

# Wartime

By WARREN E. LAFKIN

# FERTILIZER Developments and Future Trends

THE outlook for adequate fertilizer supplies during the 1946 spring season was decidedly discouraging as this was written, late in January. The situation is reminiscent of the time in early 1943 when one couldn't buy a raw, boiled, baked or French fried potato in Washington and cigars were almost as scarce. When you can't buy potatoes, or a cigar to soothe the troubled spirit, it's only human to rise in righteous indignation if one thinks needed production of these items is being even faintly retarded by the diversion of needed fertilizers to golf courses and other ornamental plantings, no matter how pleasing to the eye. One can't eat a view. It might be worthwhile to look into the merit of the grass pills the writer gave Dr. Grau one day last fall, credited at last reports with prevention or cure of all ailments, including the greenkeeper's blues.

Having shared the responsibility of equitable fertilizer distribution during two of the critical war years and authored in part all of the wartime fertilizer control orders, the writer is not unfamiliar with complaints, both from those who got fertilizers but never as much as they wanted, and from those who got none. After returning to my normal work and seeing the quantities of scarce materials in many golf course barns, I can only conclude greenkeepers were blessed with plenty of foresight in 1942 before we imposed restrictions. Of course a little fertilizer may have been diverted from potatoes when we had to start making alcohol with the surplus of spuds later in 1943. What I don't understand now is why some enterprising greenkeeper didn't get a few cars of the surplus potatoes in late 1945 and build a compost pile with them, rather than have them all diverted to feeding the pigs. Someday a greenkeeper with a vivid imagination will sell the boys in AAA on the grand job of soil conservation work they do and the first thing we know their barns will be filled up with

free lime and superphosphate and TVA ammonium nitrate. In such event the real subject of this article, specialty fertilizers, could be relegated to ancient history where some of our most advanced social minds would like to consign private enterprise.

Probably about 300,000 tons of mixed fertilizers and specific materials are sold annually to golf courses, cemeteries, schools, parks and private homes. A substantial portion of this tonnage is in the so-called specialty grades. Some will charge that the only difference between a specialty and a commercial grade of like analysis, is the more attractive package of the former. Admittedly, some unscrupulous manufacturers may take both from the same bin, but I believe them to be the exception rather than the rule. In most instances there are ingredients of added value in the specialty grades which warrant their higher price. Also the great bulk of this tonnage goes out to the consumer in small lots, often only a few bags, even to golf courses. The level of prices is largely governed by the amount purchased. More handling is involved before they reach the actual consumer and this requires more durable bags. Their purchase price in quantity is not unlike the price of premium tobacco grades of fertilizer or those compounded for other high value crops. A specialty fertilizer of known quality for turf use, sold in truck load lots in Connecticut at \$64.00 per ton for instance, would certainly not compare unfavorably with a tobacco grade sold at \$70.00 per ton in similar quantities.

Not infrequently the producers of specialty fertilizers render advisory service to their customers of a nature which can hardly be approached by many of our Agricultural Experiment Stations. The frequently over-worked Extension Agronomists of our experiment stations have so broad a field to cover they are unable to concentrate on a single subject. The practical advice of the agronomist who has specialized in the problems of sports turf

★ Lafkin, pres., Golf and Lawn Supply Corp., golf supply dealers, was Chief, Fertilizer Order Section, War Food Administration from its inception until July, 1944. Prior to that he was in the Agricultural Chemical Unit of War Production Board.—Editor. ★

would command a substantial fee on a professional basis but is cheerfully given by several firms having men of outstanding ability in their employ. Let me hasten to say this is no reflection on the excellent work of our experiment stations but indicates instead the failure of all interested in better turf to see that research work in this field is supported by adequate funds. Without a beautiful lawn any landscape planting loses character, yet no part of the home landscape is so neglected in research appropriations at both federal and state levels.

### Beware Grade Limiting Laws

A popular feature of our wartime fertilizer regulations was the limitation on grades, which permitted only a minimum number of approved grades in each state. Agronomists and fertilizer control officials in many states are now moving toward a revision of their state fertilizer control laws, with a view toward making grade limitation a basic provision of such laws.

Sports turf, like certain crops, has likes and dislikes in fertilizers and many of our standard commercial grades are ill-adapted to use on fine turf. For that reason our wartime fertilizer orders permitted a certain flexibility in the analysis of mixed specialty fertilizers, altho we did try to raise their minimum plant food content within the limitations imposed by the materials available. Greenkeepers and others interested in special turf fertilizers, should convey to their state agronomists the necessity of permitting the formulation of grade suited to their specific needs.

