RESOURCE MANAGEMENT SYSTEM FOR CROPLAND EROSION IN KENTUCKY

William H. Amos, Jr., Agronomist
Soil Conservation Service, Lexington, Kentucky

The Soil Conservation Service assists land users in planning and applying resource management systems.

A resource management system is a combination of conservation practices identified by the primary use of land or water that, if installed, will at a minimum protect the resource base by meeting tolerable soil losses, maintaining acceptable water quality, and maintaining acceptable ecological and management levels for the selected resource use. Resource management systems, in addition, may include conservation practices that provide for quality in the environment and quality in the standard of living.

The resource management system will address the following:

1. Quality in the resource base

   A. Soil loss will be kept to t or below
   B. Improve drainage for the crops produced
   C. Organic matter, tilth and fertility will be improved or maintained

2. Quality in the standard of living

   A. Produce optimum crop yield
   B. Produce high quality crop
   C. Improve management efficiency

3. Quality in the environment

   A. Minimize onsite and offsite pollution
   B. Improve visual quality
   C. Improve wildlife habitat
   D. Provide for diversity of plants, animals, and vegetative patterns
   E. Improve recreation opportunities
   F. Resource use will be compatible

Resource management systems are made up of a combination of conservation practices identified by the primary use of the land, such as cropland.

Examples are -

1. Conservation cropping system

2. Contouring
3. Conservation tillage (no-till)
4 Contour stripcropping
5. Grassed waterways
6. Terraces with pipe outlets
7. Diversions
8. Grass and legumes in rotations
9. Cover crop
10. Crop residue management

Resource management and no-tillage systems commonly used in Kentucky are -

(1) Small grain/soybeans (double cropping) or grain sorghum (milo)

(a) Small grain harvested for grain and soybeans no-till planted in the small grain residue; soybeans harvested and small grain planted with no-till planter 1/ in soybean residue. All residues left on the surface. Two grain crops harvested in one year.

(b) Waterways, diversions, terraces, and stripcropping practices used as applicable.

(c) Predicted average annual soil losses of 0.68 tons as compared to 16 tons per acre per year from conventional tilled soybeans. 2/

(2) Corn-small grain/soybean (single and double croppping)

(a) First year, corn no-till planted in small grain, and soybean residue; corn harvested for grain and small grain no-till planted 1/ in corn residue. Second year, small grain harvested for grain and soybeans no-till planted in the small grain residue, soybeans harvested and small grain cover crop no-till planted 1/ in soybean residue. All residues left on the surface. Three grain crops harvested in two years.

(b) Waterways, diversions, terraces, and stripcropping practices used as applicable.

(c) Predicted average annual soil losses of 0.68 tons as compared to 16 tons per acre per year from conventional tilled corn and soybeans. 2/

(3) Corn, continuous

(a) Corn no-till planted in killed small grain cover crop. Corn harvested for grain or silage and small grain cover crop no till planted. 1/ All residue left on surface when corn harvested for grain.

(b) Waterways, diversions, terraces, and stripcropping practices used as applicable.

(c) Predicted average annual soil losses of 0.68 tons as compared to 16 tons per acre per year from conventional tilled corn for grain. 2/

(4) Corn, followed by one or more years of meadow (pasture)

(a) First year, corn no-till planted in killed sod. Corn harvested for grain or silage and small grain cover crop no-till planted. 1/ Meadow fall or spring seeded in small grain. Second year, small grain harvested for grain, hay, or silage. All meadow harvested for hay. Corn residue left on surface when harvested as grain.

(b) Waterways, diversions, terraces, and stripcropping practices used as applicable.

(c) Predicted average annual soil losses of 0.68 tons as compared to 16 tons per acre per year from conventional tilled corn for grain. 2/

The above resource management and no-tillage systems affect the quality in the (1) resource base (soil) for sustained use by reducing the annual soil loss from 16 tons to less than one ton per acre; (2) environment by minimizing onsite and offsite pollution by pesticides, nutrients, and sediments and the additional crop residues increase the amount of wildlife food and cover during the winter months; and (3) standard of living by increasing crop yields, reducing production cost and sustaining resource productivity.

1/ May also be broadcast or airplane seeded.

2/ Soil loss predicted by the USLE for a Loring silt loam soil with a slope of 4 percent and a length of 200 feet.