

On-Farm Leaf Mulching: Leaf Application, Incorporation, and Economics

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Introduction

In New Jersey, 5 million cubic yards of leaves are collected each year. State regulations ban disposing of leaves into landfills, and their local burning or central incineration. Municipalities can either compost or leaf mulch the leaves. Leaf mulching is the application and incorporation of leaves on agricultural land. This fact sheet contains information on available resources, leaf application and incorporation techniques, and cost analysis for leaf mulching.

Leaf mulching is one of the simplest and most cost-effective methods to dispose of leaves. This practice offers several benefits that make it attractive to the farmer, including:

- organic material for soil improvement and nutrient addition
- an additional source of income through tipping fees paid by the municipality to accept the leaves
- the ability to expand the use of available equipment and labor

Leaf mulching is regulated, and permission must be granted to farmers before they begin the practice. These regulations are detailed in Rutgers Cooperative Extension (RCE) fact sheet

FS718, "On-Farm Use of Leaves: Regulations." In addition, RCE fact sheet FS820, "On-Farm Leaf Mulching: Getting Started," provides 10 guidelines for farmers when considering leaf mulching.

Leaf Application and Incorporation

Before any leaves are accepted, an all-weather road and unloading site should be planned for the delivery of leaves in inclement weather. The site should be located near farm fields and, if possible, some distance from property lines. This will help to reduce any problems should leaves blow from the site, and reduce concerns by neighboring, nonagricultural residents. If the unloading site is adjacent to neighboring property, consider using tarps or wind fences to avoid problems with drifting leaves. The unloading site should include an area where debris, bottles and cans, and other undesirable materials that may be delivered can be placed. Adequate room for access to the site by farm machinery and trucks making leaf deliveries should be planned. Farmers should consult with the Natural Resources Conservation Service for the best location of all-weather roads and the unloading sites.

Spreading and incorporation do not require a major investment in equipment. A tractor, front end loader, manure spreader, and chisel or mold-



board plow are required. Manure spreaders provide the most even spreading of the leaves, although the process is time-consuming. State regulations allow up to 6 inches of leaves to be applied annually. Six inches is approximately equivalent to 20 dry tons/A or 800 cubic yards per acre. Cultivating and finishing disks can be used to incorporate up to 3 inches of leaves, but a chisel or moldboard plow is necessary for application rates greater than 3 inches.

Consider applying and incorporating several inches at a time, then following up with additional applications. Leaves should be spread and incorporated in the fall. This reduces the potential for off-site blowing. In addition, it avoids the problem of a matted, slick layer of leaves on the soil surface, allowing field preparation and crop planting by spring. At that time, fields can be plowed, disked, or chiseled for seed bed preparation. The leaves will be partially broken down through weathering and decomposition by spring.

Economics

The economics of leaf spreading and incorporation was calculated for the use of a manure spreader and chisel plow. The calculations included labor, equipment, and incidental costs involved in leaf spreading and incorporation. This analysis determined that the “processing” cost for 1 cubic yard of leaves is approximately \$3.50. Compared with on-farm, municipal, regional, and commercial composting operations, leaf mulching is the most cost-effective leaf utilization method.

To help offset these costs, farmers often receive payments from the municipality or leaf

source to accept leaves. These payments, called tipping fees, are usually on a per cubic yard basis. Tipping fees paid to farmers in New Jersey average approximately \$3.00 per cubic yard. There is a wide range, with some farmers receiving no fee and others receiving higher amounts.

Although the average tipping fee received does not cover their costs, farmers realize they receive additional benefits from the organic material and nutrients in the leaves being applied. These benefits are difficult to quantify on a monetary basis. However, the value of improved soils, reduced soil erosion, nutrient addition, and increased organic matter is understood by farmers. To ensure that appropriate nutrient balances are maintained, soil tests should be part of all normal agricultural practices.

Conclusion

Proper planning is essential in starting and operating a successful leaf mulching operation. Farmers interested in leaf mulching should contact their county solid waste office for information and assistance with approvals. By following the above guidelines for spreading and incorporating the leaves, farmers will be able to successfully manage the leaves at a minimal cost. For farm operators considering on-farm leaf mulching, a multiyear contract covering (1) tipping fees, (2) amount of leaves to be delivered, (3) the removal of leaves contaminated with trash, and (4) types of vehicles used to deliver leaves should be included.

Information on the effects of leaf mulching on soils, crop production and pests is available in RCE fact sheet FS822, *On-Farm Leaf Mulching: Effects on Soil, Crop Yield, and Pests*.

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