

Theme Overview: Sustainable Specialty Crop Production

D. Adeline Yeh and Kuan-Ming Huang

JEL Classifications:

Keywords: Crop diversification, Ecosystem services, Fruits and vegetables, Integrated pest management, Pollination, Soil health

The specialty crop sector—which includes fruits, vegetables, tree nuts, horticulture, and nursery crops—plays a significant role in the agricultural economy. According to the 2022 Census of Agriculture, specialty crop operations represent roughly 10% of all farms in the United States and generate over \$84 billion in annual cash receipts (USDA-ERS, 2024). Despite comprising a smaller share of total farm operations compared to commodity crops, specialty crops contribute substantially to our food systems, nutritional diversity, and rural economies.

Specialty crop growers often operate on a smaller scale, are more geographically dispersed, and tend to depend heavily on ecosystem services—such as pollination, soil health, and water quality—to maintain crop productivity and quality. These characteristics present both unique sustainability challenges and opportunities. As the industry looks toward long-term resilience, it is increasingly important to evaluate sustainability strategies in the context of crop-specific profiles, regional variability, and individual farm conditions. Achieving both environmental and economic sustainability in this sector requires integrated systems that support ecological health while preserving farm profitability (USDA-NIFA, 2024).

This themed issue of *Choices* brings together a collection of articles that explore sustainability in specialty crop production across the United States and Canada. The contributions highlight a wide array of specialty crops, including pulses (e.g., peas and faba beans); pollinator-dependent fruits, tree nuts, and vegetables (e.g., almonds, apples, berries, and melons); root crops (e.g., sweetpotatoes); and ornamental horticulture (e.g., floriculture and Christmas trees) and discuss their roles in enhancing sustainability outcomes.

The opening article by Park et al. examines how specialty crops contribute to ecosystem services and economic outcomes. Their work presents a broad view of agricultural land use and illustrates regional differences in specialty crop production. Importantly,

Articles in this Theme:

- [**A Rainbow on the Farm: Specialty Crops for a Healthier Agroecosystem**](#)
Yunsun Park, Seong D. Yun, Kuan-Ming Huang, and Brandy E. Phipps
- [**Patterns of Sustainability Practices in North Carolina's Ornamental Horticulture Industry**](#)
Nick Berenson, Amanda Solliday, Daniel Tregeagle, and Melinda Knuth
- [**Buzzing Toward Sustainability: Protecting Pollinators to Strengthen Specialty Crop Production**](#)
D. Adeline Yeh, Christina Estela Brown, and Brittney K. Goodrich
- [**Sustainable Soil, Sustainable Specialty Crops Production: How Soil Liming Impacts Profits and Rotations**](#)
Mohammed Beroud, Xiaoli Fan, Miles Dyck, and Linda Y. Gorim
- [**Production Processes and Sustainability Challenges for US Sweetpotatoes**](#)
Kuan-Ming Huang, Will Maples, and Chang Liu

they analyze the relationship between crop diversity and environmental indicators such as water quality and bird diversity. Although specialty crops occupy a smaller proportion of U.S. farmland, their strategic integration, especially in monoculture-dominated regions, may help mitigate environmental stressors and enhance biodiversity.

Two articles spotlight high-value segments within the specialty crop sector: ornamental horticulture and pollinator-dependent crops. In their analysis of North Carolina's ornamental horticulture industry, Berenson et

al. surveyed growers producing nursery plants, floriculture, Christmas trees, and related crops to assess adoption of four key sustainability practices: integrated pest management, the use of sustainable water sources, native plant sales, and plant diversity. Their findings reveal patterns of practice adoption and demonstrate that sustainability in ornamental horticulture is context-specific, with no singular strategy suited to all operations.

Yeh, Brown, and Goodrich shift the focus to pollinator-dependent crops, which represent a substantial portion of the specialty crop economy. Approximately \$13 billion in U.S. specialty crop production depends, to varying degrees, on paid pollination services. The authors review recent policy measures aimed at strengthening support for beekeepers and sustaining viable habitats for both managed and wild pollinators. Their analysis underscores the delicate interdependence between crop production and pollination services, especially in light of pollinator health declines in recent years.

The final two articles delve into more targeted aspects of specialty crop sustainability. Beround et al. explore soil liming practices in Canadian pulse crop production. Soil liming involves the application of organic matter rich in basic cations to balance pH levels and improve soil fertility. While yield impacts are often the primary focus

in soil liming studies, this article broadens the lens to include the effects of liming on crop rotation and long-term economic outcomes. Without soil liming, natural soil acidification can displace pH-sensitive crops like pulses, prompting farmers to shift toward acid-tolerant cereals, a change that may have important implications for economic resilience and crop diversity.

Huang, Maples, and Liu offer a detailed case study of sweetpotato production in the United States, based on interviews and conversations with farm managers and producers. Their work highlights the crop's complex supply chain, market dynamics, and sustainability challenges, such as planting stock sourcing, disease control, and post-harvest handling. Through these insights, the article reveals challenges and opportunities related to sustainable production practices for sweetpotatoes.

Collectively, this theme issue sheds light on the diverse sustainability practices currently in use across the specialty crop sector, while emphasizing the deep connections between these crops and key ecosystem services. By showcasing real-world practices and evidence-based insights, these articles aim to advance understanding of specialty crop sustainability and facilitate broader dialogue within agricultural and policy communities.

For More Information

U.S. Department of Agriculture Economic Research Service (USDA-ERS). 2024. "Most U.S. Counties with High Concentration of Specialty Crop Farms Are Located Along Coasts." 2022 Census of Agriculture. Available online: <https://www.ers.usda.gov/data-products/chart-gallery/gallery/chart-detail/?chartId=109079>

U.S. Department of Agriculture National Institute of Food and Agriculture (USDA-NIFA). 2024. "Sustainable Agriculture Programs." Available online: <https://www.nifa.usda.gov/grants/programs/sustainable-agriculture-programs>

About the Authors: D. Adeline Yeh (adeline.yeh@usda.gov) is a Research Agricultural Economist with the Crops Branch and Market and Trade Economics Division at the USDA Economic Research Service. Kuan-Ming Huang (kmh1169@msstate.edu) is an Assistant Professor with the Department of Agricultural Economics at Mississippi State University.

Acknowledgments: This research was supported in part by the U.S. Department of Agriculture, Economic Research Service. The findings and conclusions in this publication are those of the authors and should not be construed to represent any official USDA or U.S. government determination or policy.

©1999–2025 CHOICES. All rights reserved. Articles may be reproduced or electronically distributed as long as attribution to Choices and the Agricultural & Applied Economics Association is maintained. Choices subscriptions are free and can be obtained through <http://www.choicesmagazine.org>.