Resources

Roots in Harmony
Designing a Multi-Functional Garden Ecosystem
All images used in this presentation were taken by the presenter, MGNV colleagues, AI-generated, or open sources.

Participants Handout: References, Books & Research

Recommended Books

Title	Author	Focus
Plant Partners	Jessica Walliser	Science-based companion planting strategies for pest control, pollination, and soil health
Carrots Love Tomatoes	Louise Riotte	Traditional companion planting wisdom and folklore
Gaia's Garden	Toby Hemenway	Permaculture design for home-scale ecological gardens
Braiding Sweetgrass	Robin Wall Kimmerer	Gardening is presented as a relationship of mutual care where tending the land becomes an act of gratitude and connection
How to Grow More Vegetables	John Jeavons	Biointensive gardening and soil-building techniques
Companion Planting for Beginners	Elaine Redfern	Research-informed introduction to pairing plants for healthier growth, natural pest reduction, and more resilient garden beds

Extension & University Publications

Companion Planting & Ecological Gardening

- Gardening with Companion Plants – WSU Extension (2023)
  Focuses on scientifically sound companion planting practices to reduce pests and improve productivity.
- Companion Planting & Botanical Pesticides – ATTRA (**Appropriate Technology Transfer for Rural Areas.)**
  Explores traditional and scientific foundations of companion planting, trap cropping, and beneficial insect attraction.
- Better Together: The New Science of Companion Planting – UC Master Gardeners
  Highlights modern research on polyculture, allelopathy, and interplanting for biodiversity and soil fertility.

Pollinator & Native Plant Support

- MGNV: Pollinators and Other Wildlife
- UVA Blandy Experimental Farm: Pollinator Habitat Guidelines (PDF)
- MGNV: Choosing Native Plants – Straight Species vs. Cultivars

Soil Health & Root Crop Success

- Virginia Tech Extension: Soil Preparation for Home Gardens (Publication 426-422)
- Virginia Tech: Intensive Gardening Methods (Publication 426-335)
- Composting | USDA
- Master Gardener Virtual Classroom

Seasonal Planting & Zone Guidance

- MGNV Vegetable Planting Chart for Arlington & Alexandria
- Virginia Tech: Home Garden Vegetable Planting Guide (Publication 426-331)
- National Gardening Association - Hardiness Zone Finder

Additional Resources

- Food Gardening Network: Companion Planting Chart
- University of Maryland Extension: Pollinator-Friendly Garden Design
- Intercropping Principles and Production Practices (PDF)
- Intercropping: ecosystem functioning and sustainable agriculture | Plant and Soil | Springer Nature Link (published online 2024; issue 2025)

Quick definitions and science terms used in the presentation and handout (combination gardening, soil health, pollinators, ecological gardening and companion planting).

- **Allelopathy** – When a plant releases chemicals (from roots, leaves, or decaying residue) that affect the germination or growth of other plants nearby (sometimes helpful, sometimes harmful).
- **Beneficial insects** – Insects that help your garden by pollinating plants or by eating pests (examples: lady beetles, lacewings, hoverflies, many parasitic wasps).
- **Biodiversity** – The variety of living things in an area (plants, insects, microbes, etc.); higher biodiversity often makes a garden ecosystem more resilient.
- **Biointensive gardening** – A method focused on building soil health and growing a lot of food in a small space using deep soil preparation, close plant spacing, composting, and careful crop planning.
- **Botanical pesticide** – A pest-control substance derived from plants (for example, extracts or oils). "Natural" does not automatically mean safe for people, pets, or beneficial insects—use with care and follow label directions.
- **Combination garden** – A garden designed to do more than one job at once (for example: produce food + support pollinators + manage stormwater + build soil), often by mixing plant types and using layered, multi-purpose design.
- **Composting** – The controlled breakdown of organic materials (leaves, food scraps, etc.) by microbes into a soil-like amendment (compost) that adds organic matter and nutrients back to soil.
- **Companion planting** – Planting certain crops close together to try to improve yield, reduce pests, support pollinators, or use space efficiently. Some pairings are research-backed; others are traditional and may be situational.
- **Cultivar** – Short for "cultivated variety"; a plant variety selected and maintained by people for specific traits (flower color, disease resistance, compact size, etc.).
- **Decomposition** – The breakdown of dead plant/animal material by fungi, bacteria, and soil organisms, returning nutrients to the soil.
- **Ecological gardening** – Gardening that aims to work with natural processes (soil biology, beneficial insects, diversity) to reduce inputs and support a healthy ecosystem.
- **Ecosystem** – All the living things in an area (plants, animals, fungi, microbes) plus nonliving factors (soil, water, climate) and how they interact.
- **Ecosystem functioning** – How well an ecosystem's processes work, such as nutrient cycling, water infiltration, pollination, decomposition, and natural pest control.
- **Hardiness zone** – A geographic rating based on average annual minimum winter temperature, used to estimate whether a perennial plant can survive outdoors over winter (e.g., USDA Plant Hardiness Zones).
- **Hybrid** – A plant produced by crossing two genetically different parents (often two varieties of the same species) to combine traits; many hybrids are labeled "F1."
- **Intensive gardening** – Growing crops at closer spacing and with careful soil preparation and ongoing care to maximize harvest from a small area (not necessarily "more chemicals," often the opposite).
- **Intercropping** – Growing two or more crops in the same space at the same time (for example, alternating rows or mixing within a bed) to use resources efficiently and reduce risk.

