high-quality Wagyu product (grassfed or organic) can be produced all year round, what would be involved in this, and whether unconventional Wagyu production can be profitable.
Background	The author works for Hughes Pastoral, involved in the breeding and production of Wagyu. She lives on a cattle property in Central West Qld with Wagyu cattle. Study was conducted in Asia, Europe, North and South America, and New Zealand.
Research	This report seeks opportunities in Australia for models other than the long-fed Wagyu model. Information has been gathered from personal interviews with people engaged in Wagyu production in various countries, as well as secondary sources.
Outcomes	<p>The research found that as attractive as the idea is of taking grassfed Wagyu all the way to the market, it is probably not the most profitable course of action at this stage. Feedlot entry prices are still very strong, and the long-fed Wagyu model achieves excellent prices for the whole carcass. Grassfed Wagyu, on the other hand, has a lesser degree and consistency of marbling, with some cuts faring better than others.</p> <p>Organic Wagyu, despite the extra costs involved in achieving and maintaining organic certification, is a more attractive alternative than grassfed because it maintains consistency of marbling. However, it would be difficult to provide a consistently good product all year round with both grassfed and organic Wagyu because this would remove too many supplemental feeding options from the toolkit. It may be unrealistic to expect sufficient numbers of consumers to pay for what is essentially a double premium.</p>
Implications	There is a great opportunity for organic and grassfed producers to trade up in terms of meat quality and extract better prices without drastically changing their production techniques. There could also be a real opportunity for grass-finishers in the next couple of years, given the marked increase in conventional cattle (high Brahman content) that have been joined to Wagyu bulls. This has led to an oversupply for feedlot entry. A grassfed producer could access these surplus cattle at attractive rates to kick-start a branded beef program. The Wagyu breed is tipped to be a highly influential breed like the Brahman breed was in the 1970s. Most composite breeds of the future will include a percentage of Wagyu blood. For producers already on the path of Fullblood or Purebred production, the additional premiums available would probably not compensate for the substantial increase in production costs and/or loss of marbling consistency. Where there may be an opportunity for grassfed Wagyu is with the by-products (cull females taken out of the breeding herd for age, type, or pregnancy status reasons). There are certainly opportunities for those who are passionate about taking their product all the way to the end consumer. Beef wholesalers love the story of Australian, family-owned-and-run grassfed production. To be successful, these brands will need to be consistent, reliable, and offer a niche value proposition. Luxury beef can offer exceptional value at premium prices, if the quality cannot be found anywhere else.
Publications	Formal presentation: Nuffield National Conference, Melbourne, September 2018