



## Case study

# High steaks: a humane and sustainable 'farm to fork' beef system in the US

White Oak Pastures

**The livestock sector is playing an increasingly complex role across the world, and the US is no exception. Production has to meet needs, and to do so in an environmentally sustainable way, while supporting livelihoods and animal welfare. This case study looks at how this is being achieved by a beef producer in the US.**

## Global context

Beef cattle production is a top ranking agricultural production sector in the US.<sup>1</sup> Beef cattle spend the first months of their lives on pasture or rangeland, but while a minority continue to live and feed on pasture until slaughter, most are fattened – or 'finished' – for several months in industrial-scale feedlots, on a high energy grain diet.

According to the Food and Agriculture Organization of the United Nations (FAO), the concentration of large numbers of cattle in feedlots often results in soil and water pollution, as the manure produced exceeds the capacity of the surrounding land. Additionally, intensive feed crop production can lead to severe land degradation and biodiversity losses, as arable land expands into natural ecosystems. Feed production uses over 30 per cent of arable land globally<sup>2</sup> and grain-dependent livestock are in direct competition for resources with the human population. For these reasons, feedlot cattle have high resource requirements, a great environmental impact, and generate food security concerns.<sup>3</sup>

Grain-feeding of cattle can also lead to food safety concerns. A grain diet is unnatural for the ruminant digestive system, designed to metabolise forage such as grass. Populations of the *E. coli* bacteria, which can cause severe food poisoning, have been shown to be higher in grain-fed cattle compared to those fed on forage.<sup>4</sup> Furthermore, the development of antibiotic-resistant bacteria is a growing public health problem, and the widespread use of antibiotics as growth-promoting substances in beef cattle in the US could



exacerbate the problem.<sup>5</sup> According to estimates by the Union of Concerned Scientists, 70 per cent of annually produced antibiotics (approximately 16 thousand tonnes) were used as animal feed additives.<sup>6</sup> The issue of antibiotic use in livestock production is increasing in importance as it is linked to resistance in humans and to pollution. For example, Tylosin and Monensin – antibiotics widely used as growth promoters in US beef cattle – decay rapidly in the environment but persist in surface waters of agricultural watersheds.<sup>7</sup>

The cost of feedlot finishing is also extremely high for animal welfare. Poor flooring and housing conditions impact negatively on the welfare of beef cattle,<sup>8</sup> which are forced to endure extremes of cold and heat, knee-deep manure when the weather is wet and faecal dust when the weather is dry.

## The benefits of genuinely sustainable beef production

Sustainable beef production systems are commercially viable. Grass-fed beef offers producers an effective, profitable, humane and sustainable solution for beef production in the US and similar temperate climates.

This case study provides a powerful example from Georgia: White Oak Pastures is a ranch that moved from producing calves for the feedlot system to organically rearing grass-finished cattle.

The ranch's evolution has made a **positive difference** to:

**The economy, jobs and livelihoods.** White Oak Pastures vertically integrates all stages of beef production, creating over 60 local jobs. A further 16 local farmers have converted to a similar system and now produce grass-fed beef cattle for slaughter at the White Oak Pastures slaughterhouse. Grass-based production systems are more resilient to market-price fluctuations because of their lower reliance on externally-sourced feed and fuel resources.<sup>9</sup>

**Environment and climate.** The White Oak ranch takes environmental stewardship seriously, using clover in all its pastures to help retain nitrogen and improve soil fertility. Grazing cattle in a well-designed system returns 70–85 per cent of the nutrients consumed back to the pasture in the form of manure. No chemical fertilisers are used, protecting local land and water from pollution, and animals are stocked at a density that the local environment can manage.

Soils have the unique ability to retain organic carbon. It is estimated that soils contain more carbon than vegetation and the atmosphere, and soil organic carbon sequestration is being increasingly considered as a strategy for mitigating climate change.<sup>10</sup> Many of the practices that are effective in increasing soil organic carbon – such as permanent pasture or grazing management – are followed by White Oak Pastures and result in multiple benefits, such as improvements in productivity and increasing resilience to climate change. They also help achieve the wise use of natural resources and overall sustainability of the model.

