



Russell G. Hill\*

GRASS WATERWAYS are natural or prepared outlets for carrying surplus water from farm land. Protection of these natural drainage ways from erosion and gullying by use of good soil cover is a need on many Michigan farms. Clean cultivation and tillage in unprotected waterways speed up the loss of top soil, gully formation and siltation of streams. Grass waterways are a very essential part of the soil conservation and water disposal system for farm land when used in cooperation with other soil conservation practices.

#### STUDY THE NEEDS TO DETERMINE LOCATION, SIZE AND SHAPE

Waterways must be (1) wide enough to carry the run-off water (a minimum of one rod for the smallest waterway) (2) they should have gradually sloping sides with the center slightly lower so they can be crossed with machinery (3) covered with grass to protect the channel from erosion, and (4) maintained year after year.

Grass waterways remove water without gullying.



EXTENSION BULLETIN E-457  
FARM SCIENCE SERIES  
Revised June 1966

# Save Your Waterways With Grass

Prepared Cooperatively by the

Cooperative Extension Service of Michigan State University  
Soil Conservation Service of the U. S. Department of Agriculture  
State Soil Conservation Committee of Michigan

#### METHOD OF ESTABLISHING WATERWAYS DEPENDS UPON PRESENT FIELD CONDITIONS

A good time to establish waterways is when the watershed is covered with sod. If the field is in hay or pasture and a good sod is already present, leave the sod in the natural drainage way when the field is plowed. Small sodded waterways may be established when grain is sown by doing the necessary construction, extra seeding, fertilization and protection. Where gullies have formed or where the edges are irregular and steep, it will be necessary to fill and grade to get the proper shaped waterway before seeding.

Large waterways and terrace outlets should be properly designed and constructed. They should not be attempted without knowing the proper specifications. It is recommended that assistance be obtained from the Soil Conservation Service technician assigned to your local Soil Conservation District or from your County Cooperative Extension Service.

#### PREPARE A FIRM SEED BED

After the waterway has been properly designed and shaped, make a good firm seed bed. Before preparing the seed bed, apply lime if the soil tests less than pH6.2. Spread 20 to 30 loads of manure per acre, then work the soil thoroughly with a disk or plow, or both. Harrow to smooth and cultipack immediately after seeding to encourage rapid germination.

#### USE FERTILIZER

Plenty of plant food is needed to get the grass and a dense sod quickly started. Have the soil tested

\*Extension Specialist, Soil and Water Conservation, Department of Resource Development, MSU, and Executive Secretary, State Soil Conservation Committee.



Shape waterways before seeding.

and apply the needed amount of fertilizer. If a soil test is not possible, apply 500# of 12-12-12 per acre. Topdress each spring with 30# nitrogen per acre. When straw is used as a mulch, add 30 to 100# per acre of ammonium nitrate in addition to the complete fertilizer.

#### SEED A SIMPLE MIXTURE

The best waterway seedings contain only one or two grasses. Legumes should not be used in waterways. Use two or three times more seed than ordinarily used for meadow seedings. The recommended kinds and rates of seedings per acre for different soil conditions are:

- Droughty soils — red fescue or chewings fescue, 15# or domestic ryegrass, 5#
  - Well drained, fertile soil — smooth bromegrass, 12# or domestic ryegrass, 5#
  - Well drained to somewhat poorly drained soils — tall fescue, 8# and smooth bromegrass, 5#
  - Poorly drained soils — smooth bromegrass, 12# domestic ryegrass, 5# and redbud, 2#\* or tall fescue, 15#, domestic ryegrass, 5# and redbud, 2#\*
- \*Sensible bent, 1#, may be substituted for redbud on "sloppy" waterways especially in Northern Michigan.

On critical waterway areas where seeding will not establish readily, good sod from dense stands of bluegrass or other suitable grasses should be cut, carefully laid and tamped well into the waterway.

Leave sod in waterways when plowing.





Fertilize liberally—lime where needed.



Seed adapted grasses on a well prepared seed bed.



Grass waterways must be maintained.

### USE A STABILIZING CROP

Time of seeding is important—either early spring or preferably late summer seedings are recommended. Make seedings not later than September 15 in the southern part of the state and by September 1 in the northern part of the state. Use oats seeded at  $\frac{1}{2}$  bushel per acre as a stabilizing crop. If the waterway was constructed in late spring or early summer, broadcast 2 or 3 bushels of corn per acre for summer protection. Cut the corn 8 inches high and seed grass the latter half of August. Leave the corn stubble on the surface for a mulch.

### MULCH AFTER SEEDING

Spread a light mulch (1 to 2 tons per acre) on the new waterway if there is danger of excessive washing. Use a strawy manure, a stack bottom, or straw for the mulch. Burlap sheets or commercial matting may also be used to help establish vegetation on difficult sites. When a mulch is used, go over the waterway with a weighted disk, set straight to anchor the mulch into the soil.

### MAINTAIN A DENSE SOD

Apply commercial fertilizer high in nitrogen early in the spring to promote good growth. Keep grass mowed to a height of 3 to 4 inches. A dense sod provides an efficient liner for waterways. Livestock should be kept off waterways when the ground is wet.

Hogs should not be permitted in waterways at any time. Remove rocks, weeds, tree limbs and other obstacles that cause concentration of water flow. Gullying in waterways can be prevented by placing a little sod in weak places when they first develop. Use caution in applying herbicides that drain into the waterway if they are toxic to grasses.

### REPAIR WHEN NEEDED

Repair all breaks immediately. If breaks develop in the waterway, reshape, set good sod and tamp down to secure quick establishment and prevent further damage.

### PROTECT THE WATERWAY

Lift plows and straighten disks when crossing waterways. Plow at right angles to the waterway, never parallel to it. Make it easy for the plow to flow into the waterway rather than following plow or cultivator marks along its side. Don't use waterways for a roadway.

### ACKNOWLEDGEMENTS:

*Pictures used in this publication were provided by the U. S. Soil Conservation Service.*

*Assistance with subject matter was provided by the Soil Science, Crop Science and Resource Development Departments of Michigan State University and by the U. S. Soil Conservation Service.*



EXTENSION BULLETIN E-457  
(Formerly EXTENSION FOLDER F-171)