Organizing Terrace Maintenance Demonstrations

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The conservation provisions of the 1985 and 1990 Farm Bill require that lots of terraces be built in Kansas in addition to the many miles already built. By January 1, 1995, almost 160,000 miles of terraces and 180,000 acres of waterways must be installed. After 1995 these terraces and waterways must be maintained by farmers in order for them to stay eligible for Farm Bill benefits such as deficiency and CRP payments. This publication is designed to assist county Extension and SCS personnel in the organization of terrace and waterway maintenance demonstrations.

To demonstrate proper maintenance of terraces and waterways, use the following guidelines:

- Explain benefits of terraces, waterways and other conservation practices such as residue management.
- Explain erosion control and compliance requirements of the 1985 and 1990 Farm Bill for terracing.
- Show equipment options for terrace maintenance and proper techniques for their use.
- Discuss cost of construction and maintenance and frequency of maintenance.

Site Selection

Site selection is a key aspect of a successful demonstration. A site with easy access from roads, a wide entrance to the field and ample parking space is preferred. Select terraces that need maintenance. An overtopped terrace that can be easily repaired is a good choice if the proper equipment is available.

It does not make sense to repair and maintain a set of terraces the operator does not like or that should be redesigned. The old guidelines under which many terraces were built do not fit modern equipment and cropping practices. The most frequent faults are terrace ridges with front and back slopes too short to fit the operator's equipment, terrace interval too narrow to fit the equipment, and curves in the terrace that are too tight for modern equipment to follow.

Selecting and Arranging for Equipment

Any machine that will move soil readily can be used for terrace maintenance. Normal farm equipment which may be used includes moldboard and one-way plows, 3-pt. blade, front blade, front end loader, wheeled blade, disk plows, speed mover, grader and whirlwind terracer. The moldboard plow probably should be shown at every demonstration because it still is the implement most commonly used for maintenance on farms and ranches in Kansas. Other equipment will depend upon what is available locally and what producers, contractors and dealers are willing to bring to the site. Contractors' equipment such as belt terracer, bulldozer, motor patrol or grader and scraper can also be shown. This provides contractors a chance to show off their equipment and skills. Some producers have used this type of equipment. Manufacturers might want to show some equipment that could be purchased by Conservation Districts or farmers. Try to limit the demonstration to no more than eight pieces of equipment.

Plowing Terraces

The moldboard plow is an excellent tool to maintain and build terraces; however, the procedure requires practice and more tractor power than most operators have available. Most tractor and plow combinations were selected to fit the tillage conditions on the farm. As a consequence, the tractor does not have enough power to properly build or maintain a terrace. In order to build or maintain a terrace with a plow, it is necessary to slide the furrow slice sideways to form a ridge.

Normal moldboard plowing turns the furrow slice over but does **not** move it sideways. A good rule-of-thumb for terrace building and maintenance is to use a tractor-plow combination that has one or two bottoms less than would be pulled with the tractor for regular plowing. It is essential to either find a larger tractor or a smaller plow if terrace maintenance with a moldboard plow is to be done properly. It is difficult to over-emphasize that adequate power is needed for the plow. A ground speed of 5 to 6 miles per hour (tach speed of 6 to 7 mph) is absolutely essential. An older style of moldboard is also helpful. They were designed to plow at slower speeds and will throw the soil farther at a given speed.

Terrace construction and maintenance with a moldboard plow normally calls for multiple passes over the same ground which means that the plow will operate on loose soil. If there is not enough power to maintain an adequate speed, the procedure will not work.

Practice Before Demonstrating

Arrange to meet with the person who will demonstrate maintenance with the selected equipment prior to the demonstration. If this person has maintained terraces with a moldboard plow, arrange to see some of them. If the terraces appear to be adequate in size and shape, there will be no need to practice prior to the demonstration. But many persons have not properly maintained terraces with a moldboard plow. Practice for a couple of hours prior to the demonstration can make all the difference in the world.

The terrace size, interval and alignment should be discussed with the operator prior to the day of the demonstration. The operator will learn the routine and feel confident in doing the demonstration, and you will be sure that the demonstration will be successful. A poor plowing demonstration is worse than no demonstration at all, so allow time for practice.

Refreshments/Meals

A meal is always a good way to help draw attendance and provides a nice beginning or ending. A meal or refreshments also help to get people there on time. Sponsors have included local bankers, local agribusinesses and conservation districts. As an alternative to a meal, refreshments at the beginning or end also are nice.

Suggested Program

Introduction. 6-8 minutes. (Don't let this drag.)

■ Introduce key people such as Conservation District Board sponsors, ASCS Board and Extension Agricultural Program Development Committee.

■ ASCS briefly reviews maintenance policy for structures and status of cost-share funds for new or rebuilt structures.

■ SCS briefly reviews specifications for new construction of terraces and waterways.

Erosion control/Compliance/Residue Management. About 8 minutes.

■ Why are terraces needed?

■ How do terraces fit into conservation plans for the Conservation Compliance Provision of the 1985 and 1990 Farm Bill?

