

Natural Resources Conservation Service (NRCS)  
Des Moines, Iowa

Iowa Conservation Practice 484  
October 2011

### Definition

Applying plant residues or other suitable materials produced off site, to the land surface.

### Purpose

- » Conserve soil moisture
- » Moderate soil temperature
- » Provide erosion control
- » Suppress weed growth
- » Facilitate the establishment of vegetative cover
- » Improve soil condition
- » Reduce airborne particulates

### Conditions Where Practice Applies

This practice applies to all lands where mulches are needed. This practice may be used alone or in combination with other practices.

### Criteria for Critical Area Planting

Mulch materials shall consist of natural and/or artificial materials such as plant residue, wood bark or chips, by-products, gravel, plastic, fabric, animal manure, or rice. Mulching is generally performed after grading, soil surface preparation, and seeding and plantings are complete.

Mulch material shall be evenly applied and anchored to the soil. Tackifiers, emulsions, pinning, netting, crimping or other acceptable methods of anchoring will be used if needed to hold the mulch in place for specified periods.

### Site Preparation

Soil surface shall be prepared prior to the application of the mulch material in order to achieve desired purpose and to ensure optimum contact between soil and mulch. All areas to be mulched shall be reasonably smooth and free of rills, gullies, and debris.

Where mulch is to be placed around trees and shrubs, remove all competing vegetation and shape watering saucers as needed so they have an effective depth of four inches.

### Materials

Mulch material, quality, rate, depth of application, and anchoring methods will be selected from **Table 1** in the prac-



tice specifications. Mulch material shall be free of disease, weed seeds, and other pests and pathogens.

### Application

Mulch may be applied to both seeded and unseeded areas. When applied to seeded areas, mulch shall be applied immediately after the area is seeded.

When temporary erosion control is needed, mulch may be applied anytime soil and site conditions are suitable for spreading and anchoring. Disturbed areas that will not have additional construction activity for 60 days or completed sites that will not be permanently seeded for periods of 60 days or longer should be mulched. Shorter time periods may be used depending on site conditions.

### Anchoring

#### Mulch Anchoring Methods

- » **Mulch Anchoring Tool or Disk (serrated blades)**
  - Apply mulch and pull a mulch anchoring tool over mulch. Use equipment with serrated straight disks spaced six to ten inches or other suitable equipment approved by the Natural Resources Conservation Service. Operate as close to the contour as possible. Mulch material should be tucked into the soil surface two to three inches. Use on areas

where concentrated flow velocity is less than four feet per second.

- » **Wood Cellulose Fiber** – Apply with a hydro-mulcher immediately after mulching. Reduce mulch applications to 3,000 pounds per acre and apply 750 pounds of wood fiber per acre with a non-toxic, biodegradable tackifier. Use on areas without concentrated flow.
- » **Asphalt Spray (emulsion)** – Apply with suitable equipment to spray asphalt into the mulch as it is applied. Material shall conform to the requirements of ASTM Specification D977. Application rate is 0.5 gallons per square yard (242 gallons per acre). Material shall be non-toxic to plant life. Use on areas without concentrated flow.
- » **Tackifier or Binder** – Method and rate of application shall be according to manufacturer’s recommendation. Use on areas without concentrated flow.
- » **Polypropylene Plastic Netting** – Apply plastic netting over mulch and staple with 11 gauge or heavier wire staples. Use on areas without concentrated flow or when concentrated flow velocity is less than four feet per second.
- » **Peg and Twine** – After mulching, divide area into blocks approximately one square yard in size. Drive four to six pegs per block to within two to three inches of the soil surface. Anchor mulch by stretching twine between pegs in a crisscross pattern on each block. Secure twine around each peg with two

or more turns. Drive pegs flush with soil surface to allow mowing.

- » **Slit** – Cut mulch into soil surface with square edge spade. Make cuts in contour rows spaced 18 inches apart. Mulch material shall be applied prior to moisture loss. Prior to mulching, ensure soil under shallow rooted crops is moist, as these crops require a constant supply of moisture.
- » **Soil and Stones** – Bury edge of plastic in a trench six inches deep. Firm soil over plastic. Use stones to hold plastic down in other places as needed.

Manufactured mulches should be applied according to the manufacturer’s specifications.

**General Instructions:** On slopes, mats and nets may be run either up and down or cross slope. In areas of concentrated flow, mats and nets shall be laid parallel to the direction of flow. Spread evenly without stretching to allow maximum contact with the soil. Adjacent edges should be overlapped a minimum of three inches with the upgrade mat or net on top. Staples of 11 gauge or heavier will be used to hold the mats and nets in place. Staples shall be U-shaped with a one inch crown. Staple length shall be determined by soil condition as follows: Highly compacted soils – six inches; Friable soils – eight inches; Loose or Sandy soils – ten inches. Outside edges of mats and nets shall be buried in a trench six inches deep. Mat and net edges and middles will be stapled according to manufacturer’s recommendations.