**Public health.** This system uses no antibiotics or other chemical therapeutic agents and there is complete

traceability in the system. The slaughterhouse has a resident US Department of Agriculture (USDA) inspector and robust disease control plans, ensuring safe, high quality meat.

**Land use.** Ruminants have the unique ability to feed on fibrous plant material unusable for human consumption and can use pasture land that is not suitable for growing arable crops. White Oak Pastures achieves high productivity from pasture by operating an intensively managed rotational grazing system using three species in succession: cattle, sheep and poultry.

**Animal welfare.** Animals live on pasture their entire lives, are provided with ample sources of shade and water, and are able to perform important natural behaviours. With three trained stockmen, there is a high level of care for each animal. Furthermore, the integration of different production stages decreases the need to transport animals, reducing poor welfare associated with transport.

## The evolution of White Oak Pastures

The White Oak Pastures ranch has been in the Harris family since 1866. Jenni Harris, daughter of the current owner Will Harris III, is the fifth generation to be employed on the farm.

Today, White Oak Pastures' main business activity is cattle ranching, with 650 Angus breeding cows and an average production of 600 beef cattle a year. However, in an effort to diversify and use pasture most efficiently, the ranch also produces over 200 sheep a year and has started free-range poultry production.



“One of the primary core values of my family has always been you take care of the land and the herd, and they will take care of you and the family. Animal welfare and land stewardship are not new to us.”

**Will Harris III, owner and president, White Oak Pastures**



White Oak Pasture's grass-fed beef production is a selling point

## A new business model

In a climate of uncertainty and rising feed prices in the 1990s, Will Harris III sought ways to create and retain value in his farm. The model that he had inherited was common in the US after World War II: producing calves to sell to industrial feedlots. But watching the calves he had raised being shipped to an unnatural existence, travelling for long hours without rest, food or water, was no longer what Will Harris III felt was right for his farm.

Over several years, the Harris family converted White Oak Pastures to organic production. They moved from selling calves (retaining only a percentage of the value of the final product) to an integrated form of business that delivers high quality grass-fed meat to retailers, food companies, restaurants and direct to consumers from an on-farm shop. Will Harris III continues to build distribution channels: soon his website will allow him to sell directly to consumers across the US.

## Recognised excellence

White Oak Pastures' business model and beef have been recognised through a number of awards:

- 2011 Winner of Georgia Small Business Person of the Year
- 2008 Winner of 'Flavour of Georgia' food contest
- 2008 Recipient of University of Georgia Award of Excellence
- 2011 Recipient of Governor's Environmental Stewardship Award

Following the rationale of vertical integration and to increase the ranch's degree of control over the supply chain (as well as ensuring the welfare of its cattle and quality of its beef), Will Harris III has built a USDA-approved and inspected slaughter plant. This investment is viable because 16 local farms that raise cattle applying the same production standards send their animals for slaughter at White Oak Pastures.

## A model that works for farmer and consumer ...

Land is expensive but not subject to acute price fluctuations and provides a relatively low cost feed source for most of the year, supplemented with hay harvested on the farm during periods of low pasture productivity. This stability is advantageous at a time when farmers face volatile rising feed and fuel prices. The latest Census of Agriculture shows the steepest increases in cost for producers between 2002 and 2007 was for feed – an increase of 45 per cent.<sup>11</sup>

The ranch is the largest certified organic farm in Georgia and one of the largest producers of organic, grass-fed beef in the country, with customers all over the eastern US. Its grass-fed beef is available in retail stores such as WholeFoods Market and Publix, and in specialised distributors such as Cisco, Buckhead Beef, Halpern's, Destiny Organics and Tree of Life.

