

most economical method of applying the fertilizer? Three methods of fertilizing that have proved successful are surface application, placement of dry fertilizers in holes in the soil, and injection of liquid fertilizers into the soil.

Apply N To Surface

Surface application is the easiest, simplest, and most economical means of applying fertilizers. However, for shade tree fertilization, only nitrogen materials should be applied in this manner. Phosphorus and potassium fertilizers should not be applied to soil surface for two reasons: First, they move very slowly into soil and will not be available to tree roots when placed on the surface; and second, they are likely to burn turf when applied at rates recommended for trees.

Preparing holes for placing dry fertilizer in the soil requires considerable labor. This method is time-consuming and expensive if enough holes are made. Injection of liquid fertilizers into soil requires expensive equipment and a more expensive fertilizer, one that is completely soluble in water.

However, placing dry fertilizer in holes and injecting liquid fertilizers are the two most satisfactory methods of applying needed phosphorus and potassium. Since these methods are more expensive than surface application, they should be used only when phosphorus and potassium are deficient in the soil. If these methods are used, nitrogen is mixed with the phosphorus and potassium to make a balanced fertilizer, and all three nutrients are applied at the same time.

CSU Scientists Study Grass Reestablishment

Results of a study in the use of contact herbicides to kill bentgrasses in bluegrass lawns were reported at the 13th Rocky Mountain Regional Turfgrass Conference, January 25 to 26, at Colorado State University, Fort Collins.

Separating the grasses from the grasses and reestablishing the desirable variety has long been a problem to turfmen. Reporting Colorado results was Homer M. Hepworth, of CSU's Department of Botany and Plant Pathology, who conducted the study with Dr. Jess L. Fults and John W. May. Two herbicides, potassium cyanate (KOCN) and paraquat were tested in a local home lawn, which was heavily infested with bentgrass.

These herbicides were selected because of the difference in growth habits of bent and bluegrass, Hepworth told conferees. Bents are rather shallow rooted and form stolons, while bluegrass is more deeply rooted with subsurface rhizomes. Contact chemicals were used to kill all aboveground growth, on the theory that bents would be wiped out completely and bluegrass would regrow from the protected rhizomes.

Applications of both herbicides were made to separate sections of the lawn in September of last year. The lawn was power-raked to remove dead thatch and debris seven days after herbicides were applied, then bluegrass was seeded. Hepworth reported that, within two weeks, bluegrass had emerged, with an excellent stand forming by late fall.

Both KOCN and paraquat were satisfactory in the test. Spot treatments are not recommended, Hepworth warned. Not only is it likely that some bentgrass will be skipped, but the resulting turf is likely to be spotted and unattractive. It's essential, then, that grass be completely covered with the chemical.

Plans are underway to expand the test program, with selective removal of perennial grasses from bluegrass the next object.

Summary of Recommendations:

1. Measure accurately the area to be fertilized and determine its size in square feet. For ease in calculating size and applying fertilizers, a square or rectangular area is suggested.

2. Weigh accurately the amount of fertilizer material to be used. (A bucket and kitchen scale are used by the authors).

3. Apply nitrogen fertilizers annually to soil surface at the rate of 6 lbs. of nitrogen per 1,000 sq. ft. This is easily and uniformly accomplished with spreaders commonly used to apply fertilizer to lawns. Nitrogen fertilizers are most effective when applied in April or early May before trees break dormancy. To prevent grass burn, wash fertilizer off grass blades immediately after application.

4. Apply phosphorus and potassium fertilizers every three to five years. Phosphorus should be applied at the rate of 3.6 lbs. of phosphoric acid (P_2O_5), and potassium at 6 lbs. of potash (K_2O) per 1,000 sq. ft.

One method is to place dry fertilizer in a series of holes 12 to 15 in. deep at 2-ft. intervals in parallel lines 2 ft. apart throughout the area to be fertilized. A second method of applying phosphorus and potassium is to use water-soluble materials, injecting them into soil with a hydraulic pump and soil needle. Injections are made 18 in. deep at 2½-ft. intervals in parallel lines 2½ ft. apart throughout the area to be fertilized.

Phosphorus and potassium can be applied in the spring or fall. They are often applied in spring when hole preparation or soil-needle injection is easiest.

5. Discontinue fertilization when it fails to accomplish a purpose or when other factors become of primary concern. Often, fertilizing can be continued indefinitely. Some woody species, however, may become succulent or develop a weeping appearance after prolonged fertilizing. All fertilized plants should be carefully observed each year.