■ Why is residue management important in terrace maintenance/ compliance?

Terrace Outlet Maintenance/Waterways. 10–15 minutes.

Terrace systems must have adequate outlets, even some level terraces which normally depend on infiltration. The outlet may be a waterway, permanent pasture or roadside ditch. In most cases the surface will be grass, and maintenance should include the following points:

■ Soil test and fertilize for a vigorous grass growth.

■ Harvest grass to help control sediment deposits, encourage a vigorous growth, control unwanted species, and provide income. Grazing is a good method if prohibited when the soils are wet.

■ When waterway capacity becomes inadequate, reshape or add berms to restore capacity.

■ Repair erosion damage and reseed as needed.

■ Where the terrace empties into the waterway, the runoff velocity usually changes causing sedimentation. This sedimentation needs to be controlled as it will cause water to back up into the terrace channel.

Terrace Maintenance Discussion. 10-15 minutes.

A brief discussion of terrace maintenance principles and key points should include:

■ Regular maintenance is needed to maintain channel capacity. Erosion from wind, water and tillage reduces ridge height, and sediment deposited in the channel reduces channel capacity.

■ Breaks in terrace ridges due to overtopping must be filled before regular maintenance can begin. A scraper or blade will usually do this task, but most regular maintenance procedures will not adequately fill these breaks.

■ The extra traffic across the terrace ridge at the outlet or within headlands may require special attention during construction and maintenance.

■ Measure height of the terrace ridge and width of channel periodically to evaluate maintenance practices. Discuss minimum requirements for terrace height and shape.

■ The type of maintenance practice will dictate terrace shape. Narrow, sharp ridge and inadequate channel capacity are usually the result of inadequate or incorrect maintenance practices.

■ Know the size of farming equipment that is used or planned and select the terrace width and shape to match equipment. Do maintenance to obtain the desired shape. Any machine which moves soil can be used.

■ There is not just **one** way to do maintenance.

Demonstrate Terrace Maintenance. 30-60 minutes.

Using farmer-owned and operated equipment or contractor/manufacturer equipment:

■ Show repairs of outlet transition and any overflows/breaks with blade, scraper or other equipment before terrace maintenance begins.

■ Measure terrace ridge height with straight board, carpenters level and tape measure (visual estimation is usually over-estimated by twice or more the actual height). A guideline of one foot minimum height for gradient terraces (1.5 feet for level terraces) is used to determine when maintenance is needed. Build terrace at least six inches beyond the required height to compensate for soil settling.

■ Demonstrate terrace maintenance with a moldboard or one-way plow and other pieces of equipment.

■ On a narrow ridge, make several rounds by plowing toward the ridge and moving over about two feet with each successive pass. Plowing the full implement width and making several passes over the same area may work better on some machines. This is basically the same as the procedure used to build a terrace with a plow. With an adequate ridge size but inadequate height, first plow the ridge up and then plow the channel out to both sides. This double plows the front slope segment and places a triple back furrow on the ridge.

■ Use before and after terrace ridge heights to show accomplishments.

■ Talk to operators while viewing the finished terraces, discuss techniques used, power requirements, cost per linear foot. Allow contractors and manufacturers to advertise here.

Optional Program Ideas

■ Conservation tillage and planting equipment may also be shown or demonstrated at the field day. Too much equipment in the field, however, tends to detract from the objective of emphasizing terrace maintenance.

■ A root pruning plow demonstration for shelter belts and windbreaks has been a nice added attraction. It is of particular interest and is becoming quite popular in the Great Plains. Many Conservation Districts/Wildlife and Park offices have root pruning plows for use or rent.

■ Weed identification and herbicides for weed control can be a valuable addition in some locations.

■ Consider demonstrating waterway reshaping if a suitable waterway is available. Many waterways need reshaping after about 20 years.

■ Keep the terrace section fairly short. The goal is to demonstrate the concept and not to maintain the entire terrace. More than one piece of equipment can be used on the same terrace. Arrange for the terrace work to be completed during or after the demonstration so the farmer is not left with unfinished terraces.

Before the Demonstration

■ Be sure to contact all local media and publicize demonstration details early.

■ Involve the Conservation District, Soil Conservation Service, County Extension office, Agricultural Stabilization and Conservation Service and other farm organizations as appropriate.

■ Schedule a rain date or alternate location in case it's too wet.

■ Provide directions/location signs for the demonstration.

■ Be sure tractor has enough power to pull the plow at least 5 mph ground speed (6 mph tach speed) or more even in the tough spots.

Related Publications

Maintaining Terraces, C-709
Management of Grass Waterways, L-651
Plowing Terraced Land, AF-17
Terrace Outlet Alternatives, AF-70
Terrace System Options, AF-74
Wheat Residue, L-781
Grain Sorghum Residue, L-782
Soybean/Sunflower Residue, L-783
Corn Residue, L-784
Small Grain Residue, L-785

Videos available from the Soil Conservation Service:
"How to" Conservation on Your Own.
Building Your Own Terraces

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