

# Digest

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# A holistic view of sustainability in pet food

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The sustainability movement has made its way into the pet food industry, with pet owners increasingly seeking products that offer sustainability claims. However, a critical question arises: What is sustainability, and what role does each stakeholder play in achieving it?

Sustainability is based on three main pillars: environmental, social, and economic. These pillars interact to ensure that present needs are met without compromising the ability of future generations to meet their own needs.<sup>1</sup> In the context of pet food, nutritional sustainability specifically refers to the capacity of food systems to provide sufficient energy and essential nutrients to maintain health without hindering future generations' ability to fulfill their nutritional needs.<sup>2</sup>

To understand our role in this mission, we must evaluate the entire life cycle of a product, from ingredient selection to end-of-life disposal. Raw material sourcing has garnered significant attention, with by-products that do not compete with the human food supply chain (e.g., animal meals) often viewed as sustainable options, and plant-based ingredients generally considered more sustainable than animal-based ones.<sup>3,4</sup> Alternative protein sources, such as insect meals, have gained traction due to their nutritional quality and theoretical lower environmental impact.<sup>5</sup> However, sustainability is multifaceted, and the absence of standardized measures remains a challenge for ingredient suppliers and the pet food industry.

Carbon footprint analysis has become a popular method for assessing environmental impact by measuring directly and indirectly the total greenhouse gas emissions associated with a product or organization. However, other metrics such as land use, water depletion, and nitrogen management should also be considered, as narrow focus on carbon emissions alone may not adequately reflect an ingredient's or product's overall environmental impact.<sup>6</sup> Nutrient supply, particularly protein, also affects sustainability.<sup>3</sup> Oversupplying nutrients above a pet's needs is not sustainable. The intake of bioavailable amino acids (coming from protein in the

## Of Note

- A holistic view of sustainability should be considered, taking into account the impact of veterinarians and pet owners beyond product selection.
- Nutritional sustainability refers to the capacity of food systems to provide the nutritional needs of the present without jeopardizing the needs of future generations.
- Educating pet owners about the sustainable impact of overfeeding and the practices they can adopt at home that affect sustainability efforts should be part of the overall mission.

diet) beyond physiological needs cannot be used for protein synthesis and are instead oxidized, leading to nitrogen excretion in urine—resources that could feed more animals.<sup>7</sup> Additionally, protein quality should be a key consideration in sustainability efforts, and recent work has begun considering it as a part of life cycle assessments for ingredients.<sup>8</sup>

Packaging often takes center stage in sustainability discussions, as it offers a visible and easily communicated aspect to pet owners.<sup>3,9</sup> However, sustainability extends far beyond packaging. For example, a pet food company may excel in sustainability efforts related to ingredient selection and packaging, but if the product fails to resonate with consumers due to cost or other market demands, those sustainability efforts fall short of their ultimate goal.<sup>9</sup> This highlights the interconnectedness of the three pillars of sustainability. To ensure a product's overall sustainability, all stakeholders must collaborate to align efforts across environmental, social, and economic dimensions.

The actions of pet owners play a critical role in sustainability once the product is in their hands.

### Box 1. Ways pet owners can be involved in nutritional sustainability efforts

- Key considerations include proper food storage to prevent oxidation and waste and mindful use of energy-intensive appliances such as refrigerators and freezers. Most importantly, responsible feeding practices are essential.
- Overfeeding is unsustainable, and with the rising obesity epidemic in pet dogs and cats in some countries,<sup>10</sup> veterinarians should address this issue not only as a health concern but also within the context of broader sustainability efforts. Pet owners should monitor their pet's body condition between veterinary visits. Discussions around the oversupply of nutrients, in addition to calories, should also be prioritized.
- The increasing trend of supplement use in the pet food industry can create a false sense of environmental awareness among pet owners. They may choose a complete and balanced diet with a lower environmental footprint, only to offset these benefits by purchasing additional supplements and treats without considering their cumulative impact.
- Focusing on a single ingredient in a complete and balanced diet as a way to anecdotally classify a product as sustainable may be deceiving.

