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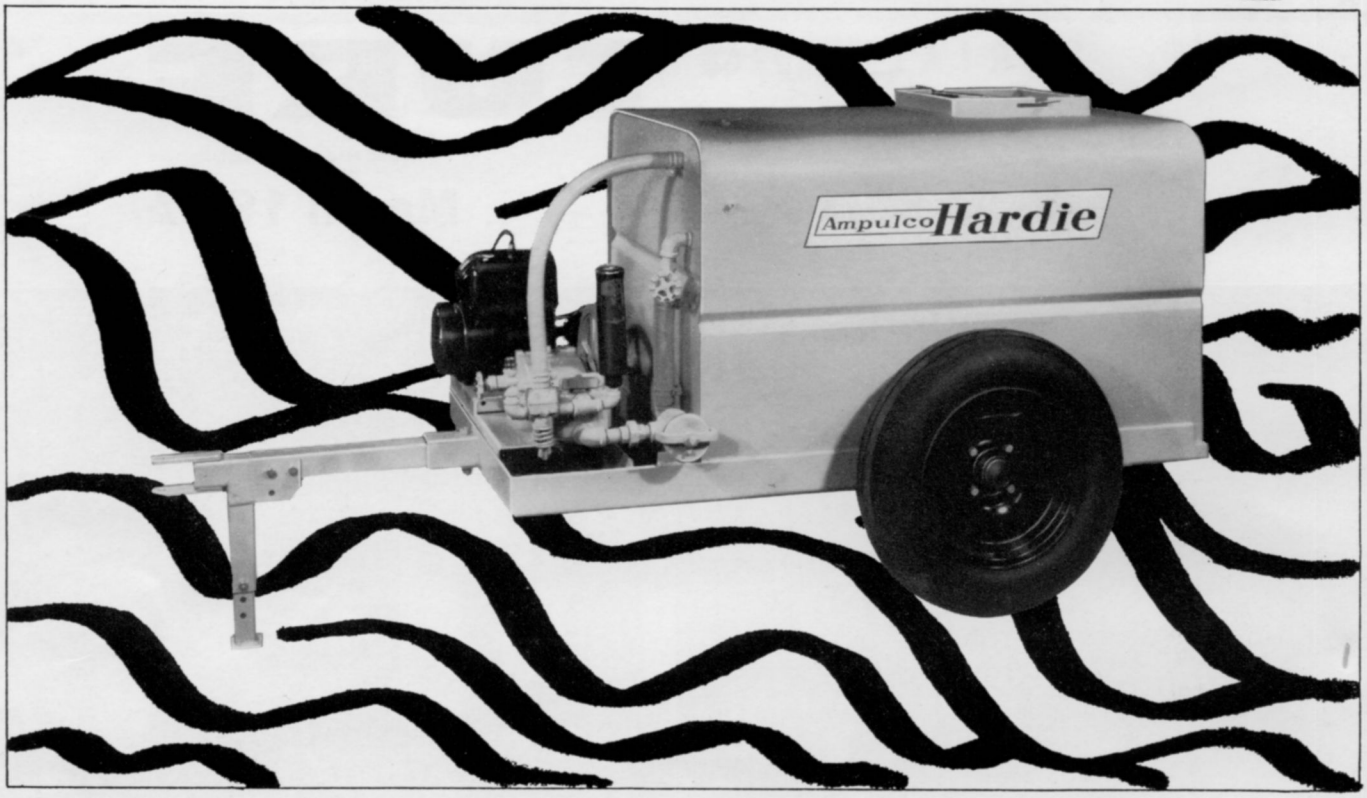

