

## Vegetation Management Section

### Equipment

#### Fertilizer

Two essentials to effective application are using the proper equipment and calibrating the equipment to apply the proper rates. When selecting equipment to best fit an operation, the acreage, crops, and labor must be considered. Large equipment is impractical in areas along rights-of-way with irregular shapes. Equipment is selected that is convenient to calibrate, hitch, and operate. This can help a busy vegetation manager complete applications on time. Expensive equipment purchases often cannot be justified for infrequent or short term operations. Equipment may be rented if a special type of machine is needed. Adjustments of application equipment are checked carefully. The operator's manual lists recommended equipment settings, which should always be calibrated before beginning any operation. The Department has a wide variety of equipment that is suitable for fertilizer application.

#### *Grain Drill or Sod Seeder*



These are granular applicators which usually plant seed and apply fertilizer simultaneously. Most grain drills are pull- type. Most sod seeders are three-point hitch mounted. Both consist of a hopper, metering system, drop tubes, coulters, and drag chains or press wheels. Usually the metering device is a positive displacement type which delivers a fixed volume of material for every revolution it makes. The drive mechanism is connected to the ground wheel so material is delivered whenever the wheel turns and the orifice is opened. This equipment will apply the same rate per acre of seed and fertilizer regardless of ground speed.

#### *Drop Spreader*

A drop spreader is used to apply dry fertilizer and lime. It may be three-point hitch or pull type. It consists of a hopper and gravity flow type metering system. With gravity flow, the orifice is adjusted and an agitator ensures smooth delivery. A consistent speed is necessary to provide uniform coverage.

#### *Broadcast Spreader*



A broadcast spreader is widely used to apply dry fertilizer and lime. It may be a small handheld or cart-mounted unit for lawn use, or it may be three-point hitch, trailer mounted, or truck mounted for field use.

The spreader typically consists of a hopper, drag chain or belt, discharge gate, chute, and one or two spinners. Some units do not use a belt or chain, but rely on gravity flow through an orifice and agitator to achieve the desired discharge rate. Broadcast spreaders are driven by PTO, ground wheel or manually operated. Most require a consistent speed to provide uniform coverage.

#### *Hydroseeder*



A hydroseeder is used to simultaneously apply water, seed, fertilizer, lime, and mulch. It is also used to apply liquid water soluble fertilizers for foliar applications. A hydroseeder may be truck mounted or pull-type. It consists of a tank, agitator, pump, swiveling gun, and nozzle. The hydroseeder is powered by an external engine and pump which are independent of drive wheels. A consistent speed is necessary to provide uniform coverage.

#### **Maintenance of Fertilizer Application Equipment**

Uniform delivery of material is important. Metering devices and discharge mechanisms must be cleaned daily to remove caked material and obstructions. All parts are checked for wear because badly worn parts result in large application errors. The drive mechanism is checked for proper operation because slipping wheels, worn belts, and worn chains also seriously affect performance. All faulty equipment is repaired or replaced. All equipment is operated at designated speeds. Excessively high or low speeds will cause improper application patterns. Most tractor PTO drives are designed to operate at 540 RPM. The operator's manual lists initial settings and adjustments, which should be calibrated in the field for proper application rate, then any necessary adjustments made accordingly. Fertilizers are corrosive and in most cases will damage components if left in the equipment overnight. Equipment is washed thoroughly with clean water. Components are protected from corrosion after washing by applying a light oil or other suitable material. These guidelines are standard operating procedures for NCDOT Roadside Environmental personnel. All unit personnel who work with this equipment are responsible for its proper care and maintenance. The maintenance section of the Operator's Manual should be used to locate specific grease points or other scheduled maintenance items.