Michigan Technical Note

USDA-Natural Resources Conservation Service

Agronomy #39

Subject: Installation of Vegetative Sod Strips for Use as Vegetative Barriers

Date: **November, 2008**

Purpose:

Provide instruction on installation of vegetative "sod strips" in concentrated flow areas. Vegetative sod strips are used to create vegetative barriers for erosion control in concentrated water flow areas.

Background:

There are several conservation practices available to address soil erosion from concentrated water flow in agricultural and non-cropland fields. Grassed waterways have been used to hold soil in concentrated flows and direct water off an in-field watershed with minimal soil loss. However, grassed waterways require the landowner to take a significant portion of a field out of agricultural production.

Another conservation practice that can address soil erosion in concentrated water flow areas is Vegetative Barriers. Criteria and considerations for planning and establishing a vegetative barrier in a field are described in NRCS Conservation Practice Standard 601 – Vegetative Barrier. This practice uses narrow strips of vegetation planted across a concentrated flow area to trap sediment, stabilize slopes, manage water flow, and reduce soil erosion. This practice has been effective in reducing soil erosion and stabilizing slopes in concentrated flow areas (Temple and Dabney, 2001; Douglas and Mason, 1996; Meyer et al., 2001)

Vegetative barriers may be established vegetatively or from seed. Advantages of vegetative establishment are known plant density at time of establishment, plants that are visibly present throughout the growing season (for weed management), and faster effectiveness as a vegetative barrier compared to establishment from seed. The Vegetative Barrier Standard describes vegetative establishment by using bareroot seedlings, cuttings, sod chunks, plugs, rhizomes, or divisions consisting of at least 5 viable stems (NRCS Vegetative Barrier Standard 601).

The Rose Lake Plant Materials Center evaluated Vegetative Barrier establishment by seeding and various vegetative methods. Installation of vegetative material by plugs did provide for better vegetative barrier effectiveness than did seeding, but heavy rains, especially during the establishment year, caused soil erosion that was not contained by the barriers (Burgdorf et al., 1990 – 2000).

The Rose Lake Plant Materials Center developed a novel method of creating vegetative barriers in vegetative "sod strips" in the greenhouse that can be transferred to the field as plant and soil conditions allow (Leif et al., 2008). These sod strips have proven more effective as vegetative barriers, especially in the establishment year, compared to other vegetative establishment methods. The following is a description of the installation process for establishing vegetative sod strips in concentrated flow areas. (Vegetative sod strips were established using techniques described in Leif et al., 2008).

Materials and Methods:

1. **Field site preparation:** Weed control and soil fertility (phosphorus, potassium, pH, micronutrients) and secondary tillage, if applicable, should be completed prior to vegetative sod strip installation.

2. **Vegetative barrier placement in field:** Criteria and considerations for vegetative barrier length and placement in a field are listed in NRCS Vegetative Barrier Standard 601. Consider width of planting and spraying equipment when deciding on the distance between barriers in the field.

3. **Trench creation:** Dig two parallel trenches using a walk-behind trencher (Figure 1). Trench width should be 1 – 2 in wider than the sod strip and trench should be deep enough to accept the entire root and soil zone of the sod strip.

4. **Sod strip insertion:** Insert vegetative sod strips in the trenches. Start installation in the concentrated flow area of the barrier, assuring that a vegetative sod strip spans the ephemeral gully (Diagram 1, Figure 2). Overlap the ends of sod strips 1 – 2 inches within each trench so that there is no break in coverage within the trench. Stagger sod strip placement in each trench by 12 – 24 inches so that the end of a strip in one trench is not directly inline from the end of a strip in the other trench (Diagram 1).

5. **Trench backfilling:** Backfill the trenches with soil excavated by the trencher. Backfill in a manner that minimizes air pockets in the root zone and provides good root-soil contact (Figure 3).

Additional Considerations:

1. **Soil conditions in field:** Install vegetative sod strips in a manner that will minimize soil compaction and provide a good growing environment for the vegetative sod strips.