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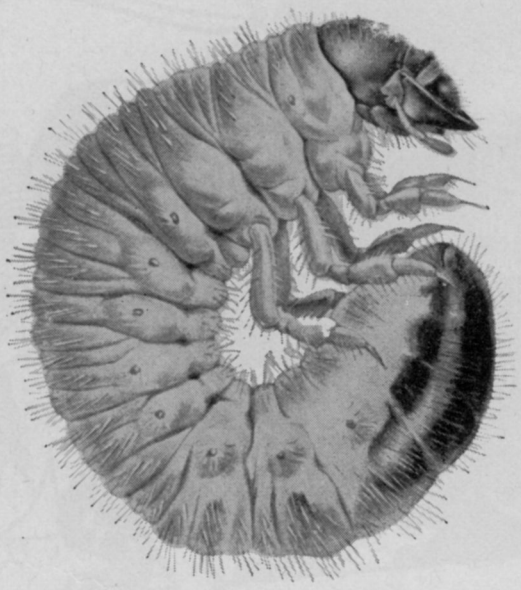
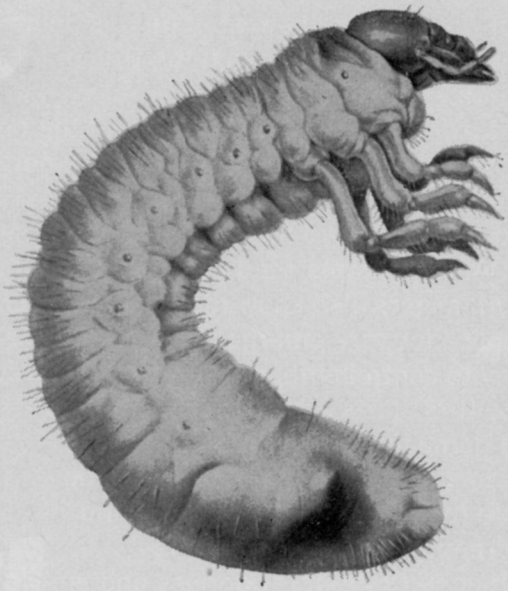


White grubs "work" in the soil for 2-3 years—chewing roots, cutting grass off from water and fertilizer in the soil.



Japanese beetle larvae makes grass look sick. Control with dieldrin breaks life cycle, helps keep turf vigorous.

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WEEDS TREES and TURF

FORMERLY WEEDS AND TURF

March 1967
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Sodmen on the Move

Without wishing to appear possessed of a case of "associationitis," *WTT* again lends its editorial support to a fledgling organization. We're referring to the National Sod Producers' Association, which took its first formative steps at last month's Sod Producer Session, conducted during the International Turfgrass Conference and Show (for a report on this session, see page 26).

We were, frankly, impressed by the reasonable attitude surrounding this formative step. With a complete absence of speeches and a minimum of fuss and bother, attending sodmen nominated and selected a committee to study bylaws and constitution for a workable organization. Five producers who form the committee are home-based from California to New Jersey and Florida.

But even more important than this representative geographical spread is the fact that many on the committee have gained previous experience with state or regional sod associations. Committeemen Ben Warren and Wiley Miner have long been active, respectively, in the Mid-America and New Jersey associations. Also auguring well for the group was the appointment of Ohioan George Hammond, who has substantial organizational experience behind him, to serve the committee in an advisory capacity.

It looks to us very much like the sort of go-ahead group that will do what needs to be done, will take the necessary steps to make the National Sod Producers' Association a reality. Formation comes at a propitious time. The unprecedented expansion of America's sod industry has reached a point where producers are experiencing a growing need to evaluate their own industry and its practices.

Though there is a vast amount of high-quality cultivated sod under production, there are still many unanswered questions and problems, ranging from agronomic considerations to educating the purchasing public in the value and versatility of sod, as well as in its selection and care.

In these and other matters, a national association can serve both industry and public. With a degree of understatement, Rutgers' Dr. Henry Indyk, who chaired the sod session, commented that such a group will be valuable if for no other reason than to sponsor a yearly program for sod producers. We quite agree. And we suspect that a national association can do a great deal more for the industry.

WEEDS TREES AND TURF is the national monthly magazine of urban/industrial vegetation maintenance, including turf management, weed and brush control, and tree care. Readers include "contract applicators," arborists, nurserymen, and supervisory personnel with highway departments, railways, utilities, golf courses, and similar areas where vegetation must be enhanced or controlled. While the editors welcome contributions by qualified freelance writers, unsolicited manuscripts, unaccompanied by stamped, self-addressed envelopes, cannot be returned.

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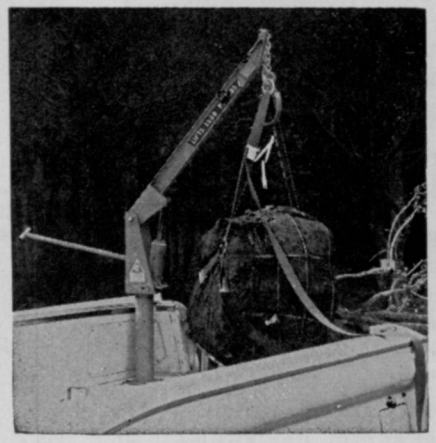

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Concerned About Editorial

I am concerned over your editorial "Incident in Vermont" appearing in the January 1967 issue of WEEDS TREES AND TURF. To many of us this is not a "backwater" case. Any case of this nature is serious because of the precedent it may set. It should, therefore, be carefully researched and the true facts determined before it is given national publicity.