While grass-fed beef currently accounts for just 3 per cent of the total US beef production, it has been growing at a rate of about 20 per cent per year. Importantly, this market growth was unaffected by the economic turmoil of the last few years.<sup>12</sup>

## ... and for animals

For US Department of Agriculture (USDA) organic certification, the animals have outdoor access, consume organic feed and are free from antibiotics and growth hormones. White Oak Pastures beef has also achieved the animal-welfare focused assurances of 'Certified Humane' and 'Animal Welfare Approved', and has reached Step 5 for chickens and Step 4 for cattle in the Global Animal Partnership's 5-Step Program. Will Harris III is a leader in this field; as beef director of the American Grassfed Association, he follows their standards for animal welfare during handling, transport and slaughter.

Before adopting a grass-fed system, calving occurred over a period of 90 days in late winter and early spring. Now, Angus bulls are kept with the breeding cows for a longer period, and calving has been extended to between six and seven months to allow a year-round beef supply. Calves are weaned at around eight months and most females are retained for breeding. Males are fattened to a target weight of 1,000–1,100 pounds (450–500 kg), reached at around 22 months old. The employment of three full-time herdsmen reflects positively on the care the cattle receive.

## Better environmental management

Effective management of grassland (a low input, renewable resource) is essential to White Oak Pastures' success. Since changing their production system, the organic matter content of the ranch's soils has increased by an average of 4 per cent. The pasture is managed on a rotational basis, with strategically chosen plant cover that extends the productive season through winter and fixes atmospheric nitrogen for plant growth.

In White Oak Pastures' intensive rotational grazing system animals are moved periodically to fresh paddocks, allowing



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pastures to re-grow. The sheep herd follows the cattle in the grazing succession, as sheep prefer broad-leaved plants which cattle do not consume.<sup>13</sup> This results in more weight gain per animal and more effective weed control than single species grazing.

### Nutrient cycling

Nutrients are returned to the soil in a much more uniform manner in a highly managed and animal-dense rotational grazing system.<sup>14</sup> White Oak Pastures' strategic placement of water, shade and mineral sources helps distribute both cattle and manure evenly. Pastures with a legume component of 20–45 per cent are more sustainable than monoculture grass pastures because the legumes contribute significantly to nitrogen fertility.



The Red Ranger is a useful and economically advantageous addition to the ranch

### Building on success: meet the Red Ranger

Working with a family-operated hatchery, White Oak Pastures has developed a chicken breed of excellent culinary quality which thrives in free range conditions. Raised in small flocks of 500 birds, the 'Red Ranger' breed ranges on the same land as cattle and sheep and fulfils an important sanitary measure by eating insects that can parasitise the larger animals.

The ranch produces 130,000 birds a year, reaching a weight of 1.8 kg (carcass weight as sold) at around 80 days of age. The same distribution channels are used as for the beef. A USDA-approved and inspected poultry processing plant is planned and will employ an additional 25 people.

## Conclusions

- A grass-fed system for beef cattle can bring major benefits for the animals, farmer, the local economy, the environment and the consumer.
- Grass-fed beef offers producers a commercially viable alternative to feedlot cattle production.
- Grazing systems can achieve high levels of productivity through good management of pasture and multi-species rearing.
- Consumer concern for animal welfare and health has brought significant market growth for high welfare, antibiotic and hormone-free meat in the US.
- Grass-based production systems are less reliant on externally-sourced feed and fuel resources, making them more resilient to market-price fluctuations.

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- 4 Callaway, T.T. *et al.* (2003), Forage Feeding to Reduce Preharvest *Escherichia coli* Populations in Cattle – a Review, *Journal of Dairy Science* 86:852–860.
- 5 PEW Commission on Industrial Farm Animal Production (2008), *Putting Meat on the Table: Industrial Farm Animal Production in America*, Pew Charitable Trusts and Johns Hopkins Bloomberg School of Public Health
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- 11 US Department of Agriculture (2007), *op cit.*
- 12 Mathews, K. H. Jr. and Rachel, J. J. (2010), Grain and Grass Beef Production Systems, in *Livestock, Dairy & Poultry Outlook*, June 18. Economic Research Service, USDA.
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- 14 Rinehart, L. (2011), *op cit.*