

Polycultures: Pulling Together the Parts to Design Ecosystems in Garden Settings

Session Notes by Steve Gabriel

www.gardening.cornell.edu/polycultures

Polyculture: a community of *multifunctional* plants, animals, and fungi that is designed for *functional interconnection*

The many parts of multi-functionality:

Human Needs	Ecosystem Services
Food	Nitrogen Fixation
Fuel	Nutrient Accumulators/Fertility
Fodder (for animals)	Living Mulch/Ground Cover
Medicine	Insectary
Aesthetics	Nectary/Pollen

Functional Interconnection

Needs of one species offer yields to another.



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Key Plant Families for attracting beneficial insects: Asteraceae: Wild asters, sunflowers, dandelion, arnica Umbelliferae family: Wild Carrot, Dill, Cow Parsnip, Sweet Cicily,

Mint (Lamiaceae) family: Anise hyssop, horehound, self heal, all mints

What about companion planting?

"Unfortunately, much of the popular literature that discusses companion planting is based upon some very bad science, in particular, the "sensitive crystallization method" which was originated by Dr. Ehrenfried E. Pfeiffer in the 1930's.

....Thus, the notion that "carrots love tomatoes" but "beans dislike fennel" is based upon an analytical laboratory procedure and not on direct observation of the plants in nature.."

Polyculture from Nature:

MORE: www.gardening.cornell.edu/companionplant



Douglas Fir

Mycorrhizal Fungi





Spotted Owl







RESOURCE: <u>www.chrismaser.com/truffle.htm</u> -- The Redesigned Forest

Polyculture from Human History:

Corn, Beans, Squash

Resources:

Jane Mt Pleasant research and writing on three sisters http://hort.cals.cornell.edu/people/jane-mt-pleasant https://vimeo.com/28102794

The three sisters – or is it four? By Toby Hemenway



The Three Sisters, drawing by John Kahionhes Fadden (1988). Courtesy of the New York State Museum, Albany, NY, 12230.

Example Polycultures:

Jugalone Tolerance:

Walnut (Juglans spp.) Paw Paw Asiminia tribola Elderberry Sambuccus canadensis Sunchoke Helianthus tuberosus Allium spp. White Clover Trifolium repens Wine Cap Mushroom Stropharia rugosa annulata

Apple Polyculture

Crops: Apple, Strawberry Grass suppression: Daffodils, Chives Mulch: Comfrey, Indigo Intectary/Pollen: Bee Balm, Dill, Fennel

Farm Scale Polyculture at the Good Life Farm (<u>http://www.thegoodlifefarm.org/</u>)

Apples/Peaches Asparagus Turkeys

Examples from Cornell Students:

Smoothie Polyculture (Hazelnuts, Paw Paw, Berries, Mint, Spinach) Tye-Dye Polyculture (Walnut, Sumac, Elderberry, Calendula) Viticulture Polyculture (Grapes, Oak, Ducks, Elderberry) Compost Toilet Polyculture (Bamboo, Lavender, Mullein, Mints)

Designing Polycultures:

- What are your goals?
- What limits does the site present?
- Begin assembling species
- Check for human needs & ecosystem functions
- Feedback

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