

Animal Feed and Pet Food

The Cost of Safety, Innovation and Sustainability

In the mature market of animal feed and pet food manufacturing, safety and quality of products is viewed by consumers as an absolute and fundamental expectation. Going beyond that, claims of innovation and sustainability are key to differentiate products, to provide better positioning for meeting consumer demands and to generate product sales and market leadership.

Retailers are increasingly feeling the effect of sustainability-driven industry disruptions. Already feeling their margins pinched, retailers are among the first to gain or lose a competitive advantage from changing consumer demands for sustainable products, and retailers are aligning with these changing consumer demands.

Eighty-two per cent of grocery retail CEOs now cite sustainability as a key priority, 90 per cent of the top 50 global grocery retailers market their own private-label organic products and 68 per cent publish a sustainability report.¹

Retailers are deploying multiple approaches simultaneously and requesting additional data, time commitments and other resources from suppliers in pursuit of sustainability goals.¹

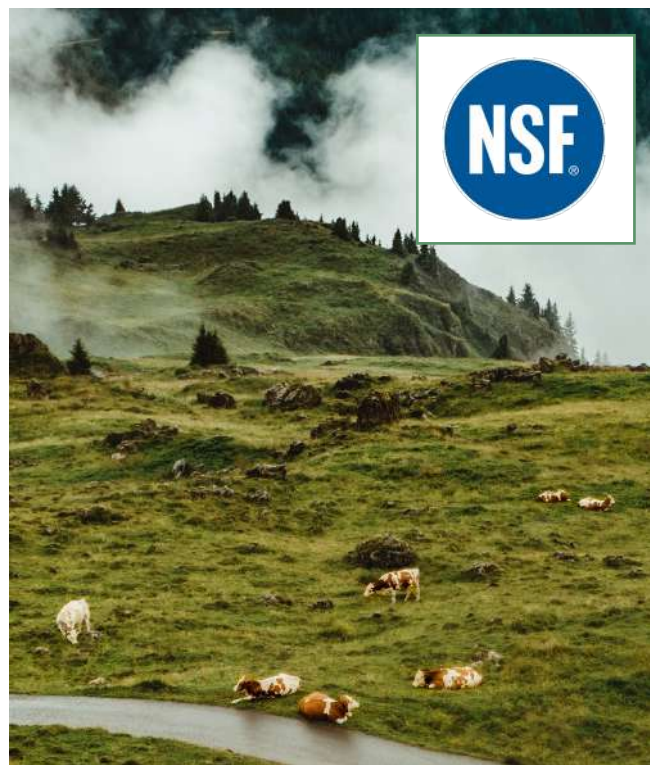
Organisations looking to validate their sustainability claims often turn to an independent third-party organisation. For example, NSF International evaluates three main pillars to determine if a supply chain is sustainable: the environment, the economy and animal/social welfare. Certain third-party organisations may look into the environment, the economy and the animal/social welfare to determine if a supply change is sustainable. Consumers will look for and select products and brands that stand for the “right” things as they see them. This can include (or exclude) social ethics, animal welfare and environment claims.

Understanding the direct and collateral impacts that accompany these perspectives and trends is where the real challenge lies.

General Supply Chain and Risk Management

The entire food supply chain must not just be aware of, but also accept, the appropriate responsibility for risk management and control at all points along the supply chain in order to ensure that the supply of animal feed, pet food and human food is fundamentally safe and meets sustainability pillars.

The industry of feed ingredient and feed and food manufacturing continues to have an ever-increasing degree of complexity. There are contributing factors including increased global trade in feed ingredients, feed novel ingredients, natural evolution of biological hazards, new technologies,



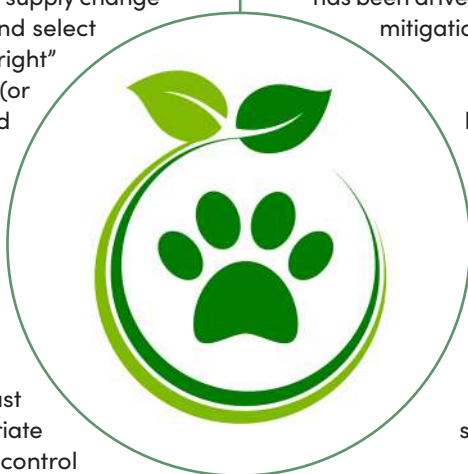
etc. Around the globe, there are differences in the priority of and/or emphasis on some or all pillars of sustainability. Every business is unique and global challenges impact supply chains in different ways.

