



United States Department of Agriculture



# 2017 Envirothon Special Topic Agriculture Soil and Water Conservation Stewardship

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# Soil and Water Conservation Best Management Practices (BMPs)



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# Cropland BMPs



## Residue and Tillage Management

### Tillage Systems:

- Conventional Tillage
- No-Till
- Conservation Tillage/Minimum Tillage

### Benefits:

- reduce sheet, rill, and wind erosion
- maintain or improve soil quality and organic matter content
- reduce energy use
- increase plant-available moisture



# Cropland BMPs



## Conservation Crop Rotation

**For crop diversity, a rotation should contain different crop types:**

- Warm season grass
- Warm season broadleaf
- Cool season grass
- Cool season broadleaf

**Typical rotations for our area:**

- Corn-soybeans
- Corn-small grain-soybeans
- Corn-small grain-soybeans-soybeans.
- Corn-corn-small grain-soybeans-vegetables

**Benefits:**

- reduce sheet, rill, and/or wind erosion
- maintain or increase soil health and organic matter content
- reduce water quality degradation due to excess nutrients
- improve soil moisture efficiency
- reduce plant pest pressures



# Cropland BMPs

## Nutrient Management

### Nutrient Management Plan:

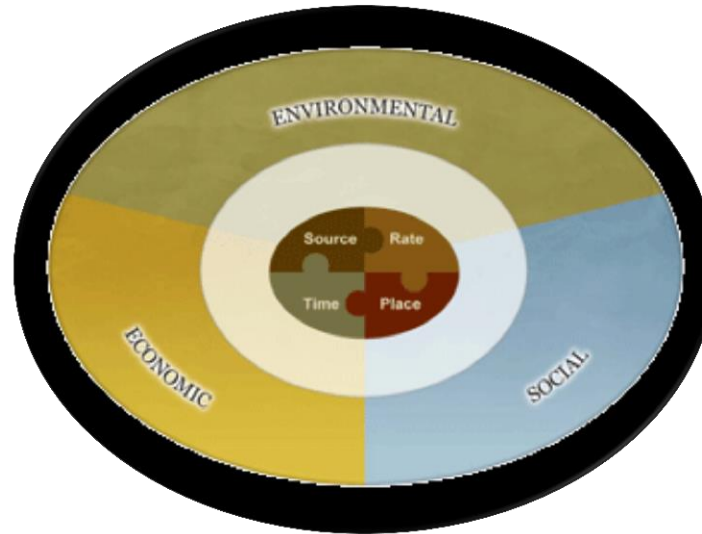
- Soil testing
- Yield goals
- Nutrient recommendations
- Implementation

### 4Rs, Right:

- Source
- Rate
- Time
- Place

### Benefits:

- budget, supply, and conserve nutrients for plant production
- minimize agricultural nonpoint source pollution of surface and groundwater
- properly utilize manure or organic by-products as a plant nutrient source
- protect air quality by reducing odors, nitrogen emissions (ammonia, oxides of nitrogen), and the formation of atmospheric particulates
- maintain or improve the physical, chemical, and biological condition of the soil



# Cropland BMPs



## Integrated Pest Management

**An approach to pest control that combines biological, cultural and other alternatives to chemical control with the responsible use of pesticides. Pests can be either insects, weeds, or diseases.**

### **The objective of IPM is to**

- Identify pest and their populations through scouting
- Establish economic thresholds for crops so you know if treatment is cost effective
- Control pests in the right place at the right time
- Control pests with the right product at the right rate

### **Benefits:**

- reduce pesticide risks to water quality through leaching, solution runoff, and adsorbed runoff
- reduce pesticide risk through drift and volatilization
- reduce pesticide risk to pollinators and other beneficial species through direct contact



# Cropland BMPs



## Cover Crops

### Cover crops are:

- Planted into standing cash crops or after harvest of cash crops
- Cereal grains, brassicas, or legumes
- Planted as a monoculture or in mixes
- Not harvested

### Benefits

- reduce erosion from wind and water
- maintain or increase soil health and organic matter content
- reduce water quality degradation by utilizing excess soil nutrients
- suppress excessive weed pressures and break pest cycles
- improve soil moisture use efficiency
- minimize soil compaction

