Jayne Bock

Clyde Don

Open Minds and Open Borders Expand Global Opportunities for Plant Proteins

Jayne Bock and Clyde Don
Guest Editors

As consumers flock to the Internet and social media to educate themselves about health and nutrition, they find "feel good" stories about plant-based proteins. Positioned as more environmentally friendly and sustainable than animal-derived proteins, plant-derived proteins will be key to feeding our growing world population. Plus, plant-derived proteins can deliver an array of health benefits. Whether all of this is true can be debated, but such assertions are enticing today's consumers to experiment with plant-based protein solutions.

Unlike other trends surrounding plant-based diets, a new group of consumers is entering the plant protein market: flexitarians. They are not traditional vegetarians or vegans, but rather individuals and families who are incorporating meatless/dairy-free meals or snacks as part of their overall wellness lifestyle. They reflect evolving wellness-focused consumers, who are seeking habits and choices that are "good for me," "good for my community," and "good for the planet." Plant proteins fit well within this mindset, which is opening up a larger consumer base for plant-based protein products.

The scientific challenges concerning plant protein solubility, texture, and functionality were tackled 10–15 years ago, but without a strong market demand, they were not perfected. Today, with growing consumer interest, these technologies are being refined, and utilization of existing equipment and technologies is advancing. In addition, the openness of consumers to new cuisines and product forms has created new opportunities for the packaged foods industry. For example, creating meat analogues to replace "meat at the center of the plate" challenged product developers working with plant-derived proteins for decades. It was difficult to utilize a plant-derived protein and offer the same experience as eating a steak. Today's consumers, however, are more willing to explore tofu and other forms of plant-derived proteins in mixed dishes and portable products. These marketplace opportunities are allowing product developers to be more creative in how they innovate with plant-derived proteins.

On the technological horizon, we expect that more scientific advances will come from integration across food platforms. Industry scientists, who follow consumer trends more closely, have led recent technological advances in plant-derived proteins. Meanwhile, academic scientists are witnessing a shift from compartmentalization of protein science research within their institutions to more holistic approaches. Scientific silos—animal science, dairy science, grain science—are giving way to more integrated research and education programs that link knowledge across disciplines. As academic institutions open their programs to invite more collaboration, we expect to see more innovation in applied plant protein science. (More to come on open borders within academia in the November-December issue of *Cereal Foods World* focusing on innovation.)

Another technological challenge cereal scientists are facing stems from a geopolitical question: how can we grow enough plant protein using sustainable methods to meet growing demands? Our global capacity to produce healthy, sustainable, and safe plant proteins is limited unless we can increase the amount of land under cultivation, which will have a negative environmental impact. Soon we will face a new question: how "green" is a plant-based meat analogue when the plant protein is grown using unsustainable methods?

In this issue of *Cereal Foods World*, we cover the current state of plant-based protein research and the challenges ahead (C. Don); the capture and utilization of side-stream plant proteins that are otherwise lost as waste (N. Sozer, E. Nordlund, D. Ercili-Cura, and K. Poutanen); the impact of processing steps on plant protein quality (M. G. Nosworthy, M. C. Tulbek, and J. D. House); and the use of extrusion to create different high-protein products from plant-based proteins (S. Hood-Niefer). A walk through of laboratory-scale extrusion adds perspective to the development of new high-protein product concepts (J. Bock and P. Deiters). Also included is another installment in the series of review articles coauthored by J. M. Jones and members of the CIMMYT Global Wheat Program exploring the role of grains and carbohydrates in nutrition and neurological disorders.

The market for plant-based proteins and dietary patterns is growing. Although high-protein diets may be a fad that comes and goes, plant-based proteins appear to be part of a dietary pattern and lifestyle that will remain relevant into the future. Cereal scientists can play a significant role in the development of this market. After all, it was us "gluten jockeys" who figured out how to unlock the functionality of gluten—what might we do for other plant proteins?

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