During my presence at the trial, no one tried to convince ". . . a jury of hard-headed Vermonters that it is perfectly all right to put a combination of chemical weed-killer and No. 2 fuel oil into a farmers water supply." On the contrary, a considerable amount of testimony was given to show why the chemical could not have gotten to the water supply. First, it was not mixed at the water hole. There was no reason to use water since the brushkiller was to be applied as a stump spray in a fuel oil carrier. Second, the material was applied to stumps at a considerable distance from the water hole and the stream leading to it. Third, the amount applied to the treated area was less than three quarts of the brushkiller diluted in 15 gallons of fuel oil. This was a summer stump treatment. Conditions were ideal for rapid breakdown of the 2,4-D and 2,4,5-T contained in the brushkiller by soil bacteria.

The farmer claimed that two of his cows were killed and the entire herd affected by the chemical-fuel oil mixture. No autopsy had been performed and no evidence was presented to show that the amount of chemical and fuel oil in question could kill a cow. Much testimony to the contrary was given by two university weed scientists.

I cannot agree that this case illustrates a chemical misuse or an unsafe practice as your editorial implies. Stump sprays of 2,4-D/2,4,5-T brushkillers have been applied to right-of-way brush in this manner for 20 years. To my knowledge there has never been a case of herbicidal poisoning of livestock from this technique. It is one of the safest that can be employed and is widely recommended by weed scientists and extension personnel all over the world.

John H. Kirch

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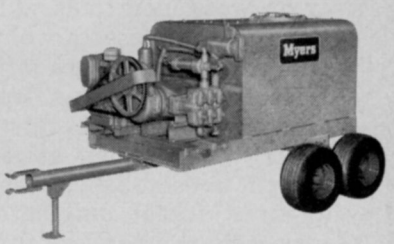

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Can Trees Be Fertilized Economically?$?

By DR. DAN NEELY and DR. E. B. HIMELICK
Illinois Natural History Survey, Urbana, Illinois

THE FIRST question to ask of tree fertilization is: *Will the anticipated results justify the cost?* The answer to this question will be determined by the age, size, and vigor of the tree and by the structure and fertility level of the soil.

Healthy, vigorous trees growing under optimum soil and water conditions should survive indefinitely without the addition of fertilizer. Trees weakened by disease, insects, drought, or other adverse conditions, and trees growing in soil of poor structure or low fertility will benefit markedly from fertilizing.

Trees that show the greatest response to fertilizing are small, young, and growing in soil of low fertility. Adding fertilizer to soil frequently increases the annual rate of tree growth by 50 to 100%. Therefore, a young tree can be stimulated to grow rapidly and give abundant shade at an early age. This should encourage greater use of tree species that are generally considered too slow-growing to give quick shade.

Probably the greatest need for tree fertilization comes in those areas where the original soil has been disturbed during building construction. Residual soil often does not have suitable structure or enough fertility to support vigorous tree growth, with the result that annual growth is low and trees are often pale green.

The next question to ask is: *What fertilizers are recommended, and what is the most economical source of supply?* Nitrogen, phosphorus, and potassium are the nutrients of primary concern in fertilizers.

N Basic To Tree Growth

Plant growth is more often limited by deficiency of nitrogen than of any other nutrient. Available nitrogen in the soil is either used by plants or carried away by water so that it is nec-

Consider These Advantages and Disadvantages To Fertilizing Trees:

Advantages:

A vigorously growing tree is less susceptible to certain diseases and insect pests than a less vigorous tree.

Canker-causing fungi occur more commonly on weakened trees. Also, many noninfectious tree diseases develop when soil nutrients and moisture are unfavorable.

Healthy, vigorous trees have a greater tendency to resist borers.

Fertilization may stimulate additional growth in established trees weakened by leaf diseases, insect defoliation, mechanical injury, soil compaction, drought, etc., so that trees can compensate for the conditions causing decline.

Disadvantages:

Although the advantages far outweigh the disadvantages, certain points should be kept in mind. Fertilizing trees or shrubs in lawns may also stimulate grass growth, and frequent mowing may be necessary.

Unless regularly pruned, small ornamental shrubs, through fertilization, may outgrow their locations in a few years.

Heavy nitrogen applications tend to increase twig growth and reduce flowering in some ornamental shrubs.

American beech, white oak, and some crab apple varieties have been reported injured by fertilizer formulations containing nitrogen, phosphorus, and potassium.

