Sustainable Agriculture/Locally Grown

Special Topic
SC Envirothon 2014
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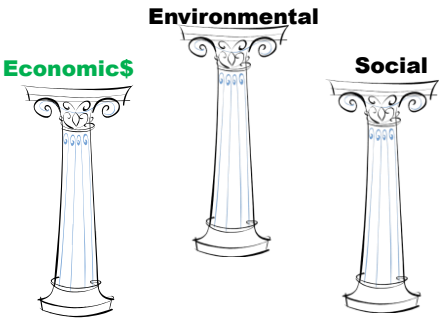
Sustainable Farming

- Sustainable agriculture is the act of farming using principles of ecology, the study of relationships between organisms and their environment. The phrase was reportedly coined by Australian agricultural scientist Gordon McClymont. It has been defined as "an integrated system of plant and animal production practices having a site-specific application that will last over the long term" For Example:
  - Satisfy human food and fiber needs
  - Enhance environmental quality and the natural resource base upon which the agricultural economy depends
  - Make the most efficient use of non-renewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls
  - Sustain the economic viability of farm operations
  - Enhance the quality of life for farmers and society as a whole[2]

Three Pillars of Sustainability



Indicators of Sustainable Farming

- Profitability
- Environmental Stewardship
- Quality of Life (for agricultural society)

Profitability

- Generates profits over the long-term
- Maximizes farmer/rancher control over crops and prices
- Supports a family at a standard of living that includes health care, education, and vacations
- Minimizes reliance on government subsidies
- Has a succession plan. Succession plan means have a plan for who will operate the farm after the current ownership.

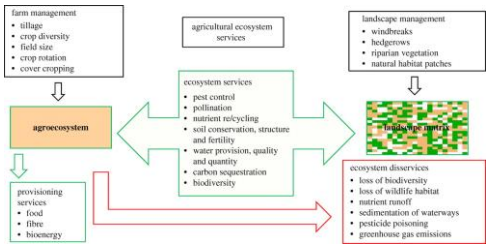
Environmental Stewardship

- Builds and maintains soil organic carbon to level appropriate for soil and climate
- Prevents soil erosion
- Balances nutrient inputs and outputs
- Maintains clean water
- Maximizes water conservation
- Minimizes dependence on non-renewable resource fuels and purchased production inputs
- Minimizes use of toxic substances
- Uses integrated pest management practices
- Maximizes crop rotation
- Encourages diversity of plant varieties and/or livestock breeds
- Encourages diversity of plants and animals within the landscape
- Minimizes land under agricultural production
- Minimizes air pollution problems such as odors, dust, and greenhouse gasses
- Minimizes solid waste generation
- Optimizes the management and use of on-farm resources
- Protects and renews soil fertility

Quality of Life

- Allows time for family, hobbies, and/or community participation
- Provides safe, nutritious food, fiber, and/or biomass energy
- Treats farm workers well
- Treats animal humanely
- Increases the surrounding communities economic and civic well being i.e. provides the capacity for the community to support local schools, houses of worship, or other community institutions
- Contributes to the scenic beauty of community
- Contributes to farming/ranching being seen as respected professions
- Encourages involvement of the next generation

Impacts of farm management and landscape management on the flow of ecosystem services and disservices to and from agroecosystems.



Power A G Phil. Trans. R. Soc. B 2010;365:2959-2971

Soil Basics

- Soil ain't dirt!
- Composting/Green manure
- Crop rotations
- Cover crops
- Conservation tillage
- No need for knowledge beyond the soil station standards

Sustainable Farming

- Should enhance and protect:
  - water quality
  - water quantity
  - Biodiversity
  - manage insect pests, disease, and weeds.

How many roads must you travel?

- Grocery store food travels an average of 1518 miles*
- "Local" generally considered within 100 miles

*Leopold Center for Sustainable Agriculture at Iowa State University

Building Soils

- Composting
- Crop rotations
- Cover crops
- Conservation tillage
- Managing intensive grazing systems

Conserving Water

- Conservation tillage
- Cover crops
- Plant selection
- Precision agriculture
- Water re-use
- Sub-surface drip irrigation.

Pollinators

The Birds and the Bees

- Native Pollinators

Attracting Native Pollinators

- Protect habitat
  - Summer Breeding/foraging habitat
  - Secure overwintering sites
  - Nectar corridors
- Build shelters
  - Bat boxes
  - Butterfly boxes
  - Solitary bee boxes
- Plant food – density and timing

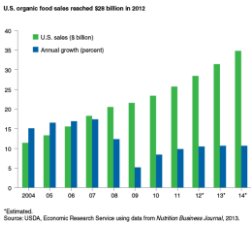
IPM

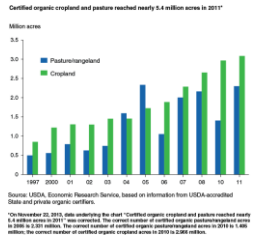
- Relies on a combination of common-sense practices.
- Comprehensive information on the life cycles of pests and their interaction with the environment.
- Variety of available pest control methods
- Balance most economical meanswith the least possible hazard to people, property, and the environment.

What does "Organic" Really Mean?

- CFR in your materials, but:
- No human sewage sludge fertilizer
- Avoidance of synthetic chemical inputs not on the National List of Allowed and Prohibited Substances (e.g. fertilizer, pesticides, antibiotics, food additives, etc.), genetically modified organisms, irradiation, and the use of sewage sludge;
- Use of farmland that has been free from prohibited synthetic chemicals for a number of years (often, three or more);
- Keeping detailed written production and sales records (audit trail);
- Maintaining strict physical separation of organic products from non-certified products;
- Undergoing periodic on-site inspections.

Organic is Growing





Is Organic Sustainable?

YES!

- Supports Ecosystem services
- Reduces exposure to harmful substances
- Healthier products
- Better social responsibility
- DEATH TO MONSANTO!!

NO!

- $$$$$$ compared to conventional farming
- Can't feed the world this way
- Greenwashing
- No evidence of healthier foods

Fueling the Farm

- Improving efficiency
- Biosolids
- Methane
- Ethanol
- Biodiesel
- Compost/heat cogeneration

Getting to Market (and getting paid)

- CSAs
- Food hubs
- Farmers markets
- Farm to school.

SCENARIO

RFP - Food Security in South Carolina

- SCDA Mission Statement
  - "to promote and nurture the growth and development of South Carolina's agriculture industry and its related businesses while assuring the buying public of safety and security. Our shared vision is for the state's economy to grow and prosper providing everyone, producers and consumers, opportunities to enjoy the fruits of agriculture."

Develop a Program…

- Urban agriculture expansion
- Elimination of food deserts
- Development of local food infrastructure
- Expansion of the "Certified SC" brand.
- Reproducable
- Scalable

Bonus Points

- Reclaim lost land (*viz*. brownfields)
- Strengthen underprivileged communities
- Otherwise improve natural resource management in South Carolina.

Caveat

- 1-3 awards
- $4 M maximum award (show a reasonable budget)
- Cost match requirement ($1:$1)
  - Real dollars
  - Real estate donations
  - Other in-kind contributions.

Is urban agriculture legal?

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