Therefore, educating pet owners should be a central focus of sustainability efforts (**Box 1**).

In summary, sustainability is a multifaceted endeavor that goes beyond raw material selection and packaging, which tend to be the main focus of consumers. A holistic understanding of sustainability is essential. It is not just about using alternative protein sources; it is also about optimizing feeding management. Educating pet owners on their role in sustainability is crucial to ensuring that all players contribute meaningfully to the bigger picture. Sustainability remains a complex topic requiring further standardization and effort; however, we must not overlook the fundamentals: nutrient oversupply and pet owner education have a profound impact on sustainability and should be integral components of our strategies.

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# The use of sustainable ingredients in pet food

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Pet owners are increasingly aware of the impact that their consumer behavior has on the environment. Environmentally friendly production, recyclable packaging materials and the use of sustainable ingredients are examples within the pet food industry that can help meet the need for more sustainable pet food. Many pet food ingredients are by-products from the human food chain, and therefore classify as sustainable. Animal by-products come from animals fit for human consumption, but these by-products are not consumed in large quantities by people. Examples of animal by-products are organ meats, which have high nutritional value and are very palatable to dogs and cats. By using animal by-products, food waste is reduced as these products are sparingly used, or not used at all, by the human food industry.<sup>1</sup>

In addition to the use of animal by-products, multiple protein sources are often combined to provide a complete and balanced diet. There is also increased interest in other sustainable protein sources such as insect protein, cultured meat, vegetarian and/or vegan options, and algae.

The amount of protein and fat, as well as their bioavailability, largely differs between insect species. Black soldier fly larvae meal is successfully being used as a protein and fat source in pet food, as it has a high protein and fat content as well as high digestibility.<sup>2</sup> The success of black soldier fly larvae-based diets is reduced, however, due to neophobia. In a questionnaire-based study, many consumers had a strong aversion towards insect-based pet food. Consumer education lowered this aversion, and among vegetarians/vegans, this aversion was reported to be lower.<sup>3</sup>

Cellular agriculture (i.e., the production of cultured meat and microbial proteins) has potential to provide sustainable meat and protein, but this also requires use of green energy technologies. The transition towards cellular agriculture has just started and the use of these products in pet food (other than experimental use) is not allowed yet.<sup>4</sup>

## Of Note

- By using by-products in pet food, dogs and cats can get their required nutrients and food waste is reduced. In addition, using by-products increases ingredient sustainability versus using skeletal muscle or human-grade ingredients.
- Alternative proteins can be used in complete and balanced diets, but clients may be nervous about new ingredients.
- Significantly overfeeding nutrients or providing excess calories may result in competition with the human food chain, food wastage, and obesity.

Vegan and vegetarian diets for pets are currently on the market, but they should be carefully formulated and, when complete and balanced, should be used for dogs only. Many vegetarian and vegan diets were reported to be deficient in multiple nutrients, and excessive amounts of certain nutrients have also been reported.<sup>5</sup>

Protein derived from algae is potentially very sustainable. Algae contain almost double the protein content of beef, are easy to culture, and absorb CO<sub>2</sub>. To date, algal protein is not commonly used as a pet food ingredient.<sup>6</sup>

Often based on consumer demand rather than nutritional requirements, many commercial pet foods provide nutrients in significant excess of requirements, use ingredients that compete directly with the human food system, or are overconsumed by pets, resulting in food wastage and obesity.<sup>7</sup> The competition with the human food system is particularly true for home cooked food.

**Table 1. Types of alternative proteins and ingredients used in pet food**

Type of alternative protein	Examples of ingredients used in pet food
By-products	Liver, kidney, spleen, heart, lung
Insect protein	Black soldier fly larvae
Vegan and vegetarian protein	Egg, wheat gluten, corn gluten meal, soy, potato
Algae	Spirulina

In summary, by-products and alternative proteins can be used as part of a complete and balanced diet. By-products are used commonly in pet food manufacturing because of high nutritional value and sustainability. Clients may be nervous about using new pet food ingredients, but these ingredients may be more sustainable options while providing pets the nutrients they need.

