

Conservation Systems that Meet Tolerance Limits on Highly Erodible Lands

By Arnold D. King¹

The Conservation Compliance provision of the Food Security Act of 1985 has had a dramatic impact on the Soil Conservation Service and the farmers we serve. We are tooling up to help our farmers plan and install conservation practices that will get them in compliance, if they are not already there. The legislation enforces our objective of using land within its capability, so that productivity is maintained for the benefit of future generations.

The bottom line is that farmers who plan to continue producing commodity crops on land identified as highly erodible are required to have approved conservation plans by 1990, and the planned practices must be installed by 1995. Farmers must comply if they wish to participate in many USDA programs. This poses a tremendous workload, and we are concentrating most of our efforts toward these responsibilities. Erosion prediction will play a big role in applying conservation provisions of the Food Security Act. It is very important that models reflect state-of-the-art erosion prediction technology.

We have about 45.5 million hectares of land identified as highly erodible, using the formula $RKSL/T$ for water "T" erosion and $IKCIT$ for wind erosion. These formulas include the parameters of the wind and water erosion equations that indicate potential erosion without the influence of management.

As we apply conservation practices, these potential erosion rates are reduced to reflect predicted erosion rates under different levels of management.

A few major practices used to reduce erosion to acceptable on cropland levels include the following:

1. Grassed Waterways
2. Diversions
3. Terraces
4. Contour Farming
5. Stripcropping
6. Windbreaks
7. Conservation Tillage

In addition, many cultural practices, such as summer fallowing, improved cropping sequences, fertility management, deep breaking, chiseling, and other management inputs, work together to provide acceptable protection from wind and water erosion on cropland.

Soil conservationists do not depend on single practices to reduce erosion to acceptable levels, and practices do

not always perform adequately when applied alone. Terraces usually do not result in adequate erosion control unless a crop residue practice is included to protect against sheet and rill erosion. And conversely, conservation tillage may need support from terraces, stripcropping, diversions, or waterways to provide protection from concentrated flow erosion. With these interactions in mind, our conservationists work with producers and plan management systems consisting of practices or combinations of practices that, if applied, will result in erosion control and other ecological benefits.

We feel strongly that some form of conservation tillage will be necessary on most of the land identified as highly erodible. With field crops such as corn, soybeans, grain sorghum, and wheat, extensive research and field experience have established conservation tillage as a household word in the agricultural community. For these crops, the technology is well-developed. However, conservation tillage systems for cotton, peanuts, tobacco, and a few others have not been sufficiently field-tested, and accepted methods must be developed. We hope research and development will continue on this very important practice.

Improved weed control technology is the key to increasing acceptance of conservation tillage, and we hope the current trend in herbicide development will continue.

Contour stripcropping is used extensively in some areas. This practice is very effective against sheet and rill erosion and should be expanded to several other areas of the nation. It has proven to be a very efficient method of reducing erosion, and practices such as this, which have not had much appeal, may become more widely accepted by the nation's farmers as we move into conservation compliance.

Contour farming is effective when used with other practices. Acting alone, it sometimes causes more problems than it prevents. Terraces, stripcropping, conservation tillage, and other practices complement contour farming. Another practice that accomplishes similar results is furrow diking, which is used in a few areas in West Texas. South Carolina is evaluating the practice to control erosion and improve sprinkler irrigation efficiency. The practice has a lot of potential for erosion control and water conservation.

In summary, agency personnel, industry, and farmers will work together more closely than ever to get conservation applied to the nation's cropland and to get most of our farmers in compliance with conservation provisions of the Food Security Act of 1985.

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