

Scenes from the 2010 Virginia Biological Farming Conference  
Institute for Advanced Learning and Research, Danville, VA  
February 19-20, 2010

### **Perennial Vegetable Crops**

Pre-conference workshop by Eric Toensmeier

- Reviewed by Mark Schonbeck

Is it possible to reap nutritious, tasty vegetables without relying on delicate annual crops that must be planted each year in a prepared seedbed, and kept weeded through repeated cultivation? Asparagus, watercress, and Jerusalem artichoke (sunchoke) are familiar to most. Some of us in the Appalachian region gather ramps in the spring, and a few of us have heard of something called “sea kale.” In this pre-conference session and in his book *Perennial Vegetables*, Eric Toensmeier of Holyoke, Massachusetts has expanded this list, with scores of perennials in over a dozen plant families that offer edible shoots, leaves, flower buds, roots, tubers, fruits, or seeds.

Perennial vegetables offer several advantages, including low maintenance, multi-year production from one planting, long season of production, resistance to pests and weeds, and adaptation to dry, wet, or shady environments. In addition, perennials require no tillage other than the initial soil preparation prior to planting. As a result, soil quality can improve during perennial crop production, and carbon dioxide is removed from the atmosphere and stored as soil organic matter. After showing the 1990 and 2006 USDA hardiness zone maps (which indicate some dramatic shifts in climate zones), Eric described perennial vegetables as “post-scarcity agriculture” and an important part of the solution to the threat of global climate change. He estimated that conversion of just one-quarter of the world’s annual cropland to perennial crops could counteract the buildup of atmospheric carbon dioxide.

Potential drawbacks of perennial vegetables include slow establishment, unfamiliar flavors and textures, and the potential of some species to become weedy or invasive. Also, perennial crops cannot be rotated year to year, and some are prone to virus diseases. Whereas perennial crops may yield less than annuals on a per-acre basis, they are much less labor intensive, and can yield more per hour of work.

Landscape design approaches to perennial vegetable production include planting along edges of annual vegetable gardens or in strips through fields, edible landscaping, and, for wetland species, water gardens. Many wetland vegetables can be produced in the small, plastic wading pool for designed for young children. Some problems that can arise in water gardens include overgrowth of algae, mosquitoes, and insufficient oxygen for some plants. Bullfish, mosquito fish, and frogs can keep mosquito populations down. Sufficient desirable vegetation to cast at least 70% shade on the water surface usually prevents excessive algal growth. Many aquatic vegetables require little or no aeration if grown in a fairly shallow body of water.

Eric then took us on a tour of major vegetable plant families, introducing us to some of the edible perennials in each, and offering his honest opinion of their palatability, as well as cautions about weediness and management challenges.

The brassica or cabbage family offers a number of highly nutritious perennial vegetables. One of the most promising is sea kale (*Crambe maritima*), which is less pest-prone and more drought-tolerant than its cultivated annual relatives like broccoli, hardy to zone 4, and can provide harvests for 10 years. In the spring, emerging shoots can be blanched by inverting a flower pot over the plant, and cut when 6–9 inches long. During summer, flower heads can be cut and eaten as broccoli, and leaves can be eaten like collards in the fall.

Sylvestra arugula (*Diplotaxis muralis* and *D. tenuifolia*) is a shrubby perennial that provides arugula-flavored greens throughout the season. Turkish rocket (*Bunias orientalis*) yields very strong, spicy leaves (best cooked), and broccoli-raab flower heads with excellent flavor. It spreads by lateral roots and can be invasive. Watercress (*Nasturtium officinale*) can be grown in wet soil or in flowing water; plants bought at a grocery can be rooted in water and introduced into a stream or water garden.

Eric introduced us to two perennials in the carrot family: skirret (*Sium sisarum*) and water celery (*Oenanthe javanica*). Skirret produces clusters of pencil-thin roots with a parsnip-potato flavor, and is readily propagated vegetatively by dividing clumps or replanting a few roots. Water celery grows on water or land, providing edible foliage with a mild parsley-celery flavor. It is potentially invasive and should be grown in containment, never introduced into a natural waterway.

The onion family includes multiplier onion (*Allium cepa aggregatum*), walking onion (*A. c. proliferum*), garlic chives (*A. tuberosum*), Welsh onion (*A. fistulosum*), and ramps (*A. tricoccum*). Ramps are native to the southern Appalachians, shade tolerant, and can be naturalized in forest or grown in orchards. Welsh onions provide scallions and should be rotated to new locations every 1–3 years. Walking onions can become weedy, and should be controlled by harvesting before the topset bulbils become mature.

The lettuce/sunflower family includes sunchoke (*Helianthus tuberosus*), whose tubers are best in the spring, and contain inulin, a starch that is not directly digestible, but helps to regulate blood sugar and enhance calcium assimilation. Chicory (*Cicorium intybus*) yields leaves that are somewhat bitter but highly nutritious, and thick, edible flower stalks. The less-known fuki grows enormous leaves on 3-ft stalks; the stalks can be boiled, peeled, and eaten.

The buckwheat family requires some caution because of its oxalic acid and oxalate content. Rhubarb (*Rheum X cultorum*) stalks and flower buds are edible if cooked, but leaf blades and roots are quite poisonous. Sorrel (*Rumex acetosa*) is healthful in moderation; a cultivated variety, ‘Perfusion,’ is non-invasive, and produces edible foliage all year without bolting. The spinach family offers Good King Henry (*Chenopodium bonus-henricus*), which Eric described as “OK if cooked,” and *Hablitzia tannoides*, a large vine (to 9 ft) from Scandinavia that provides spinach-like leaves through June. Stinging nettle (*Urtica dioica*), and a native wood nettle (*Laportea Canadensis*) that grows in shade and has a milder sting, both make highly nutritious greens when picked young (wear gloves) and cooked.

After covering these better-known vegetable families, Eric moved on to some little-known edible perennials, and some surprising facts. Ostrich fern (*Matteuccia struthiopteris*) is native to

the US; unlike the carcinogenic bracken fern, ostrich fern fiddleheads are safe to eat after cooking. Several species of hosta grown in the US as shade-loving ornamentals provide edible leaves that are harvested commercially and widely eaten in Asia. Chinese yam (*Dioscorea opposita*) and some varieties of air potato (*Dioscorea* spp.) can be grown as perennials in the United States. Even some trees produce edible foliage as well as fruit, including mulberry. Eric noted that the eating quality of mulberry leaves varies greatly with variety, “from good to terrible,” though goats seem to relish them all.

Finally, Eric noted that opportunities exist to breed perennial vegetables for greater cold tolerance, or improved palatability and nutritional value. For example, most perennial beans are tender, tropical species, and development of hardy perennial beans could open new opportunities for sustainable protein production in temperate zones.

References on perennial vegetables, some of which were available for sale at the Conference, include *Perennial Vegetables* by Eric Toensmeier, *Edible Forest Gardens* by David Jacke and Eric Toensmeier, *Oriental Vegetables* by Joy Larkam, and *Plants for a Future* by Ken Fern.