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# Talking to clients about sustainable ingredients in pet food

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Most pet owners are concerned about climate change and want to feed their pets in an environmentally respectful way. Product environmental footprint is the overall dietary evaluation, including sustainability factors shown in **Box 1**.<sup>1</sup>

## Box 1. Sustainability factors that contribute to the environmental footprint for pet food

- Ingredient source, e.g., feed conversion, percent edible weight, foods fed, greenhouse gas production (e.g., CO<sub>2</sub>, methane)
- Processing
- Transportation and storage
- Packaging
- Land and Water Use

Ingredients, especially protein sources, have a great impact on sustainability. Protein sources include skeletal muscle, by-products, eggs, dairy, grains, vegetables, legumes, and novel ingredients, e.g., insects. Owners may wish to feed non-meat diets for sustainability or ethical concerns.<sup>2</sup>

## The Nutrition Conversation

The diet history provides a platform to initiate the nutrition discussion. If the healthcare team has concerns about the diet, ask the owner about having a discussion.<sup>3</sup> Some owners may be reluctant to have this discussion, e.g., if they feel the healthcare team will disapprove of their choice or they have insufficient time. Further appointments or phone calls may be needed.

A discussion of the pet's lifestyle and activities, and any owner pet care challenges is essential for establishing client rapport. The better the relationship with the client, the more likely they are to adhere to recommendations.

## Of Note

- Ingredients, especially protein sources, have a big effect on pet food sustainability.
- Sustainability measures of novel protein ingredients such as insect protein should be compared with the animal proteins that are commonly used in pet food production such organ or viscera by-products.
- Diet discussions should be tactful and nonjudgmental, with written fact-based material supplementing discussions.
- The most important dietary attributes are completeness, balance, and quality control.

If the diet choice is due to misperceptions about benefits, ask non-judgmentally about the reasons for their choice. Provide written as well as verbal fact-based information, e.g., handouts or web links to good information. The World Small Animal Veterinary Association Global Nutrition Committee (WSAVA GNC) toolkit has resources on using internet information and on selecting a pet food.<sup>4</sup>

## Protein Ingredients and Sustainability

Owners may be resistant to feeding animal by-products due to misunderstandings. Animal by-products (animal derivatives) are secondary products from the human food industry, e.g., heart, lung, muscle meat, which may not be eaten in large amounts by people. Their use in pet foods provides palatable, nutritious ingredients which otherwise

may go into landfills or be incinerated. When animals are intended for the human food chain or designated for pet food, using by-products (i.e., organs) in pet food is beneficial to the environment.<sup>5</sup>

For owners wishing to feed vegetarian or vegan diets, discussing the diet's quality is necessary. Many of these diets contain imbalances and deficiencies and they are extremely difficult to formulate for cats.

The use of insect protein in pet diets shows promise for sustainability, although the environmental impact is often compared to that of meat (skeletal muscle) for human consumption. The impact should be compared to meat by-products as these are more often used in pet foods.<sup>6</sup> For example, the greenhouse gas production of poultry meal is lower than for some insect proteins; therefore, claiming insects are a more sustainable protein source depends on the comparison, the quantification method, and the compared aspects of sustainability. Insect production does require fewer resources than traditional livestock, e.g., lower land and water use.

