USDA Integrated Approaches and Resources for Erosion Prediction and Control in Sustainable Farming Systems

Linda Oyer Scheffe and David T. Lightle

Potential Benefits of Sustainable Systems: Water Resource
- Conserved surface and ground water quantity and quality leading to higher yields
- Reduced pumping costs
- Water losses minimized (evaporation, runoff, and deep percolation)

Other Potential Benefits
- Reduced overall on-farm energy use
- Increased beneficial use of fertilizer and other agricultural inputs
- Record keeping is used as a tool in decision-making and management of current and future water resources

Potential Benefits of Sustainable Systems: Soil Resource
- Improved soil quality (greater yields, more crop production, reduced wind and water erosion)
- Proper salinity and nutrient management (reduced use of soil amendments, reduced runoff and leaching)

Integrated Irrigation/Nutrient/Residue/Salinity Management/Soil Quality Field Trials/Demos

Other Considerations
- Take an inventory; think about every field/pasture/stream/well
- What are the natural resources on your farm? What practices can I apply to build soil quality? To recycle nutrient inputs?
- How can I conserve/produce energy or reduce energy use?

Sustainable Farming Systems must integrate:
- Soil Quality, including Soil Erosion
- Water Quality
- Nutrient and Salinity Management
- Insect and Disease Management
- Production/Economic
- Marketing
- Energy and Air Quality
- Economics
- Whole Farm Planning
- Watershed, Marketing Opportunities

Build Soil Quality
- Use cover crops (annual and perennial) that provide habitat for beneficial organisms, and soil amendment inputs
- Build organic matter content
- Manage/protect soil organisms to preserve biodiversity
- Rotational grazing, prescribed grazing

Develop Conservation Plan
- Integrated Approaches (cover crops, crop rotations, residue management)
- Inventory, resources, and develop conservation plans for whole farm
- Use soil quality, including aggregate stability
- Use crop residue management to improve soil quality

Other Considerations
- Use integrated systems approach (ecosystem, whole farm, watershed), use integrated tools to assess resource concerns
- Use integrated planning and management tools (technology "exchange" vs. "transfer")
- Develop whole farm conservation plans creatively and flexibly, step by step
- Consider on-farm and off-farm effects
- Focus on keeping energy flow through the integrated system
- Emphasize ecological benefits, improve biodiversity
- Improving soil quality is key to improving soil, water, air, plant, and wildlife health
- Use case studies, field trials, on-farm research/demonstrations, farmer-to-farmer networks
- Interdisciplinary teams including producers and partners
- Farmers need to demand quality service and know how to make and management of current and future resources
- Need user-friendly fact sheets, brochures on integrated systems

Keys to Achieving Sustainable Farming
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