JOB SHEET

Waste Utilization

Oklahoma Conservation Practice Job Sheet **633**

USDA Natural Resources Conservation Service (NRCS) **August, 2006**

Landowner_____

WHAT IS WASTE UTILIZATION?

Waste utilization is using agricultural wastes such as manure, wastewater and/or other organic residues.

PURPOSES

Waste utilization should be applied as part of a conservation management system to:

- protect water quality
- provide air quality
- provide fertility for crop, forage, fiber production, and forest products
- improve or maintain soil structure
- provide feedstock for livestock
- provide a source of energy

HOW IT HELPS THE LAND

The use of agricultural waste on land can be a good, cheap source of plant nutrients and organic material for the soil when handled, stored, and applied properly.

WHERE THE PRACTICE APPLIES

This practice applies to land where agricultural wastes from livestock, poultry, or processing are generated and utilized.

WHERE TO GET HELP

For assistance in planning waste utilization, contact your local Natural Resources Conservation Service or
your local Conservation District office.

APPLYING THE PRACTICE

All federal, state and local laws, rules and regulations governing waste management need to be strictly adhered too.

All wastes should be handled and stored in a manner to avoid leakage or spillage from the site. In order to properly handle and store wastes, planning should be done which considers constructing covered storage facilities, waste storage ponds, or waste storage lagoons as well as the tools and equipment needed to apply or utilize the waste in a timely manner.

Application rates of agricultural wastes should be based on an analysis of the material prior to land application. As a minimum, the analysis should identify the amounts of moisture, nitrogen, phosphorus, and potassium. Other elements or components of the waste material may be analyzed as needed.

Salt concentrations in the soil may increase when large amounts of wastes are applied to the land. High salt concentrations will cause soil particles to disperse and deteriorate soil structure. Soil salinity testing to monitor salt accumulation should be done when applying large quantities of manure or organic by-products. This salinity analysis can be done in conjunction with routine soil testing every 3 years.

When the use of waste water effluent is planned, a salinity test should be performed on the effluent water prior to application to avoid potential crop damage. Waste water effluent may have very high salt concentrations. Soils receiving waste water effluent should be monitored for salinity accumulation using soil salinity analysis on an annual basis as long as effluent is being applied.

The following tools are used to determine application rates for waste material applied to fields:

- **Nutrient Limited Waters and other Sensitive Areas**
  The Oklahoma Water Resources Board has identified water bodies that have been impaired by nitrogen and/or phosphorus in Oklahoma. These water bodies are called Nutrient Limited Waters. Boundaries for these watersheds are found on the Oklahoma NRCS Nutrient Limited Waters map. Application of waste material is reduced or limited in these watersheds.

  Setbacks need to be used when sensitive areas, such as perennial and intermittent streams, ponds, sinkholes, wells and gullies are near areas of waste application.

- **Field Risk Assessment and Nutrient Budget**
  The Oklahoma Phosphorus Assessment tool was developed to assess a field for the potential transport of phosphorus off-site. Based on that assessment, the tool will establish a maximum rate of waste application for the field.

  A nutrient budget accounts for nutrients present in the field and those needed to produce the next crop. A proper soil sample and soil test analysis is essential for completion of the nutrient budget.

The Oklahoma Nutrient Limited Waters Map, Oklahoma Phosphorus Assessment Tool and a nutrient budget used together provide the guidance for determining waste and nutrient application rates. This information should be a part of the overall nutrient management plan.

It is recommended that a certified nutrient management specialist be used to develop the nutrient management plan.

Owner/Client Responsibility

Producers are responsible for maintaining records that document the utilization of waste. These records need to be kept a minimum of 5 years.

The following should be addressed in the records:

- quantity of waste material produced and its nutrient content analysis
- soil test results
- dates, rates, location, and methods of waste and nutrient applications
- climatic conditions at application time: temperature, humidity, wind speed and direction, time of day, etc.
- quantities of wastes removed from the farm
- crops grown and yields
- dates of equipment calibration

CONSIDERATIONS

Minimize the impact of odors from land applied wastes by making applications at times when temperatures are cool and when wind direction is away from neighbors.

Apply wastes to pastures or hayland soon after cutting or grazing before regrowth occurs.

Nitrogen volatilization associated with land application
of some wastes can be reduced by incorporation of the material within 24 hours.

Since phosphorus can accumulate in the soil quickly when using manure on a regularly basis, limit the amount of waste application as much as possible or spread material over a greater number of acres.

Priority areas for land application of wastes should be on gentle slopes located as far as possible from waterways. When wastes are applied on more sloping land or land adjacent to waterways, other conservation practices should be installed to reduce the potential for offsite transport of waste.