The Total System Approach and Biodiversity

The total system approach discourages "treat-the-system" applications that don't provide sustainable solutions for ongoing pest management that mimics nature. The key to sustainable biodiversity within agroecosystems denotes a balance of natural effectiveness by indigenous populations, multitrophic level interactions, plant mixtures, soil microbes, existent plant defenses, and species (W.J. Lewis et al. 1997).

The total system approach encapsulates the management of the entire ecosystem on the farm to include minimal soil disruption, sufficient water uptake, cropping solutions, and weed availability to allow flora and fauna synergy within the environment and surrounding communities. The biological compositions of plants trigger responses to herbivores and their enemies. While some release natural toxins to discourage uptake, others exert chemicals that attract beneficial insects and parasites to dismember their opponents (W.J. Lewis et al. 1997).

The total system approach also complements the diversity of the landscape, promotes energy conservation and nonrenewable resources, sociological benefits for employment, public health, and a farmer's quality of life. The overall downside of pest management strategies are that biological, chemical, and physical therapeutic tools are our leading solution for managing pests, instead of using natural methods that neutralize problems over time. Being patient

enough to balance pest organisms by embracing naturally recurring synergies within biodiverse environments long enough to allow them to naturally adapt, instead of eliminating pests all together, is one of the biggest challenges that we face when taking on the total system approach (W.J. Lewis et al. 1997).

While the total system approach would be extremely beneficial to my bioregion and Texas in general, agricultural traditions in my life place are not necessarily privy to sustainable techniques. Due to the fact that sustainability is misinterpreted and not enough research substantiates why it is better (Becker 1997, 6), I think that many conventional farmers in Texas just want a quick fix so that they can turn a profit. Perhaps through their eyes, the total system approach doesn't make the same guarantees that other pest management strategies do so they fear that it's just too risky.

Works Cited

Becker, Barbara. "Sustainability Assessment: A Review of Values, Concepts, and Methodological Approaches." ***Issues in Agriculture 10.*** **Washington, D.C.: Consultative Group on International Agricultural Research, February 1997.**

W.J. Lewis, J.C van Lenteren, Sharad C. Phatak, and J.H. Tumlinson III. "A total system approach to sustainable pest management." ***The National Academy of Sciences*** **94 (November 1997): 12243-12248. Photo additionally credited from their scholarly journal publication http://www.pnas.org/content/94/23/12243.**

If You Plant You Will Grow

January, the time when we plan new beginnings. I hope this year, your new beginnings include growing plants! Now is the time to be ordering seeds, here are a few companies that you may like! Mother Earth News also has a seed directory in their Jan/Feb 2016 issue. Check out your agricultural extension office in your state to find a list of plants that grow well in your region. You can search your county through your state agricultural extension office to find what foods will grow well there, try googling your county/region and it should pull up some good leads.

For Texas, since it's my current region that I know the most about, here's a link to get you started for when you should plant in Central Texas, and what crops do well in Central Texas.

Johnny's is definitely one of the companies that I support. One of their greatest selling points is that they are employee owned. They offer great seed selections and their seed packs have a complete description of how to grow each crop, including germination, cultivation, and potential problems. Another way that they stand out is that their catalog is an excellent resource! They provide the same detailed information on each plant species which can be a very useful tool for

a grower! However their prices are high in relation to some other very good companies so I believe in balancing brands with excellent ethos is the best way to plan for my garden, and always check their sales which are fantastic!

Some of the other seed companies that I equally support include Territorial Seed Company that also provides a great description for growers and is Oregon based. The Seed Savers Exchange (Iowa) which is a nonprofit that allows members to have a sustainable impact on seed collection and has unique heirloom varieties. Botanical Interests (Colorado) has been a favorite the last few years because they have incredible prices, and beautifully illustrated seed packets! Stark Bro's (Missouri) is where I buy my bare root strawberries, and have been very successful with their grapes! They have fantastic customer service and if you aren't pleased with your plant they'll send you a new one or credit your account.

Pinetree, another Maine company, offers a great selection of herbs, garden varieties, and a myriad of homesteading supplies. Peaceful Valley out of California has great pricing on organic potatoes, and their catalog series stands out because each issue focuses on a different topic related to organic growing. Lastly, Baker Creek Heirloom Seeds are exceptional for their heirloom seed offerings. Their Mansfield, Missouri location is a great place to visit!

All of these products have a different marketing mix, brand, and are located in different bioregions but they all promote more sustainable food systems which is why I love them!

Benefits of Using the Polyface Farm Model in Central Texas

Organic Red Hard Wheat growing in our largest garden bed and planted as the first crop to build the soil! We purchased this seed from Thayer Feed and Seed LLC at the Mother Earth News Fair in Kansas 2014.

