NRCS
Natural Resources
Conservation Service

Mechanical Scarification

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NOTE

After a fire many trees are weakened from burning around the base of the trunk. The trees can fall over or blow down without warning. Shalow rooted trees can also fall. Therefore be extremely alert when around burned trees.

What is mechanical scarification?

Mechanical scarification is the tilling or ripping of the soil across the slope using farming or construction equipment. The purposes of this treatment is to loosen and mix the soil profile in order to create a better seedbed, improve infiltration, and where present, reduce any hydrophobic characteristics that may have developed as a result of the fire.

When is mechanical scarification used?

Mechanical scarification is used primarily on burned slopes of less than 30% where soils are compacted or exhibit significant hydrophobic properties.

Scarification is useful to improve conditions for seeding and mulching. Scarification can improve infiltration if the soil is deep and permeable enough that precipitation can percolate through it once it moves below the soil surface (NRCS Hydrologic Group A & B soils).

Scarification by itself is not an effective erosion control practice and can increase erosion when rainfall intensity exceeds the infiltration rate, as the loose soil is eroded more easily by runoff. Therefore scarification should be combined with other erosion control practices such as mulching. Mechanical Scarification should not be used in swales, drainage ways, gullies, or other areas of concentrated flow.

How is mechanical scarification performed?

Tractors, bulldozers or similar equipment either pull a tillage implement or are fitted with a tool bar containing tines, rippers or other devices capable of loosening and mixing the soil to a depth of at least 6 inches.

A contour line is marked about 1/3 the way down the slope to establish a key line. The machines are operated parallel to the key line. Scarification must not be performed up and down the slope. The entire slope may be scarified to accomplish the maximum effect. To reduce treatment costs mechanical scarification can be limited to 8 to 12 foot wide strips spaced uniformly over the slope. The maximum recommended spacing between scarified strips is shown below:

Slope Gradient (percent)	Contour Strip Spacing (feet)
< 5%	160
5 - 10%	120
10 - 20%	60
20 - 30%	30
> 30%	not recommended