Ephemeral Gully Erosion

Soil erosion that results in small gullies in the same flow area that can be obscured by tillage.

**What is it?**
Ephemeral gully erosion is a form of erosion created when soil is detached from areas of concentrated flow. An ephemeral cropland gully is larger than a rill and smaller than a classic gully. They usually result from the junction of rills that form a dendritic (branching or tree-like) pattern of channels and are easily identified through visual observation or light detection and ranging (LiDAR). Ephemeral gullies usually appear on cultivated fields during the planting or growing season but can be driven over by typical farm machinery and by typical cultivation tillage equipment. Under the same management system, ephemeral gullies can reappear at or near the same location.

**Why is it important?**
Ephemeral gully erosion removes valuable surface soil. The deposition of eroded materials can obstruct roadways and fill drainage channels and result in crop losses. Nutrients removed by erosion can accumulate in water and may lead to algal blooms, lake eutrophication, and depleted dissolved oxygen levels that lead to fish kills. When ephemeral gully erosion is not treated it can lead to further complications such as the formation of classic gully erosion. This can have a negative economic impact on the farm and offsite.

**What can be done about it?**
Ephemeral gully erosion can be challenging due to the reappearance of the erosion after significant storms or on a yearly basis. The cause of increased water flow across the landscape must be considered when addressing ephemeral gully erosion. Cropping practices that increase water infiltration into the soil result in less runoff and decrease concentrated flow. To reduce ephemeral gully erosion, reduce tillage, include high residue crops, perennial, and/or sod-forming crops in the cropping system, grow cover crops, and manage crop residues to remain on the soil surface as a system of conservation practices in addition to stabilizing the ephemeral gully. Permanent vegetation may be required to stabilize areas not controlled through management practices.

### Ephemeral Gully Erosion at a Glance

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<th>Problems / Indicators</th>
<th>Typical Causes</th>
<th>Examples of Typical Solutions</th>
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| Branching or tree-like pattern of rills in areas of concentrated flow | Bare or unprotected soil  
Soil disturbing activities such as tillage  
Decreased infiltration by compaction or poor soil structure | Reduce tillage using residue and tillage management  
Conservation crop rotations  
Cover crops  
Terraces  
Grassed waterways  
Permanent vegetative cover  
Water and sediment control basins |