Adapted from "Fertilizing and Watering Trees," by the authors of this article. Single copies of the circular are available free of charge from the Illinois Natural History Survey, Urbana, Ill. 61801.

The authors recommend applying granular nitrogen fertilizers to soil surface by means of common lawn fertilizer spreaders, which are suitable for fertilizing either grass or trees. Nitrogen applied in this manner becomes available to tree roots following rainfall or irrigation.

essary to add nitrogen at regular intervals to maintain an ample supply.

Most soils that contain sufficient organic matter and clay have enough phosphorus for adequate plant growth. However, in some soils additional quantities of phosphorus may be needed for best growth.

Soils usually contain more potassium than nitrogen or phosphorus. Those most likely to be deficient in potassium are sandy soils in areas of heavy rainfall.

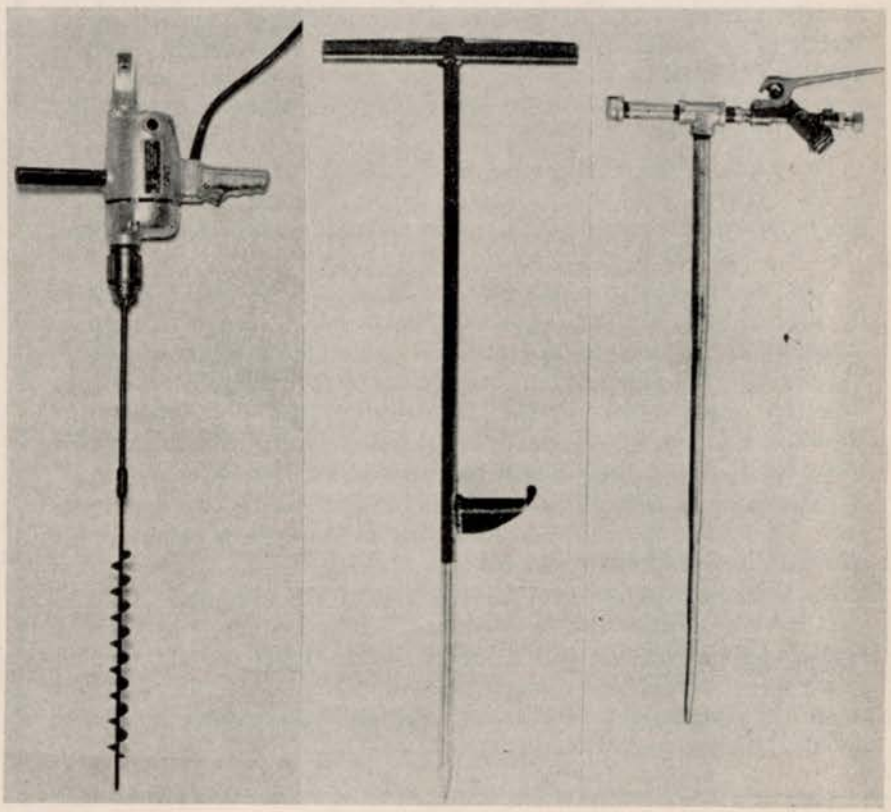
Nitrogen is the basic element in tree fertilizing. Need for phosphorus or potassium will vary from place to place, and an agronomist, farm advisor, or extension specialist should be contacted for advice on local soil conditions.

Many granular commercial fertilizers contain nitrogen, phosphorus, and potassium. The guaranteed analysis of most fertilizers is shown on the bag as three numbers, for example, 12-12-12. Fertilizers containing all three nutrients are called balanced or complete fertilizers.

Usually, it is more economical to buy the nutrients separately. A suggested source of nitrogen is urea (45-0-0); of phosphorus, triple superphosphate (0-45-0); and of potassium, muriate of potash (0-0-60). If only nitrogen is needed, the cost per pound in different fertilizers varies greatly as shown below (current, local, wholesale prices):

Fertilizer	Cost of N/lb.
Urea (45-0-0)	$ .12
Ammonium nitrate (33.5-0-0)	.12
Ammonium sulfate (21-0-0)	.13
12-12-12 (not water soluble)	.28
Ureaform (38-0-0)	.58
20-20-20 (water soluble)	1.20

The last question to ask before work begins is: *What is the*



Right: tools of the trade for applying fertilizers into the soil. An electric drill with a soil auger (left), or a punch bar (center), can be used to prepare holes for application of dry phosphorus and potassium fertilizers. Soil needle (right), fed by a hydraulic pump, can be used to inject water-soluble fertilizers into the soil.

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.

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.

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.