



FUELING THE PLANT-BASED PROTEIN REVOLUTION

Overview

Amfora is an agricultural company focusing on human and animal nutrition. A group of agricultural industry thought leaders and investors founded Amfora in 2016 with the vision of harnessing biology to address global food challenges. Amfora is fueling the plant-based protein revolution by applying its patented gene editing technology to create plant-based replacements for animal protein and increasing the protein content of staple food crops. The company has raised a total of \$11 million in venture capital with funding from Spruce Capital, Leaps by Bayer, and the Commonwealth Scientific Industrial Research Organization.



Opportunity

A seismic shift is underway that is challenging the planet's ability to feed its people in a sustainable way. A growing global population, rising prosperity in developing countries, and changing diets are fueling demand for ever-increasing amounts of food, and in particular, foods that are high in protein.

Amfora's mission is to meet the growing global demand for protein by improving the nutritional content of food and feed crops, while reducing production cost and the burden on the environment.

By 2050, the world's population will increase to 9.7 billion people, up from 7.6 today. To feed the world, the United Nation's Food and Agriculture Organization estimates food production will need to increase by 60 percent by 2050. This will place a tremendous strain on natural resources, such as land and water, drive deforestation and overgrazing, and exacerbate the problems of greenhouse gas emissions and environmentally damaging effluents.

To address these global challenges, Amfora is harnessing biology to sustainably nourish the planet and enhance global wellness. Amfora's mission is to meet the growing global demand for foods that are high in protein by enhancing the nutritional density of food and feed crops, while reducing the cost of food and environmental toll on the planet for future generations.

Technology

Enhanced Protein Content

Amfora uses gene editing, a process for making precise modifications to the genome, to regulate a genetic switch that controls the balance between protein and carbohydrates in all crops. By maintaining this switch in the “on” position, crops produce and store more protein in their seeds at the expense of starch and fiber. Increasing the protein density of feed crops reduces the number of acres required to meet the demand for feed, resulting in less burden on the environment.



Consumers are embracing healthy alternatives to meat because of concerns about their own health, as well as the environmental toll that meat production takes on the environment. In addition to the large amounts of water needed to support meat production, livestock are a leading cause of contamination of rivers, lakes, and groundwater. The need for land to support grazing and feed crops are a driver of deforestation. And, livestock represent one of the leading sources of greenhouse gasses.

The increasing popularity of plant-based meat alternatives can be seen from trendy restaurants to top fast-food chains and major supermarkets promoting the availability of these healthy and nutritious choices. Amfora’s protein-rich soy represents a cost-effective source of protein-rich raw material to meet the rapidly growing demand for these products. By providing the suppliers of plant-based meat and dairy alternatives with a scalable, sustainable and low-cost supply of their primary ingredient, such as “ultra-high” protein soy and pea, Amfora will help to enable these companies to displace animal-based protein and dramatically reduce the carbon footprint of food production.

In addition, Amfora is focusing on revolutionizing aquaculture by developing a low-cost, plant-based source of protein for farmed seafood. Meal made from feed-grade fish, such as herring, mackerel, and anchovies, have long been the main source of feed for farmed fish. A diet high in these feed-grade fish mimics the diet of wild-caught fish. However, the growth of farmed seafood production has outstripped the supply of feed-grade fish, resulting in the use of expensive high-density protein ingredients including soy protein concentrate and wheat gluten to supplement fishmeal in aquaculture feed formulations. Amfora’s “ultra-high” protein soy has a protein content comparable to fishmeal and the high-density protein ingredients currently used in aquaculture feed formulations. By replacing these expensive ingredients in aquaculture feed formulations, Amfora’s ultra-high protein soybean can dramatically reduce the cost of farmed seafood while preserving the marine ecosystem.

Amfora is enhancing the protein content of food crops including wheat and rice. Increasing the protein content of these crops will make them a more complete source of nutrition and enable the development of a family of high protein foods that can address the growing consumer interest in plant-based protein. In addition, foods made with Amfora’s high-protein, low-starch wheat and rice will have a lower glycemic index, helping health-conscious people control their blood glucose levels, and helping to address the twin epidemics of diabetes and obesity.

Beyond Protein

In addition to increasing the protein content of crop plants, Amfora is pursuing other approaches to enhancing the nutritional profile of crops vital to global food security. This includes optimizing the amino acid profile of plant-based proteins, modifying carbohydrates to reduce their effect on serum glucose, and enhancing micronutrients that help the body to absorb and utilize essential nutrients and promote wellness. Amfora is helping to meet the changing dietary demands of the global population, enhance the nutritional content of crops, and reduce the environmental toll of producing the food we eat.