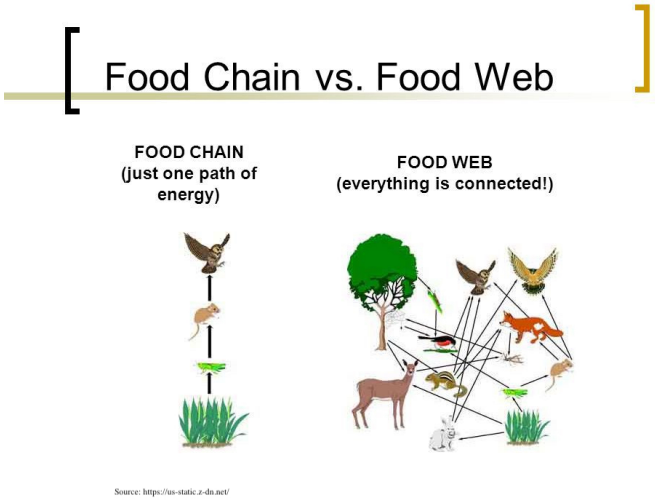
Food Chains, Food Webs, and Plant Guilds
By Kate O'Lenic, Master Gardener

Here's a bit of food for thought - all our food starts with energy from the sun. Sun makes the plants grow, the plants are eaten by insects or animals, which in turn are food for other creatures, including us. That leads us to the idea of food chains and food webs. A food chain is a very simple description of how this transfer of energy occurs. There are food chains in the ground, in streams, rivers, and oceans, in deserts and forests – well, everywhere, including our yards and gardens. Those food chains overlap and blend together into food webs. As gardeners, we can help food chains and webs thrive by what we plant. That's pretty amazing.

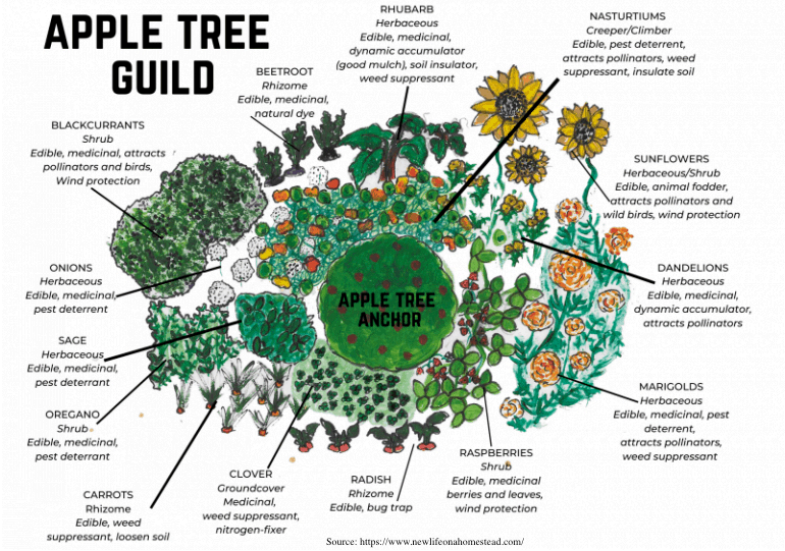


Let's start at the ground level. There is a huge living food web in the soil. The bacteria, fungi, ants, worms, beetles, and more in the soil are important for soil health. To support them, consider the following:

- Avoid tilling the soil.
- Restore compacted soil.
- Use organic mulch, such as tree branches and leaves.
- Avoid the use of pesticides.
- Use a variety of plants for a wide food source for those that feed on the plants.
- Leave lawn clippings in place.
- "Leave the leaves" – let leaves pile up in your gardens.

It will come as no surprise that native plants are essential for a healthy food web. Even better, keystone plants are the "powerhouse plants" that provide the most support for food webs. For recommendations on keystone plants and other native plants for your gardens, consult with native plant groups, search the internet for native plants for your area, or find nurseries in your area that specialize in native plants. The State of Tennessee has published "Landscaping with Native Plants" available at: https://www.tn.gov/content/dam/tn/tdot/environmental/redesign/hbo-pollinator-program/pdfs/ref_residential_landscaping_native_plants_tennessee.pdf . There is also a publication from the University of Tennessee entitled "Native Trees for Tennessee" that can be a good starting point for gardeners to find the right plants to nurture nature. (https://extension.tennessee.edu/publications/Documents/SP515.pdf)

There's one other concept to digest – plant guilds. Plant guilds are collections of diverse plantings that support each other. Guilds are intended to attract beneficial insects, repel pests, and improve soil nutrition and use of water and nutrients. The idea is based on companion planting for vegetable gardens but also involves trees and shrubs. As an example for home gardeners, plant guilds can be designed around fruit trees using flowering and vegetable plants.



Partner plants for guilds fall into six categories: accumulator, attractor, fixer, suppressor, deterrent, and mulcher. Accumulators are plants that add nutrients to the soil and include comfrey (potassium) and red clover (iron). Attractors are plants that draw beneficial insects to the garden and include marigolds, sunflowers, nasturtiums, and many more. Fixers are plants that fix nitrogen in the soil, such as peas, beans, and clover. Suppressors help inhibit weed growth like nasturtiums, rhubarb, and clover. Deterrents help repel pests. Planting onions, sage, oregano, marigolds, and other strongly fragrant plants will aid in repelling garden pests. Finally, mulchers, as the term suggests, help to retain soil moisture and inhibit weed growth. Nasturtiums and rhubarb are good examples of mulchers. When creating your plant guild, consider using plants that cover several different categories and include providing fruit and vegetables you can eat.

There is so much we gardeners can learn about different ways to plant and reap the benefits that nature offers. How about starting your own guild? Resources below provide all the details you'll need to get started.

Resources

Introduction to and Components of Food Webs
https://bio.libretexts.org/Courses/Gettysburg_College/01%3A_Ecology_for_All/19%3A_Food_Webs/19.01%3A_Introduction_to_and_Components_of_Food_Webs

Food Chains and Food Webs
https://www.epa.gov/sites/default/files/documents/foodchainsandfoodwebs.pdf

Support the Soil Food Web

https://landscapeforlife.colostate.edu/support-the-soil-food-web/

Powerhouse Plants
https://www.udel.edu/udaily/2020/december/doug-tallamy-native-plants-food-web-insects-birds-survival-earth/#

Edible Forest at James Madison University – Plant Guilds
https://sites.lib.jmu.edu/foodforest/sample-guilds/

Companion Planting in Home Gardens
https://extension.umn.edu/planting-and-growing-guides/companion-planting-home-gardens

Companion Planting
https://extension.wvu.edu/lawn-gardening-pests/gardening/garden-management/companion-planting

New Findings Further the Study of Dynamic Accumulators
https://smallfarms.cornell.edu/2022/04/new-findings-further-the-study-of-dynamic-accumulators/

The next University of Tennessee Master Gardener class at the Sullivan County Extension Office located at 140 Spurgeon Ln, Blountville, TN. starts on **January 30, 2024** and continues every Tuesday for 14 weeks.
10AM – 12noon
Call the Extension Office for information and application form.
423-574-1919

How do I ask a question?
If you have a question for the Master Gardeners, submit them to us on our website at www.netmga.net. Click the link at the top of the page, "ASK A MASTER GARDENER" to send in your question. Questions that are not answered in this column will receive a response from a Master Gardener to the contact information you provide.