- **Interplanting** – A type of intercropping where crops are mixed together within the same bed or row (often used to save space or to stagger harvests).
- **Monoculture** – Growing a single crop species/variety in a large area or bed; can make pest and disease outbreaks spread more easily compared to diverse plantings.
- **Mulch** – A layer of material (leaves, wood chips, straw, etc.) placed on the soil surface to reduce weeds, conserve moisture, moderate temperature, and reduce erosion.
- **Multi-functional garden ecosystem** – A garden planned as an ecosystem that provides multiple benefits (habitat, food, beauty, soil building, pest suppression, water management) rather than focusing on only one goal.
- **Native plant** – A plant that evolved naturally in a specific region and was present before modern large-scale human introduction from other regions.
- **Native plant support** – Garden practices that prioritize natives and the insects/birds that depend on them (for example, providing host plants for caterpillars and nectar plants for adult pollinators).
- **Nutrient cycling** – The movement and reuse of nutrients (like nitrogen and phosphorus) through soil, plants, microbes, and organic matter as materials grow, die, and decompose.
- **Pest control** – Managing organisms that damage plants. In ecological gardens, this often emphasizes prevention and non-chemical methods first (healthy soil, diversity, monitoring, barriers, and beneficial insects).
- **Permaculture** – A design approach that uses ecological principles to create productive, low-waste landscapes (often emphasizing perennials, soil building, water management, and "stacking functions").
- **Pollinator** – An animal that moves pollen from flower to flower, enabling fertilization and seed/fruit development (bees, butterflies, moths, flies, beetles, hummingbirds).
- **Pollinator habitat** – The food, shelter, and nesting resources pollinators need (a season-long sequence of blooms, host plants, water, and places to nest/overwinter).
- **Polyculture** – Growing multiple plant species together (the opposite of a monoculture) to increase diversity and often reduce pest/disease spread.
- **Productivity** – How much harvest, growth, or desired output you get from a garden area over time (for example, pounds of produce per square foot, or total blooms supporting pollinators).
- **Resilience** – The ability of a garden system to keep functioning through stress (heat, drought, pests) and recover afterward; diversity and healthy soil often improve resilience.
- **Root exudates** – Sugars, acids, and other compounds released by roots that feed soil microbes and can influence nutrient availability and plant health.
- **Soil fertility** – The soil's ability to supply essential nutrients to plants in the right amounts and balance.
- **Soil health** – The overall ability of soil to function as a living ecosystem that sustains plants, animals, and humans; includes structure, organic matter, microbial life, and nutrient cycling.
- **Soil preparation** – Getting soil ready for planting (for example: loosening/conditioning, adding organic matter as needed, correcting drainage, and avoiding compaction).
- **Straight species** – A plant that is the naturally occurring species (not a named cultivar or hybrid), typically grown from wild-type genetics.

- **Sustainable agriculture** – Food-growing approaches intended to be environmentally responsible and maintain productivity over the long term (often emphasizing soil conservation, efficient resource use, and reduced pollution).
- **Trap cropping** – Using a "sacrificial" plant that pests prefer, placed to lure pests away from the main crop (often combined with monitoring and timely removal/control on the trap crop).
- **Water infiltration** – How quickly water soaks into soil rather than running off; improved by good soil structure and organic matter.
- **Beneficial insects** – Insects that help your garden by pollinating plants or by eating pests (examples: lady beetles, lacewings, hoverflies, many parasitic wasps).
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