Amplified attention to sustainable supply chains in retail has been driven by factors including brand reputation, risk mitigation, compliance and cost savings.¹

All entities along the supply chain need to be able to demonstrate awareness about:

- What their supply chain is and where they are sourcing ingredients from
- The risks to food safety and sustainability in their supply chain
- What the targets and expectations within the supply chain are
- The process to measure and report on achievement of food safety and sustainability

Clearly mapping out a company’s supply chain is essential to any approach to responsible sourcing. This includes knowing the raw material sources and the complexity of supply chains. What are some challenges that accompany this trend? Understanding and evaluating a company’s supply chain is truly a difficult task, particularly when sources are global. Some companies have virtually integrated their supply chains to truly understand and manage them. The ability for companies to utilise software applications for clients results in



full transparency into their supply chains. Effectively managing supply can be achieved by:

- Establishing goals and policies to build a framework for the organisation
- Identifying key suppliers and commodities and working to uncover supplier best practices
- Engaging with suppliers to generate buy-in to goals and policies
- Leveraging technology to integrate data, allowing for easy data gathering, reporting and decision-making

Establishing and maintaining key stakeholder relationships and partnerships with entities within a supply chain must include strong communication. Communication based on and supported by good documentation and data is essential for the health, integrity and continual improvement of any supply chain. To ensure success of their sustainability programmes, retailers are engaging directly with suppliers to generate buy-in to retailer sustainability goals. Successful programmes make this a practice early, and it often can facilitate suppliers exchanging best practices.

Agriculture, livestock and poultry production, feed and pet food manufacturing face multiple risks that are dynamic, complex and interconnected; potentially threatening the security or supply of raw materials and the reputation of brands. Managing these risks requires the right strategies and policies, a clear understanding of supply chains and the ability to positively influence them – to ensure the long-term demands of the business are met.

Risk management should first be based on preparedness, prevention and reducing the hazard; then on eliminating any problem detected from the food supply chain. Risk management includes identification of the points of control to prevent, reduce or eliminate the hazard and the tools to detect and confirm effectiveness of those controls. Risk assessment is a critical factor that enables companies to truly understand their supply chains. These interventions can not only reduce risk to the business but may also create significant opportunities to differentiate the brand and sustain competitive advantages.

Companies must develop a strategic approach to responsible sourcing that is communicated within the organisation itself and throughout the supply chain; its effectiveness will be

impacted by how well the feed/food safety and sustainability commitments are understood.

Ultimately, quantifying sustainability impacts, setting and meeting scientific goals and targets is a difficult but crucial task. The framework outlined can be a useful guide for companies as they begin or expand upon their sustainability journey.

Regardless of where companies are in this journey, it is important to remember the broader purpose of measuring and setting sustainability goals. Customers, investors and regulating bodies are demanding data-driven metrics for a reason, and it is the company's responsibility to respond to those demands with aggressive and scientific time-bound goals.

What is the best method for quantifying and reporting sustainability impacts?

Utilising corporate audit strategies in combination with third-party audits and certification programmes is key to verifying supply chain practices, policies and data. However, business sustainability requires having a reliable supply. It's essential to minimise the operating overhead of suppliers and to provide clarity in responsible sourcing targets and immediate, mid-term and long-term expectations to achieve continual improvement.

Enhancing business intelligence involves analysis of large data sets and making use of the conclusions from that analysis to optimise opportunities for competitive advantage. When measurement begins, data is available. The cost and technology to collect, organise, analyse and interpret the data has to be addressed. With results in hand, the process of opportunity prioritisation can determine the relative cost, potential impact and importance of options to achieve ongoing programme success.

Drivers for Innovation and Sustainability

Consumers are becoming increasingly aware that their purchasing decisions can and do have impacts on the environment – from the choice and disposal or recycling of packaging to seeking more local goods and considering the impacts of manufacturing and agricultural operations. So, consumers demand and are willing to make their choices based on the evidence that a product has met higher standards of sustainability; they further demand greater transparency about the products and how they are manufactured.



Figure 1: Framework for Developing and Reporting Sustainability Metrics

This demand has a domino effect. It forces retailers and manufacturers to really examine how to achieve and then demonstrate that they are meeting consumer perceptions of sustainability. A broad spectrum of mechanisms can be implemented to achieve improved sustainability, ranging from minimal changes to thinking-outside-the-box innovations. In every case, though, this will ultimately impact a company's ability to source sustainable ingredients.

Ingredient Sources

A current trend is integrating human-grade food products into pet food; for example, pet products made with ingredients such as blueberries, carrots and sweet potatoes are quite popular. A higher demand for human-grade ingredients increases the strain on the food supply system and there is current debate as to whether this is a sustainable process.

Using by-products from other industries where the primary product is for human consumption is viewed as having an important role in sustainability. Many companies have been focused on finding alternative markets for their "by-products" from the production of human food products.

Spent grains are a major waste product of the distillery and brewery industries. With the multitude of smaller craft breweries, the generation of spent grains is a growing source. If not used as a by-product, there is usually an associated cost for disposal. Local livestock producers have benefitted in some cases from the opportunity to obtain locally available, free ingredients, but with limited control of product safety, consistency and nutrient value. The companies providing the by-products are, in some jurisdictions, subject only to minimal requirements of feed safety, such as documenting and providing adequate storage for the by-product that keeps it free of harmful contamination.