There are many benefits to the Polyface Farm model. Joel Salatin isn't caught up in labels but believes in the essence of husbandry practices and stewardship (Salatin, A New Old-Fashioned Food System 2015). His model aides the local community with access to affordable food and he shares his knowledge with those willing to learn how to incorporate biodiversity while turning a profit. Central Texas is a difficult region to be a "grass farmer." Land varies depending on the ecoregion and is a mix of rocky cavernous ridges, limestone, savannah, piney woods, and blackland prairies (Library of the University of Texas n.d.). Drought and a hot climate bring about other challenges that Salatin doesn't necessarily face in Virginia.

Salatin claims that his beef is "salad bar beef" because of the variety of leafy greens that are found in his fields (Salatin 2014). So every day he provides a different polyculture, diversified, paddock for nutrition which consists of dandelions, Kentucky blue grass, onion, narrow leaf plantain, wide leaf plantain, orchard grass, fescue, red clover, white clover, and buttercup (Salatin 2014). Although our region has the capacity to produce a variety of forage crops, different seasons really dictate what is grown but rebuilding the soil is a necessity.

Native grass seed by Native American Seed company would be introduced to the grazing system because it's what the buffalo used to forage, is extremely hardy, requires minimal watering and does well in Central Texas. We have access to organic feed from a local mill just a few miles away so it is ethically important we purchase soybean free, Non GMO feed from Coyote Creek as the most sustainable option. However gleaning food from other farmers and businesses is another great sustainable feed source that works well in a zero waste system.

A mixed farming system is sustainable as long as the number of animals and crops produced stays in balance with nature and production demands. A grazing pasture management system must be in place on any farm with livestock. Efficiently maintaining a sustainable pasture requires incorporating the forage-producing capacity and stocking rate to achieve the target level of animal performance over time without causing deterioration of the pasture's ecosystem (David L. Greene 2002, 1).

Salatin grows on a large scale farming system and a smaller scale farm could; be more attainable; require

less labor input; be more manageable; be financially feasible and sustainable. I also believe that food crops should be integrated in order to be more self sufficient. Salatin raises beef, chicken broiler meat, chicken eggs, rabbits, and pigs on between 100-500 acres (Pollan, Joel Salatin's Polyface Farm 2006). By reducing farm scale to accommodate smaller percentages of livestock while encouraging heritage breed diversification is imperative to the preservation of endangered species. In my experience, raising heritage breed chickens in Central Texas creates more resilient food systems. Reducing farm size would allow the farmer to have a better quality of life. (Pollan, Joel Salatin's Polyface Farm 2006). There is a demand for access to healthy and affordable food in Central Texas as well as markets to sell value added products through CSA, farmers markets, and restaurants (Austin Energy Depletion Risks Task Force, Roger Duncan 2009).

Austin needs to minimize food security issues in order to be more sustainable but Austin only represents a fraction of Central Texas. Having access to a farm store and being able to visit the farm to understand where your food comes from plays a crucial role in establishing a better food system. Building a farm brand using a sustainable whole farm model will encourage community members to become a part of the food movement. Educational opportunities aid in the development of future farmers which is essential to making our bioregion more sustainable.

"When we say we are grass farmers, what we're saying is we are honoring and producing the most historically normal, carbon cycle, nutritive cycle, energy cycle that is solar driven in real time and actually builds soil like nature has done forever (Salatin, Episode 516

– Polyface Farm 2014).”

Bibliography

Austin Energy Depletion Risks Task Force, Roger Duncan. *The City of Austin.* Austin Energy Depletion Risks Task Force Report, Austin: Austin Energy, 2009.

David L. Greene, Stanley W. Fultz. “Understanding Pasture Stocking rate and Carrying Capacity.” *Fact Sheet 788.* College Park: Maryland Cooperative Extension University of Maryland, 2002.

Library of the University of Texas. *Figure 1. Balcones Escarpment Area, Central Texas.* Austin.

Pollan, Michael. “Behind the Organic-Industrial Complex.” *The New York Times Archives.* May 13, 2001. http://www.nytimes.com/2001/05/13/magazine/13ORGANIC.html?pagewanted=all (accessed October 19, 2014).

–. “Joel Salatin’s Polyface Farm.” *Strategies for Sustainable Agriculture: Rotational Grazing.* Compiled by Rooy Media LLC. November 29, 2006.

Salatin, Joel. *Episode 516 – Polyface Farm* Growing a Greener World TV, (October 23, 2014).

–. “A New Old-Fashioned Food System.” *Mother Earth News*, January 2015: 67-69.