Looking at Agricultural Sustainability

Understanding “Sustainability” and “Whole Farm” Concepts
What is sustainable agriculture?
USDA Sustainable Agriculture Research and Education program definition

- Satisfies human food and fiber needs;
- Enhances environmental quality and the natural resource base upon which the agricultural economy depends;
- Makes the most efficient use of nonrenewable and on-farm resources and integrates, where appropriate, natural and biological cycles and controls;
- Sustains the economic viability of agricultural operations and their communities; and
- Enhances the quality of life for farmers and ranchers and society as a whole.
Simplified definition:

- Providing a more profitable farm income
- Promoting environmental stewardship
- Promoting stable, prosperous farm families and communities
Three Aspects of Agricultural Sustainability

- Economic factors
- Environmental concerns
- Social issues
Goal 1: Promoting environmental stewardship – Examples:

- Improving soil quality
- Reducing dependence on non-renewable resources
- Minimizing adverse impacts on safety, wildlife, water, natural resources
Goal 2: Promoting stable, prosperous farm families and communities – Examples:

- Keen attention to health and safety of family and farm workers
- Establish a community connection
- Purchasing local products, inputs, and equipment
- Working for farmland preservation
Goal 3: Providing a more profitable farm income – Examples:

- Reduce expenses – inputs like fertilizers, etc.
- Diversify so you have a broader product base
- Capture more of the consumer dollar for your product
- Increase the “value” of your products
Elements of Sustainability

from SAN publication, “Exploring Sustainability in Agriculture”
Elements of Sustainability

- IPM
- Rotational Grazing
- Soil conservation
- Water quality / wetlands
- Cover crops
- Crop and landscape diversity
- Nutrient management
- Agroforestry
- Alternative markets
Soil building
Direct marketing
Water conservation
Diversity

Tools for Sustainable Ag

IPM
Farmers promote sustainability by:

- Implementing a variety of tools or practices
- Decisions and ability to implement practices depend on, or are influenced by, the whole farming system
- The degree to which the tools are implemented can lead to variations as to how sustainable the farm might be
Sustainable agriculture is a continuum

Less sustainable thinking  More sustainable thinking

Get through this year  Next few years make or break  Pass farm to kids  Stewardship for many generations
Insect Management

Less sustainable practice

Calendar spray insecticides (on a pre-determined schedule)

Scout for insect pests, then spray non-selective insecticide

Scout for insect pests, then spray selective, least-toxic pesticide

More sustainable practice

Use cultural practices and beneficial insects to control pests
Crop Rotation

Less sustainable practice

Monoculture (same crop in same field each year)

Two years between the same crop planted in the same field

Three years between crops planted in the same field

Four years between the same crop planted in the same field

More sustainable practice
Weed management

Less sustainable practice

- Apply herbicides as primary weed control
- Apply reduced rates of herbicide and cultivate

More sustainable practice

- Cultivate to remove weeds
- Use allelopathy, smother crops, and mulches to suppress weeds
Organic Matter Maintenance

**Less sustainable practice**
Add crop residues only to the soil

**Add animal manures plus crop residues**

**More sustainable practice**
Add cover crops, animal manures, plus crop residues

Add compost, cover crops, plus crop residues to the soil

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Relationship to Consumer

**Less sustainable practice**
- Producer is unknown to consumer
- Consumer has loyalty to grower brand

**More sustainable practice**
- Consumer contact with grower at direct markets
- Consumer commitment to farm through practices such as community supported agriculture
In summary...

Agriculture Sustainability is a continuum

Three components are environment, economics and social

Site specific to each farm and farming system
Sustainability in Ag - Summary

1. Economic, environmental and social factors are all important

2. Sustainability is site specific but some indicators of sustainability have been established.

3. Sustainability is based on a set of progressive steps towards a long term goal.
Credits

Presentation developed by Cultivating Success™: Sustainable Small Farms Education.

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