2. **Vegetative sod strip root condition:** Install vegetative sod strips when the roots of the plant material are well developed and have started to intertwine with the coconut fiber. Installing vegetative sod strips before roots have adequately developed may result in sod strip breakage and root system damage.

References:

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Meyer, L. D., S. M. Dabney, and W. D. Kemper. 2001. Designing Research to Improve Ronoff and Erosion Control Practices: Example, Grass Hedges. Pages 447 – 451. In: D. E. Stott, R. H. Mohtar, and G. C. Stenhardt (eds). 2001. Sustaining the Global Farm.

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Prepared by:

John W. Leif, Manager, Rose Lake Plant Materials Center, USDA-NRCS, East Lansing, MI

Technical Review by:

David W. Burgdorf, Plant Materials Specialist, USDA-NRCS, East Lansing, MI
John C. Durling, Agronomist, Plant Materials Center, USDA-NRCS, East Lansing, MI
Jerry J. Grigar, State Agronomist, USDA-NRCS, East Lansing, MI
Joel Douglas, Regional Plant Materials Specialist, Central Region, USDA-NRCS, Ft. Worth, TX

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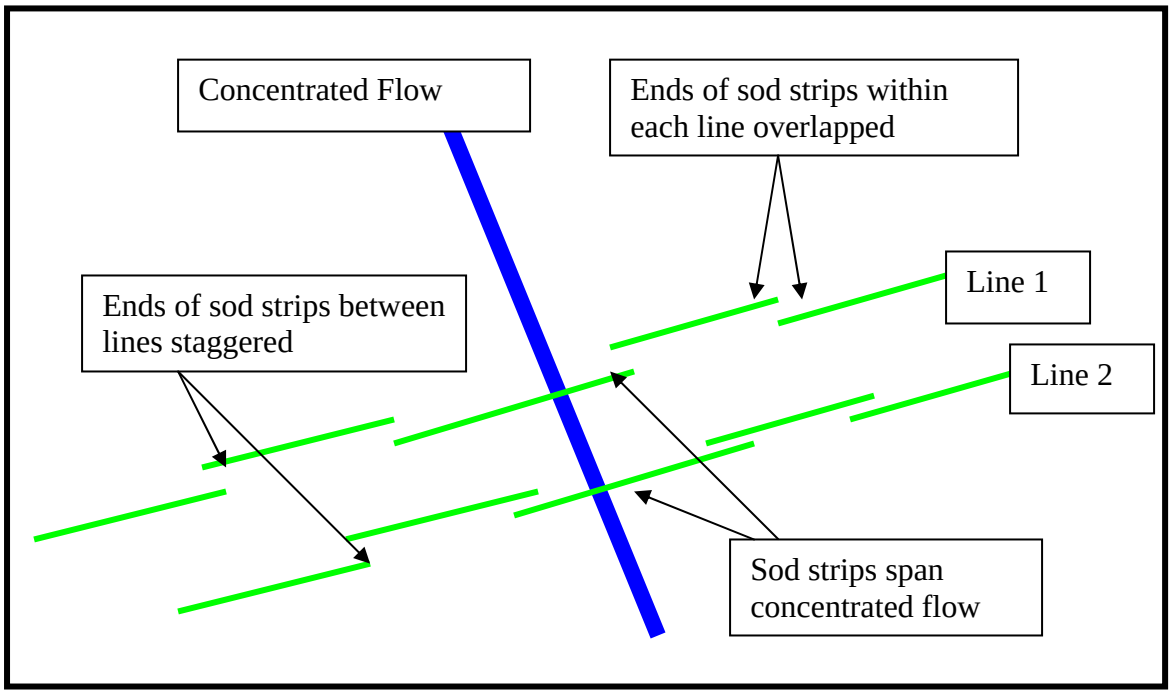

Diagram 1. Placement of vegetative sod strips relative to concentrated flow and to each other. Note: Distances between sod strips are expanded to show detail. Sod strips will contact each other in the trench.

Figures 1. Creating parallel trenches with walk-behind trencher.

Figures 2. Installing vegetative sod strips in trench.
Note: Vegetative sod strip spans concentrated flow area.

Figures 3. Trench backfilled with soil excavated by trencher. Finished barrier in place and functional.