

CATEGORY: HORTICULTURAL PRACTICES IMPACTING HEALTH

Horticulture Best Practices

Best practices for horticulture involve planting, harvesting, and processing methods. Pest management, soil, permaculture, landscape management, and biodynamic systems are also included. These span a wide range of topics, many of which can impact human health.

Horticulture for health paradigm is primarily interested in best practices within this sector that can affect human health. “Best practices for plant production related to diverse health issues including chemical sensitivities, water source contamination, children’s delayed cognitive development, and nutritional deficits (Mie et al., 2017), have influenced the green industry and its use of chemicals, GMO seeds, food borne pathogens and production practices, and development of nutrient-dense food (Fernandez-Bou et al., 2025; Hongoeb et al., 2025) (Fleming, 2021)”. Best practices continue to evolve with collaborative efforts between government, educational institutions, businesses, consumers and horticulture/agriculture trade groups.

Newer studies have investigated best practices where horticulture plays a role - using virtual reality (VR) biophilic images in hospitals (Medina & Hughes, 2025), pain relief using plant-centered features (Zandi & Wung, 2025), the use of Cooperative Extension education resources (Stanton et al., 2025) and Food Rx strategies (Gunter et al., 2025).

For related resources refer to category: Plant-based Food, Plant-based Nutrition and Food Security Action.

Key Organizations

[American Community Gardening Association](#)

[AmericanHort](#)

[American Society for Horticultural Science](#)

[Biodynamic Association](#)

[The Garden Professors](#)

[Horticulture and Agriculture Professional Associations & Organizations](#)

[Feed the Future Innovation Lab for Horticulture](#), University of California, Davis – currently closed

[International Society for Horticultural Science](#)

[Plants for Human Health Institute](#) at North Carolina State University

[Seed Your Future](#)

[Soil Science Society of America](#)

State Agricultural Schools

University Extension Services (by county)

Books, journals & epublications on horticulture best practices

Chalker-Scott, L. (2023). *Gardening with companion plants*. Washington State University Extension.

Chalker-Scott, L. (2020). *Protecting water resources: Planting and caring for home wetlands and other riparian areas*. Washington State University Extension.

Coleman, E. (2018). *The new organic grower. A master’s manual of tools and techniques for home and market gardener*, 3rd edition. Chelsea Green Publishing.

[Greenhouse Management magazine](#)
[Horticultural Myths](#) by Dr. Linda Chalker-Scott
[HortScience](#)
[HortTechnology](#)
[Journal of ASHS](#)

[Nursery Management magazine](#)

Milliken, S., Ovca, A., Villarroel, M., et al (2022). Lessons learned from introducing aquaponics to higher education curricula. In *Enhancing environmental education through nature-based solutions* (pp. 153-181). Springer.

[Permaculture Design Magazine](#)

Pettorelli, N., Durant, SM., & Du Toit, JT. (Eds.). (2019). *Rewilding*. Cambridge University Press.

Tallamy, D. (2020). *Nature's best hope*. Timber Press.

Tallamy, D. (2023). *Nature's best hope (Young Readers Edition): How you can save the world in your own yard*. Timber Press.

[Trends in Plant Sciences](#)

Research & articles on horticulture best practices

Recently published selected research & articles:

Abdi, DE., Fields, JS., & Beasley, J. (2023). [Pine straw mulch depth modulates soil conditions](#). *HortTechnology*, 33(5).

Akbar, D., Babacan, H., Marty, M. et al. (2025). A sector-wide action plan to halve horticulture food waste by 2030: Theory to practice. *Sustainability*, 17(12).

Anding, JD., & Fry, J. (2024). [Assessing Master Gardener practices and confidence in responding to clientele questions about home food preservation in Texas](#). *HortTechnology*, 34(2).

Aziz, MA., Brini, F., Rouached, H. et al. (2022). [Genetically engineered crops for sustainably enhanced food production systems](#). *Frontiers in Plant Science*, 13.

