Terraces

Nebraska Conservation Planning Sheet No. 2

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Grassed Backslope

Flat Channel

Narrow Base

Broadbase

What are terraces?

Terraces are earthen structures built to intercept runoff water on moderate to steep slopes. They reduce the rate of runoff and allow soil particles to settle out. The resulting cleaner water is then carried off the field in a non-erosive manner. Typically, several terraces are built on a hillside.

How it helps the land

Terraces are used to reduce sheet and rill erosion and prevent gully development. They are also used to retain runoff for moisture conservation and groundwater recharge. They are most effective when used in combination with other practices, such as residue management, crop rotations, and field borders.

Terracing reduces sediment in road ditches, lakes, and streams by keeping the soil on the hill. Grassed slopes of some terraces provide cover for wildlife.

Where the practice applies

Terraces transform long slopes into a series of shorter slopes. They are used primarily for soil erosion reduction, including small gully control. They also apply in areas needing to retain runoff water for moisture conservation.

Where to get help

For assistance in planning, laying out, and designing a terrace system on your farm, contact your local Natural Resources Conservation Service office. Also ask NRCS for a short video segment, "How to maintain terraces." It's part of a video series called "Conservation On Your Own."

Requirements of terracing

Several important factors must be considered when planning and designing a terrace system.

- Select from two types of terraces:
  - **Gradient terraces** are designed to slow runoff water and guide it to a stable outlet like a grassed waterway. (See *Grassed Waterways* conservation planning sheet.)

- **Storage terraces** collect water and store it until it can infiltrate into the ground or be released through an underground outlet. When runoff water is to be retained, the channel of the terrace is constructed level. Generally, level terraces are built in areas of low rainfall or where soils have high infiltration rates. When water is released, underground outlets with riser inlets are the most common type of outlet.

- Terraces generally fit the contour of the land. Deviations from the contour must be limited and are allowed only when necessary to obtain good alignment. Always check with the NRCS office before allowing any deviation from the design.
- Terraces are designed to control runoff from a 10-year frequency, 24-hour storm. For storage terraces, capacity is increased to store runoff and hold ten years of sediment accumulation.
- Terraces are spaced to control sheet and rill erosion and control small gullies. Terrace spacing is determined by several factors including soil type, slope, and the use of other conservation practices such as residue management.
- There are four typical terrace shapes. The pictures on the front illustrate each shape. Following is a brief overview of each.
  - **Steep or grassed backslope terraces** have a farmable frontslope and a 2:1 backslope (2 feet of horizontal to every 1 foot vertical drop).
  - **Narrow base terraces** have 2:1 grassed slopes on both the frontslope and backslope.
  - **Broadbase terraces** have flatter front and back slopes that are farmed on both slopes. They should not be built on land slopes greater than 10 percent. Front and back slopes should not be steeper than 6:1.
  - **Flat channel or level terraces** have the same design as a broadbase, except the channel is constructed flat.

Applying the practice

This practice is installed when construction is completed and seeding, if required, is established. After terraces are built, chisel the portion of the terrace that will be farmed to loosen compacted soil.

The backslopes of grassed backslope terraces and the front and backslopes of narrow base terraces should be fertilized and seeded according to the recommendations below. Oats may be seeded as a nurse crop at the rate of 3/4 bushel per acre during the spring.

Recommended fertilizer (lbs/ac) for your terraces

N	P	K	Lime	Iron	Zinc
_____	_____	_____	_____	_____	_____

Recommended seeding rates for your terraces

species/variety	Pure live seed lbs/ac
_____	_____
_____	_____
_____	_____

Other considerations

- Where terraces are parallel, there are very few problems with planting. If terraces are not parallel, short rows should be kept between terraces rather than turning on terraces.
- If terraces are not the same length, plant from the longer terrace to the shorter one. Otherwise, it is best to plant from the bottom terrace up.

Maintaining the practice

- Remove sediment build-up in the terrace channel to maintain the required water holding capacity.
- Plowing terraces is one method of maintaining capacity. Plow up the terrace leaving the dead furrows in the terrace channel. Plowing terraces for maintenance will not affect conservation plan residue requirements.
- If you have terraced land in the acreage conservation reserve or other set-aside programs, check with NRCS about options for maintenance while these acres are idle.
- Inspect terraces and underground outlets at least twice a year, once in the spring and once in the fall after harvest. Also check terraces after all heavy rainstorms.
- Repair sections of the terrace which have eroded or have excessive settlement.
- Fill any settled or eroded areas in the pipe trench.
- Repair or replace damaged pipe and riser inlets.
- Remove sediment build-up and trash from around the riser inlet so they are in the lowest place on the terrace channel. Also clean or remove any obstructions from outlets.
- Control rodents or burrowing animals.
- Don't operate farm equipment on steep frontslopes and/or backslopes. Also be careful not to crowd grassed terrace slopes with farming operations.
- Avoid farming too close to riser inlets. Farming operations can cause ridges that block drainage of the terrace channel.
- Control weeds, brush, and trees by spraying or mowing, and reseed and fertilize as needed to maintain good vegetation.
- Where grassed waterways are used as terrace outlets, they must be maintained to prevent gully erosion.
- Terrace cutslopes may need special attention to rebuild soil fertility such as applying trace elements (zinc, sulfur, etc.), manure, mulch, etc.
- Inspect terraces where livestock have been pastured. Livestock trails may erode a notch through the ridge and severely reduce the capacity of a terrace.
- In order to maintain terrace capacity, farming operations should be performed parallel with the terraces; avoid operating equipment over the ridge.

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