## Conservation Practice Specifications MULCHING (484)

Table 1. Guide to Mulch Materials, Rates, & Uses

Mulch Material	Quality Standards	Application Rates		Depth of Application	Anchoring Methods 1/	Remarks
		Per 1000 ft <sup>2</sup>	Per Acre			
<b>Organic Mulches</b>						
Grass hay or cereal grain straw	Air dried, free of undesirable seeds, coarse material, and moldy chunks. Grass hay should be 2/3 grass species.	75-100 lbs. 2-3 bales	1.5-2.5 tons 90-120 bales	Lightly cover 75-90 percent of the surface.	Mulch Anchoring Tool or Disk, Wood Cellulose Fiber, Asphalt Spray, Tackifier, Polypropylene Plastic Netting, Peg and Twine, Slit	Good to use where mulch is needed for up to three months. Subject to blowing unless kept moist or anchored. Most common mulching material. Good for erosion control.

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<b>Organic Mulches Cont...</b>						
Cornstalks, shredded or chopped	Air dried, 8-12" lengths	150-300 lbs.	4-6 tons		Not Required	Effective for erosion control. Slow to decompose. Excellent for mulch of crop fields. Resistant to blowing.
Sawdust or ground corncobs	Green or composted. Free of objectionable material. Hardwood sawdust is preferred. Corncobs should be free of grain.	200-300 cu ft	5 tons	2-7"	Not Required	Most effective as a mulch around ornamentals, small fruits, and other nursery stock. Special application rates: Fruit trees – 5-7" Vegetables and flowers 2-3" Black & Red Raspberries 4-7" Strawberries 3" Resistant to blowing. Requires 30-35 lbs. of N/ton to prevent N deficiency during decay. One cubic foot weighs approximately 24 pounds.
<b>Regular Mulches</b>						
Compost or Manure	Well shredded, free of excessive coarse material.	400-600 lbs.	8-10 tons		(Optional) Asphalt Spray or Polypropylene Plastic Netting	Use strawy manure. May create a problem with weeds. Resistant to blowing. Manure is <u>NOT</u> a good mulch for tree establishment.

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<b>Regular Mulches</b>						
Wood Excelsior	Green or air dried burred wood fibers 4" long.	90 lbs. 1 bale	2 ton		Polypropylene Plastic Netting, Peg and Twine, Slit	Effective for erosion control. Anchoring required only on critical areas or sites subject to high winds. Decomposes slowly. Packaged in 80-90 lb. bales.
Hydromulch Wood fiber cellulose (partly digested wood fiber)	Made from natural wood fiber, usually with green dye and dispersing agent added.	50 lbs.	.75-1 ton		Not required	Use maximum rate when applied to critical areas. Apply with a hydromulcher.
Hydromulch Wood fiber/paper blend	Blend of natural wood fibers and paper.	50 lbs.	.75-1 ton		Not required	Use maximum rate when applied to critical areas. Apply with hydromulcher.
Wood chips or Bark shavings	Green or air dried. Free of objectionable material. Chips or shavings from hardwood species are preferred.	500-900 lbs.	10-20 tons	2-7"	(Optional) Asphalt spray, Polypropylene Plastic Netting, Peg and Twine, Slit	Same use and application as sawdust and ground corncobs. Requires 20-25 lbs. N/ton to prevent N deficiency during decay. Resists blowing.
Peat Moss	Dried, compressed, free of coarse materials.	200-400 lbs.		2-4"	(Optional) Wood Cellulose fiber	Effective around ornamentals. Keep moist to prevent blowing. Packaged in 100 lb. bales  (6 cu ft) Excellent moisture holding.

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<b>Fiber Blankets, Mats and Nettings</b>						
Excelsior wood fiber blanket	Interlocking web of excelsior wood fibers with netting on one or both sides. Eighty percent of the fibers are 6" or longer.	1.5 roll Rolls 36X36 or 48X48  2 lbs. fiber/1000 sq inch	61 rolls		See 2/ below  Staples	Use without additional mulch. Effective for erosion control on steep slopes.  Use around tree and shrub plantings to suppress weed growth. Needs to have contact w/soil to minimize rodent habitat.
Chopped straw mat	½" layer of chopped straw knitted into polypropylene netting.	1.25 rolls	51 rolls		See 2/ below	Use without additional mulch. Effective for erosion control on steep slopes. Needs to have contact w/soil to minimize rodent habitat.
Paper mat	Plastic netting interwoven with paper.	0.3 or 0.6 rolls	12 or 24 rolls		See 2/ below	Use without additional mulch. Needs to have contact w/soil to minimize rodent habitat.
<b>Inorganic Mulch</b>						
Plastic	2-4 mil	Variable up to 50 ft wide			Soil and stone	Use black for weed control. Use white for seed establishment without organic mulch. Release plastic after seeding is established. Effective moisture conservation and weed control. Large areas should have holes or slits cut to let rainfall percolate. After 4-5 years may need to remove if plastic does not degrade.

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<b>Inorganic Mulch Cont...</b>						
Gravel, crushed stone, or slag	Washed	9 cu yds		2-4"	Not Required	Use on short slopes and around woody plants and ornamentals. Use gravel where subject to foot traffic.

*1/ This column refers to the different types of mulch anchoring methods found under General Criteria.*

*2/ Follow Manufacturer's recommendation or see Placement and Anchoring of netting and matting located in Anchoring methods found in General Criteria.*