A long treatise on wartime fertilizer practices and policies is of little interest now. Unfortunately the supply situation has not improved as would have been expected. Numerous factors account for present shortages, most important of which are:—

(1) The coal strike of last fall coupled with the steel strike, which have materially reduced sulphate of ammonia production.

(2) Partial reversal of our historic role as importers of fertilizer materials, especially nitrogen and potash. We are now called on for heavy exports.

(3) The continued dearth of organic nitrogenates and diversion of all edible organic materials into stock feed, also in very short supply.

(4) Acute labor shortage in fertilizer plants which may grow worse in an industry of historically low wage rates; operating under ceiling prices which permit little advance in wages to attract labor. The specialty producer has been given some price relief but is experiencing great difficulty in acquiring adequate supplies of basic materials.

No industry can remain static and the demands of war on the chemical industry has forced the fertilizer manufacturer to expedient improvising in grade formulation. But the impetus of war to the industry has brought new materials and better methods of utilizing them. Not many years ago a mixed fertilizer containing 16 units of available plant food was considered high grade. Today the average is well over 20 and going upward.

### Better Application Needed

The methods of applying all our modern high analysis materials has hardly kept pace with their development. Modern application machinery has fallen behind the ingenuity of our chemical engineers. Equipment for row crop fertilizer application is well ahead of our means for broadcast distribution. Greenkeepers often improvise and find means of using high analysis materials to advantage as well as developing more efficient ways of using older conventional types. We don't know what the future holds for methods of distributing fertilizers to turf, but prophesy future developments of interest.

The plow sole method may readily find acceptance in the building of new courses and is conceivably one way of getting an abundant supply of phosphorous down deep where we would like lots of grass roots to be. Greenkeepers were among the first to make liquid applications of fertilizer and may give serious consideration to one proposal which was seriously offered to the government in the summer of 1943 when we had a temporary but substantial surplus of anhydrous ammonia.

The author of this proposal suggested we ship cars of anhydrous ammonia to central destinations and use our large surplus of gasoline tank trucks (remember gas rationing?) to haul a saturated ammonia solution out to the farms. The farmer was to hurriedly improvise some kind of a tank truck and boom with which it could be safely applied. Anyone who has accidentally cleaned their nasal passages with anhydrous ammonia as I once did along with my neighbor's chickens might look askance at the idea. Once my neighbor's rooster recovered from the sudden blitz he let out the most triumphant crow I ever heard, which I enjoyed even in my discomfiture.

But there are several practical methods of handling liquid nitrogen and in fact anhydrous ammonia is widely used by trained crews in California and the far west, where it is introduced into irrigation water. Since nitrogen in solution is the most economical way to purchase this element, practical methods for its use in that form certainly will be developed. Even before the war we were using tomato starting solutions made with

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heat and winter cold. In Iowa, the most widely used bent grass is perhaps Washington followed by Metropolitan and C1. With the "know-how" possessed by greenkeepers, these strains produce beautiful results. But we are not satisfied. Each of these popular strains have to be watched continually during the entire growing season and steps taken to protect them against brown patch and dollar spot. Disease control is costly in terms of fungicides and the labor needed for their timely application. A bent grass free or more resistant to disease than the common varieties now used would obviously be of extreme value under our conditions. Were diseases easy to control, we perhaps could be satisfied with the present varieties.

Bent grasses are heterozygous in their genetic constitution which simply means that they are of mixed origin. It is here that the hope of improvement lies. Seedlings of bent grass are variable in many characteristics. They vary in vigor, color, texture, hardiness and in disease resistance. The problems of breeding, selection and testing are problems for men trained in the sciences involved. The Greens Section has made notable progress and is to be commended for its work in selecting, testing and the introduction of such excellent varieties as Washington, Metropolitan, Old Orchard and C1.

## Fertilizer Development

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concentrated materials containing 79 units of plant food.

During the past year the writer has made several applications of high analysis granular materials to lawns. It has been possible to apply as much as 40 pounds of nitrogen per acre, even in the heat of summer, with such materials without either watering in or bad discoloration to the grass. Such materials would hardly be practical on greens unless immediately dissolved by thorough watering.

It is not improbable that the miracles attributed to soil-less culture and the materials which have proven this method commercially practical on high value greenhouse crops, may point to a definite future trend in fertilization through utilization of complete nutrient solutions. Altho such developments in fertilizer practice would not surprise me, wide acceptance of new theories will be gradual. Still golf courses were among the first to use soluble materials applied by various types of proportioning devices and I personally look for their increased use in the years immediately ahead.

In our haste to adopt new ideas we dare not lose sight of the importance of organic matter, the life of our soils.



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