Bagavathiannan, MV., Graham, S., Ma, Z. et al. (2019). [Considering weed management as a social dilemma bridges individual and collective interests](#). *Nat Plants*, 5(4).

Bautista-Baños, S., Correa-Pacheco, ZN., Ventura-Aguilar, RI. et al. (2025). Traditional and recent alternatives for controlling bacterial foodborne pathogens in fresh horticultural commodities—A review. *Coatings*, 15(5).

Beller, M. (2023). [Triumph over apple scab: University of Minnesota releases apple variety resistant to fungal disease](#). *Food Tank*.

Bennett, P. (2021). [The National Initiative for Consumer Horticulture and the role it plays in human well-being](#). *ISHS Acta Horticulturae 1330: XV International People Plant Symposium and II International Symposium on Horticultural Therapies: The Role of Horticulture in Human Well-being and Social Development*.

Berning, EH., Andersen, CVH., Mertz, O. et al. (2022). [Resilience of breadfruit agro-ecosystems in Hawai'i during the COVID-19 pandemic](#). *CABI Agric Biosci.*, 3(1).

Campana, E., Ciriello, M., Roupheal, Y., & De Pascale, S. (2025). A new paradigm in greenhouse horticulture: Integrating resource efficiency for sustainable intensification. *Environment, Development and Sustainability*.

Carey, A., Nair, A., & Thoms, A. (2024). [Evaluating the soil block method and growing media in organic vegetable transplant production](#). *HortScience*, 59(4).

Carroll, C., & Noss, RF. (2021). [Rewilding in the face of climate change](#). *Conservation Biology*, 35(1).

Carver, S., Convery, I., Hawkins, S. et al. (2021). [Guiding principles for rewilding](#). *Conservation Biology*, 35(6).

- Chalker-Scott, L. (2023). [Excessive use of water and fertilizer by homeowners: Why it happens, how it affects the environment, and how the nursery industry and extension outreach can help](#). *Journal of Environmental Horticulture*, 41(2).
- Chatakul, P., & Janpathompang, S. (2022). [Interior plants: Trends, species, and their benefits](#). *Building and Environment*, 222.
- Chen, J., Sun, Y., Oki, LR. et al. (2023). [Climate-ready landscape plants: Garden roses trialed at reduced irrigation frequency in Utah, USA](#). *HortTechnology*, 33(5).
- Devi, KV., Raj, S., Alavekar, MS., & Bhrihavasi, G. (2025). Advancements and future trends in horticultural propagation. *Horticulture Crops*, 204.
- Duarte, RDC., Lannetta, PPM., Gomes, AM. et al. (2024). [More than a meat- or synthetic nitrogen fertiliser-substitute: A review of legume phytochemicals as drivers of 'One Health' via their influence on the functional diversity of soil- and gut-microbes](#). *Front Plant Sci.*, 15.
- Cvanić, T., Šovljanski, O., Popović, S. et al. (2023). [Progress in fruit and vegetable preservation: Plant-based nanoemulsion coatings and their evolving trends](#). *Coatings*, 13(11).
- Fernandez-Bou, AS., Rodriguez-Flores, JM., Ortiz-Partida, JP. et al. (2025). Cropland repurposing as a tool for water sustainability and just land transition in California: Review and best practices. *Frontiers in Water*, 7.
- Fetchel, M., & Hall, C. (2022). [An update of the literature supporting the economic benefits of plants: Part 1 – methods of valuing benefits](#). *Journal of Environmental Horticulture* 40(4).
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- Fleming, L. (2021). Horticulture for health framework. [ISHS Acta Horticulturae 1330: XV International People Plant Symposium and II International Symposium on Horticultural Therapies: The Role of Horticulture in Human Well-being and Social Development](#).
- Fontaine, S., Abbadie, L., Aubert, M. et al. (2024). Plant-soil synchrony in nutrient cycles: Learning from ecosystems to design sustainable agrosystems. *Glob Chang Biol*, 30(1).
- Fourie-Basson, W. (2023). New species of medicinal mushroom endemic to Kynsna forest. Stellenbosch University.
- Gaisser, R., Kuehn, K., & Pritts, M. (2024). [Novel low tunnel coverings and plant type affect productivity of day-neutral strawberries](#). *HortTechnology*, 34(3).
- Ghannem, A., Ben Aissa, I., & Majdoub, R. (2021). [Effects of regulated deficit irrigation applied at different growth stages of greenhouse grown tomato on substrate moisture, yield, fruit quality, and physiological traits](#). *Environ Sci Pollut Res Int.*, 28(34).
- Glenn, W., Waliczek, TM., & Drewery, ML. (2024). [Market potential for specialty compost produced from wool waste](#). *HortTechnology*, 34(3).
- Greenhouse Product News. (2026). Sustainability template helps florists improve operations and efficiency. *GPNmag.com*.
- Gunter, CC., Treadwell, DD., Resende Jr, MF. et al. (2025). Food Rx: Integrating horticulture research to improve nutrition and health. *Proceedings of the National Academy of Sciences*, 122(21).
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- Heckman, JR., Krogmann, U., & Wyenandt, CA. (2023). [Community shade tree leaves: Beneficial uses for agriculture](#). *HortTechnology*, 32(6).
- Held, L. (2024). [Chemical capture: The power and impact of the pesticide industry](#). *Civil Eats.com*.
- Held, L. (2022). [New evidence shows pesticides contain PFAS, and the scale of contamination is unknown](#). *Civil Eats*.

