USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

Treatment of Ephemeral Gullies with Perennial Grass

Nebraska NRCS Information Sheet

The Good! **The Bad!** **The Ugly!**

How can perennial grass help control ephemeral gullies?

Ephemeral gullies are small ditches that form in fields. They most commonly occur in draws between hills, and other low-lying areas on slopes where water concentrates as it runs off the field. As the volume of water runoff increases, no-till farming and cover crops may be insufficient to control ephemeral gullies. A permanent grass strip may be needed to protect the soil. Grass helps to slow the runoff water down and keeps the soil covered and in place, preventing erosion and gullies. Untreated ephemeral erosion will likely result in larger gullies. Disking or tillage of ephemeral gullies is NOT a form of treatment. In fact, tilling these areas will loosen the soil and make the problem worse.

Where to get help

NRCS can provide technical assistance in the planning, design, and application of treatment for your erosion issue(s). Contact your local NRCS Office to schedule a time to discuss your conservation goals and objectives.

The *Do It Yourselfers* (DIY)

For the DIY'ers, NRCS offers the following items for consideration as you plan and implement your ephemeral gully treatment:

Inventory and Evaluation

To be successful, you must know what is happening on your field. Is it practical to plant grass in erosion-prone areas? How big of an area needs to be planted? What is the contributing drainage area, the slope of the affected area, the soils, the need for mechanical shaping of the site before it can be seeded, wetland impacts, endangered species impacts, and cultural resources impacts.

Perennial Grass extents

The grass cover should begin upstream of the point where runoff water merges into a concentrated flow path, but at a minimum, start upstream of any ephemeral gully formation. The grass cover should extend downhill to a point where runoff water can be released at a place where soil erosion will no longer occur. This could be within the field or at a field's edge.

Width and Depth

The following width and depth guidance is applicable for ephemeral gully areas with 30 acres or less of drainage area. For sites with more than 30 acres of drainage, contact NRCS for guidance.

Depending upon the shape and condition of the site, plan the grass cover to span the natural valley width (but not less than 30 feet top width); and to a depth that is at least 1.2 feet deep. While dimensions are important, establishing and maintaining a healthy grass cover generally determines the success or failure of ephemeral gully treatment.

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Grading and Shaping

Grade and shape the proposed grassed area as necessary to achieve a uniform parabolic or trapezoidal shape. Ensure your construction depth is adequate to direct runoff into the grassed area as a natural "grass lip" will be present after grass establishment. Proper depth can reduce the unintended consequences of runoff water flowing alongside (and eroding) the grassed area verses within the intended grassed area.

Avoid grading and shaping when site conditions are frozen, muddy, droughty, etc. If grading and shaping necessitates the placement of earth fill, do so in layers of nine inches or less, with each layer compacted by the wheels and/or tracks of the construction equipment. Spread or dispose of excess excavated material so it will not interfere with the proper function of the vegetated area.

If infertile subsoil will be exposed by grading and shaping operations, strip and stockpile topsoil. When grading and shaping is complete, spread the topsoil over the exposed infertile soil. The final product should be reasonably smooth, free of rills and gullies, and ready for seeding.

Seeding and Fertilizing

After shaping and smoothing, it is important to get the protective vegetal cover established before heavy rains form new rills or gullies.

A firm seedbed will increase the chance of a good grass stand. Before you plant, be sure the seedbed is firm. A good way to check is to step on the seedbed. If your footprint is less than ½ inch deep, the seedbed is adequate. You may need to use a roller or cultipacker to get a firm seedbed.

Common seeding recommendations for grassed areas in eastern Nebraska are 10 PLS lbs./ac of brome and 4 lbs./ac of switchgrass. In western Nebraska, plant 7 PLS lbs./ac of brome, 10 PLS lbs./ac intermediate wheatgrass and 2 lbs./ac of switchgrass. It is recommended the grass be drilled. If broadcasting the seed, double the seeding rates. Seed the grass between March 1st to April 15th. If there is at least two inches of topsoil, no fertilizer is needed. Otherwise, soil test and apply according to the test. Do not apply nitrogen fertilizer at seeding – this will only stimulate weeds.

When establishing new seedings, it is recommended, to include mulching, companion crops, fabric checks, side dikes, or any combination of these options. In eastern Nebraska, add a ½ bushel of oats to the seed as a companion crop when drilling. In western Nebraska, add 2-3 lbs./ac of perennial ryegrass as a companion crop when drilling.

Water from neighboring property

If runoff water from a neighboring property has already concentrated into a ditch via a natural flow path or via a culvert, prior to entering your property, additional measures may be needed to ensure success of your grass seeding. Measures may include but are not limited to: 1) installing an underground outlet pipe; 2) placement of rock or broken concrete; 3) mulch blankets; 4) other.

For settings and or situations described in the paragraph above, it is recommended you seek the guidance of a NRCS Technical Specialist to determine what alternative measure(s) may best address the particular situation at hand.

Maintaining the practice

The following tips will help ensure longevity of the perennial grass treatment area:

Do not plant "end rows" or plant parallel to the flow path. Planting perpendicular to the flow path ensures runoff water is directed into the grassed area.

Maintain the width of the grass area when tilling and planting. Lift implements out of the ground before crossing the grassed area.

If you must till, avoid creating a lip or berm at the edge of the grassed area which could hinder runoff water from flowing into the grassed area

Fertilize periodically.

Repair rills or gullies by reshaping and reseeding.

Do not let herbicide spray continue into the grassed area.

Mow as needed to maintain flow capacity, but do not mow until a healthy grass cover is established.

Maintain outlets to prevent the formation of new gullies. This may include reshaping and reseeding the outlet, or repairing or replacing components of structural outlets.

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