

roller weighing from 150 to 200 pounds to the foot of roller is sufficient. The sod should not be allowed to become dried out for lack of watering before the roots of the grass have had a chance to take hold in the soil below.

If a nursery is used for raising sod to repair old greens or build new greens, as much of the area as will be required in the near future should be treated the same as if used for actual putting—that is, the required area should be cut and watered daily, and for a month or so before the sod is to be laid on the green the area should be top-dressed as regularly as is necessary on a putting green.

We think we can move turf as well in July or August as at any other time, but naturally more care is required when the work is done in midsummer. If the weather is very dry, the turf must be prepared for removal by being soaked with water two or three days and then allowed to dry out until it can be handled nicely. The ideal time, however, in our experience here, is May or June. Our No. 9 green was built and sodded in 1919 between July 4 and July 15, and was in fine shape for the Ohio State Open Tournament held here in September of that year. Our No. 18 green was finished June 29, 1920, and went into the National Open Tournament on August 10 of that year.

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### U. S. Nitrogen Industry Now Factor In World Supply

The production of fixed nitrogen in the United States this year will be three or four times greater than last year, says Dr. C. H. Kunsman, fertilizer and fixed-nitrogen chemist of the Bureau of Chemistry and Soils, United States Department of Agriculture. This year's production, he says, will be the equivalent of about 600,000 tons of Chilean nitrate, of which this country has been importing about 1,000,000 tons a year.

By chemical and electrical means nitrogen can be taken out of the atmosphere, and the nitrogen so obtained is called fixed nitrogen because it is necessary to fix or combine it with other substances to make it commercially available for fertilizer and other uses, he explains.

For the first time, says Doctor Kunsman, the domestic United States supply of fixed nitrogen becomes an important fraction of the total supply, and also, for the first time, a considerable part of the domestic production will be used as fertilizer, the agricultural demands for nitrogen representing, in one form or another, about two-thirds of the total demand for nitrogen.

In establishing the nitrogen-fixation industry in the United States the Government has taken an active part, and the Fixed Nitrogen Research Laboratory of the Bureau of Chemistry and Soils, the research of which has been of great importance in establishing the industry in this country, is continuing its investigations.

"More than 10 years ago," says Doctor Kunsman, "the Government built the Muscle Shoals nitrate plant for war purposes. No fertilizer has been produced there, although the use of the plant for that purpose has been widely advocated. Our increasing supply of fixed nitrogen is coming from new and modern plants constructed by private enterprise."

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Even pine needles are used advantageously by greenkeepers for composting with manure.