## Dietary Recommendations

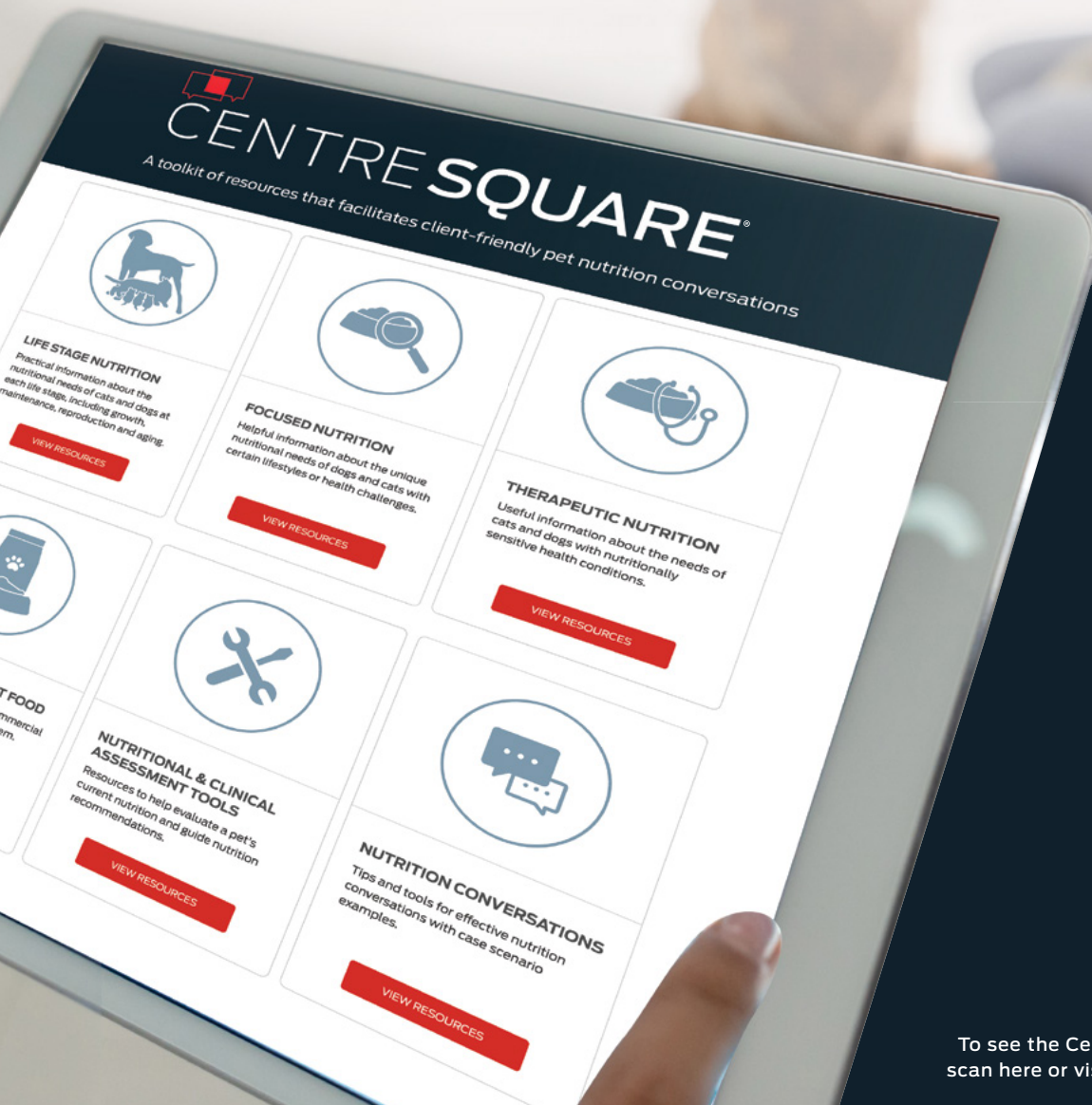
Pet health information is more effective for persuading owners about pet diet choice than the veterinarian's personal choice or manufacturer recommendations.<sup>7</sup> Owners should understand the most important aspects of the diet are the nutrients it provides, i.e., it being complete and balanced for the pet's life stage. Veterinary teams should recommend diets that are safe for long-term feeding with good quality control.

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