- Hongoeb, J., Tantimongcolwat, T., Ayimbila, F. et al. (2025). Herbicide-related health risks: Key mechanisms and a guide to mitigation strategies. *Journal of Occupational Medicine and Toxicology*, 20(1).
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- Jha, S., Egerer, M., Bichier, P. et al. (2023). [Multiple ecosystem service synergies and landscape mediation of biodiversity within urban agroecosystems](#). *Ecology Letters*, 26(3).
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Examples of horticulture best practices

[American Society for Horticultural Science offers a Collaboration Center](#) used to foster collaborative, mutually beneficial relationships between industry and academia and other cross-institutional collaborations using categories like citrus crops, floriculture, and local food systems.

[Farmers in the Netherlands are growing more food using less resources](#) video.

[Interview: Mad Ag on Supporting Farmers to Build a More Regenerative Food Future](#) with Mad Agriculture by Plant Based Foods Institute (2022).

[Plant Health and IPM](#) video from NYSIPM Vegetable Garden Conference with speaker Don Gabel, Director of Plant Health, The New York Botanical Garden.

[Vegetable Resources > Chapter IV: Cultural Practices](#) from *Texas Vegetable Growers Handbook*.

Videos & webinars on horticulture best practices

[American Floral Endowment](#) website identifies current research priorities (2026) including automation and technology, sustainable production, biocontrol of pests, breeding technology among others.

[Best Practices: Postharvest Water Sample Collection](#) webinar from University of Georgia's Laurel Dunn.

[Connect-2-Consumer](#) podcasts from Dr. Bridget Behe, Michigan State University are weekly discussions on topics related to plant retailing; research-based information is made easily accessible to the horticulture industry.

[Denying our Understanding of Real Organic Practices Robs the World](#) video, interview with Eliot Coleman, Real Organic Project.

[Doug Tallamy: Restoring Nature's Relationships at Home.](#) (2021) Living Landscape Speaker Series webinar.

[Growing Change](#) video shares pesticide challenges to health, focusing on healthy food and healthy workers.

[Nature's Last Hope](#) webinar video by entomologist Doug Tallamy.

[Planting: Best Practices](#) webinar (on trees and shrubs) from Conservation Garden Park.

[Soil Science Society of America](#) website identifies the 13 journals they publish, the connection to The Alliance of Crop, Soil, and Environmental Science Societies (ACSESS) non-profit and other science associations.

[United States Food and Drug Administration, Agricultural Biotechnology – “Feed Your Mind”](#) educational initiative.

Related organizations

[Permaculture Institute](#)

[Worldwide Permaculture Network](#)

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