

A Farmer's Guide To Agriculture and Water Quality Issues



EROSION AND SEDIMENT CONTROL FACT SHEETS



ES-4

BMPs for Erosion Control

Best Management Practices (BMPs) are combinations of practical management, cultural, and structural practices that agricultural scientists, government agencies, or other planning agencies believe to be the most effective and economical way of controlling erosion while maintaining agricultural production. It is impossible to catalog every erosion control measure that might apply to your farm. You should consult your local conservation district, university extension office, or state department of agriculture to learn what practices are practical and effective for your situation. Remember that in most cases, technical assistance essential to first implement many erosion control BMPs is available through your local conservation district, USDA-NRCS district office, or university extension.

Many specific water erosion control practices are defined below. More information on some major groups of practices such as conservation tillage and irrigation erosion control and on wind erosion is presented in other fact sheets in this series. Where applicable, the number in parentheses after the practice name is the USDA-NRCS practice code; full standards for these practices can be obtained through the NRCS Technical References.

Practices Used to Reduce Soil Detachment

Conservation tillage is a term applied to any tillage and planting system that covers 30% or more of the soil surface with crop residue, after planting, to reduce soil erosion by water. Where soil erosion by wind is the primary concern, any system that maintains at least 1,000 pounds per acre of flat, small grain residue equivalent on the surface throughout the critical wind erosion period. There are many variations of conservation tillage, including no-till/strip-till, ridge-till, and mulch-till.

Conservation cover (327): Establishing and maintaining perennial vegetative cover to protect soil and water resources on land retired from agricultural production.

Critical area planting (342): Planting vegetation, such as trees, shrubs, vines, grasses, or legumes, on highly erodible or critically eroding areas (does not include tree planting mainly for wood products).

Conservation crop rotation (328): An adapted sequence of crops designed to provide adequate organic residue for maintenance or improvement of soil tilth. A good conservation cropping

sequence contains a high percentage of crops that are soil hugging, produce heavy canopy cover, and produce large amounts of after-harvest residue. Use crops that provide protective cover during normal high erosion periods. Start with crops that protect the soil and do not grow crops producing low residue more than one year in a row.

Residue Management (329): Any tillage or planting system that maintains at least 30% of the soil surface covered by residue after planting to reduce soil erosion by water; or, where soil erosion by wind is the primary concern, maintains at least 1,000 pounds of flat, small-grain residue equivalent on the surface during the critical erosion period.

Mulching (484): Applying plant residue or other suitable material to the soil surface. Mulch the soil surface with off-site residue or other organic material to protect soil when vegetative or residue cover is not available.

Cover crop (340): A crop of close-growing grasses, legumes, or small grain grown primarily for seasonal protection and soil improvement. It usually is grown for 1 year or less, except where there is permanent cover as in orchards.

Practices Used to Reduce Transport of Runoff and Sediment

Contour farming (330): Farming sloping land in such a way that preparing land, planting, and cultivating are done on the contour. This includes following established grades of terraces or diversions. Ridges left by the tillage implement will trap and store rainfall and snowmelt, increase the amount of water that infiltrates into the soil and reduce the amount that runs off the surface.

Contour stripcropping (585): Growing crops in a systematic arrangement of strips or bands on the contour so that strips containing higher erosion crops are alternated with low erosion crops. to reduce water erosion. The crops are arranged so that a strip of grass or close-growing crop is alternated with a strip of clean-tilled crop or fallow or a strip of grass is alternated with a close-growing crop.

Contour buffer strips (332): Narrow strips of permanent, herbaceous vegetative cover established across the slope and alternated down the slope with parallel, wider cropped strips.

Grassed waterway (412): A natural or constructed channel that is shaped or graded to required dimensions and established in suitable vegetation for the stable conveyance of runoff. Grassed waterways force storm runoff water to flow down the center of an established grass strip and can carry very large quantities of storm water across a field without erosion. Grass waterways are also used as filters to remove sediment, but may sometimes lose their effectiveness when too much sediment builds up in the waterways. To prevent this, other erosion control practices that keep soil on the field should be maintained.

Terrace (600): An earthen embankment, a channel, or combination ridge and channel constructed across the slope to store water runoff or transport water to a non-erodible outlet. Terraces reduce sediment transport by reducing the effective length of slope and also trap sediment. There are several types of terraces: bench terraces, contour terraces, and parallel terraces; the appropriate choice depends largely on topography and crop management. Sets of a more specialized form of the parallel terrace are constructed in parallel and discharge runoff through subsurface drains are known as parallel tile outlet terraces. With these terraces, water that is stored behind a terraced ridge is discharged through a surface inlet into a subsurface drain.

Practices Used to Trap Sediment Before It Can Leave the Field

Sediment basins (350): Basins constructed to collect and store debris or sediment.

Field border (386): A strip of perennial vegetation established at the edge of a field by planting or by converting it from trees to herbaceous vegetation or shrubs.

Filter strip (393): A strip or area of vegetation for removing sediment, organic matter, and other pollutants from runoff and wastewater.

Water and sediment control basin (638): An earthen embankment or a combination ridge and channel generally constructed across the slope and minor watercourses to form a sediment trap and water detention basin.

Stream Channel Stabilization (584): Stabilizing the channel of a stream with suitable structures.

Use exclusion (472): Excluding animals, people, or vehicles from an area, primarily by means of fencing.

Riparian forest buffer/herbaceous cover (391A/390): Establishing an area of trees, shrubs, grasses, or forbs adjacent to and up-gradient from water bodies.

Wildlife wetland habitat management (644): Creating, maintaining, or enhancing wetland habitat for desired wildlife species.

Grade stabilization structure (410): A structure used to control the grade and head cutting in natural or artificial channels. Grade-stabilization dams are used to prevent gullies from eating back into fields, to stabilize or raise gully channel floors, or to drop water from terraces, waterways, or diversions to stream channels at lower elevations.

For additional information on erosion control BMPs appropriate to your situation, contact your state agriculture department, university extension service, NRCS office, or conservation district. More information about erosion control BMPs is available from:

Farmer's Guide to Agriculture and Water Quality Issues <http://www.cals.ncsu.edu/wq/wqp/index.html>

US EPA Agricultural Compliance Center <http://www.epa.gov/agriculture/index.html>

USDA-NRCS National Conservation Practice Standards http://www.ftw.nrcs.usda.gov/nhcp_2.html

US EPA Watershed Academy Web Agricultural Management Practices for Water Quality Protection
<http://www.epa.gov/watertrain/agmodule/>

US EPA

National Management Measures to Control Nonpoint Source Pollution from Agriculture

Chapter 4c: Erosion and Sediment Control <http://www.epa.gov/owow/nps/agmm/index.html>

Best Management Practices for Soil Erosion <http://www.epa.gov/seahome/erosion.html>

USDA – Agricultural Research Service The National Soil Erosion Research Laboratory
<http://topsoil.nserl.purdue.edu/nserlweb/>

Conservation Technology Information Center BMP Choices
<http://www.ctic.purdue.edu/Core4/CT/Choices/Choices.html>

Purdue University Best Management Practices for Soil Erosion
<http://agen521.www.ecn.purdue.edu/AGEN521/epadir/erosion/asm521.html>

Other Fact Sheets in this series include:

ES-1 *Why Control Erosion?*

ES-5 *What is Conservation Tillage?*

ES-2 *Principles of Erosion and Sediment Control*

ES-6 *Erosion Control for Irrigated Land*

ES-3 *Streambank Erosion Control*

ES-7 *Wind Erosion*

ES-8 *Incentive Programs for Erosion and Sediment Control*



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