Distillers grains are not new as an ingredient in animal feed. The fuel ethanol production industry is a continually growing source of distillers grains that are also used in animal feeds. This sparks ongoing interest and research into feeding and optimising the use of distillers grains in livestock feed. When corn is the fermented grain, there remains the challenge of monitoring of mycotoxins. The parameters of product quality are aligned with the primary product, which is not for edible use, thus there are potential gaps in measures of quality of a by-product.

Bakery, confectionery, fruit and vegetable processing all generate currently utilised by-products that can be found in livestock feed and pet food. Instead of letting fruits and veggies go to waste because they don't meet the cosmetic quality standards, "ugly" products are being used more sustainably by incorporation into livestock rations and pet food and treats.

The use of rendered animal protein continues to be a sustainably viable ingredient source in pet food. However, cases where there is recall of pet food containing pentobarbital has created a shock to the system and triggered extreme precaution. Some companies choose to narrow their pool of suppliers, refuse to accept ingredients from certain sources such as rendering operations or limit ingredients sourced from imports in order to remain viable in the market. Calls have been made to prohibit the use of deadstock in animal food and to take pentobarbital off the market. There have been

times when drug availability was severely limited, impacting the veterinary care of livestock. This has resulted in solutions such as research into improved detection methods, alternative methods of euthanasia, requiring euthanised animals to be permanently marked and pressure on the rendering industry to address the risk in its supply of incoming material.

Innovation for Types and Sources of Ingredients

Meeting global needs for human consumption impacts demand for products that are also traditionally found in animal feed and pet food, and pushes the thinking, thereby opening the door to innovative options.

Animal feed and pet food manufacturers are now being innovative and looking at alternative products – such as insects – as another form of protein. Insect-based agriculture has a much smaller environmental footprint (less resources are needed to cultivate this protein). In the EU, legislation defines insects reared for protein in the category of "farmed animals" and the International Platform of Insects for Food and Feed (IPIFF) published the 2019 Guide on Good Hygiene Practices for EU Producers of Insects as Food and Feed.² The guidelines include recommendations on safety, biosecurity and prevention of adverse effects on environments. However, in order to generate insect protein in sufficient quantities as feed for livestock sectors, this requires large-scale production facilities. There is also the question of feed source for the insects. A sustainable insect chain may best rely on sources of animal protein as feed source for the insects, but prohibitions to use of this protein in feed for pigs and poultry force producers to seek sources from a specific list of approved materials of vegetal origin and/or animal origin.

Other innovative ingredient sources include oil from natural marine algae and protein derived from methane-eating bacteria.

Safe and Sustainable Pet Food Packaging

The push for innovation, particularly in the pet food market, goes beyond just the ingredients and products. Aside from the shelf appeal, there is also the consideration of quality. High barrier resistance capabilities in pet food packaging are important considerations in the protection against spoilage.

However, another key driver for consumers shopping for pet foods still relies on "look and feel". Visual cues are essential to the buyer about all the things that matter – food safety, animal welfare, and ethical and environmental commitments. The packaging must also contain the label information consumers desire; labels such as "natural", "organic" and "clean" are motivating sales as they often do in human food selections.³ "Clean" can extend to both the food within the packaging through reduced ranges of ingredients, as well as to the packaging itself.

Packaging that is clearly linked to environmental sustainability promotes the overall "clean" platform. The target for design of packaging focuses on the use of biodegradable and recyclable bags. Packaging is being manufactured using recycled content or content from certified sources like Sustainable Forestry Initiative (SFI) or Forest Stewardship Council (FSC). Keeping in line with consumer desire for confidence in safety and freshness, resealable packaging and recyclable individual portion packaging are providing a solution.



However, the contradiction comes in the fact that a “cleaner” label pet food product, with fewer preservatives and other chemicals that have in the past contributed to quality over a longer shelf life, now have to have reengineered packaging that can keep microorganisms at bay. These reengineered packaging solutions often are not as amenable to recycling, so packaging manufacturers are looking to the other Rs (reducing and reusing) as potential options to promote.

Beyond Just Feeding Animals

Key recommendations for feed ingredient suppliers and feed and pet food manufacturers who want to source their ingredients more responsibly and sustainably are to:

- Understand and really know your supply chain and its associated risks
- Think outside the box when considering sources
- Set goals and communicate clear expectations for both food safety and sustainability
- Obtain third-party audits and certification to help verify supply chain practices, policies and data
- Capture and analyse the data gathered to provide insight into progress, roadblocks and areas to focus on

REFERENCES

1. Increasing Emphasis on Sustainable Supply Chains: Implications for Retailers and Manufacturers, NSF International, 2017, <http://www.nsf.org/newsroom/white-paper-supply-chain-sustainability-implications-retailers-manufacturer>
2. International Platform of Insects for Food and Feed (IPIFF), Guide on Good Hygiene Practices for European Union (EU) producers of insects as food and feed, 2019
3. McMurter S., Pet Food Packaging Report–Key Trends and consumer insights on pet food brands (white paper), 2013

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