

Vegetation Management Section

Materials

Fertilizer Storage, Handling, Transporting and Application

Fertilizer Storage and Handling

Safety is the primary concern when storing, handling, and applying fertilizers. There is no substitute for safety because it avoids human suffering, pays dividends in improved efficiency, protects the environment, and results in improved employee morale and performance.

The following guidelines apply to storage of all fertilizer materials:

- Granular fertilizers are hygroscopic; that is, they readily absorb moisture, thus, they are placed to avoid contact with damp surfaces, moisture, and humidity. Facilities should be dry and free from water seepage. Exposure may be reduced by covering with plastic. Rotate bagged materials to prevent older shipments from caking and becoming unusable.
- Aluminum and wood structures are acceptable for storing fertilizers. Since most fertilizers are corrosive, they should not come in contact with unprotected iron, copper, lead, or zinc materials. Protect wood against impregnation by using treated lumber or paint.
- Bins and storage areas should be kept clean and free of contaminants such as organic chemicals, flammable liquids, corrosive acids, chlorates, and finely divided metals or sulfur, in order to prevent fires.
- Fertilizers are stored away from steam pipes, radiators, light bulbs, and other sources of heat.
- Bagged fertilizers are stored no closer than 30 inches to walls, with adequate aisles for accessibility and ventilation. Piles should not be over 20 feet wide or stacked closer than 36 inches to roof eaves or overhead beams. Keep separate from possible contaminants by a space of 36 inches or a firewall.
- Floors should be dry and clean. They must be of noncombustible material, or protected against impregnation. For bulk fertilizer storage, cover concrete floors with a moisture barrier. Bagged fertilizer should be placed on pallets. Plug all drains which could receive molten nitrate in the event of a fire.
- "No Smoking" rules must be observed and no open flames are allowed.
- Warehouse should be self-ventilating.
- Storage area must be accessible to fire-fighting equipment and hydrants. A fire plan and inventory of materials must be kept on file.
- Fertilizers are not stored with or near explosives or flammable materials unless facilities are designed and approved to store them.
- Spilled material is cleaned up promptly.

Containers and Packaging

NCDOT usually purchases dry granular fertilizers packaged in 40-50 lb. plastic or paper bags lined with a moisture barrier to prevent caking. Water soluble liquid fertilizers are usually packaged in 1 - 5 gallon plastic recyclable containers.

Transporting Fertilizer Products

Fertilizer products are typically shipped from dealers to local NCDOT Roadside Environmental warehouses by flatbed semi trucks. NCDOT employees then transport fertilizer from the warehouse to field operations by flatbed truck as needed.

NCDOT employees are required to become state certified and possess a NCDMV Commercial Driver License to operate flatbeds, hydroseeders and application equipment before transporting fertilizer products. Special care is taken when transporting or loading fertilizer to ensure that the load is secured and the vehicle does not exceed gross vehicle weight limits. Further information on transporting material can be found in two manuals commonly used by NCDOT personnel: North Carolina Commercial Driver's Manual (sections 3 and 8) and NCDOT Workplace Safety Manual (chapters 10, 11, and 12.)

Fertilizer Application

Two essentials for effective application are proper placement and proper timing. Fertilizer placed in contact with or too close to seeds can cause salt injury or nitrogen burn, resulting in poor stands. If side placement (banding) is not possible or practical, which is the case in many NCDOT operations, incorporation is the preferred method. The use of grain drills and sod seeders for planting grass is desirable because plants with small seeds respond well to close fertilizer placement. Occasionally it is necessary to apply fertilizer by shoulder-harness spreaders, especially when small, irregular areas need nutrients or topdressing materials. When applying fertilizers with drop, broadcast, and hand spreaders, it is best to apply half of the material in one direction and the other half from the opposite direction in order to obtain the most uniform coverage.

When topdressing turf and fertilizing ornamental plants, timing is important. Cool season grasses should be fertilized between September and January. Warm season grass requirements vary, but they should generally be fertilized between May and August. Trees and shrubs should be fertilized in spring and summer. Flowers and grasses should be fertilized when planted. Liquid foliar applications should be made in early morning, late afternoon, or on cloudy days when plants are turgid.