Prompt Action Recommended

When injury by grubs begins to show in an established lawn, it should be treated at once. If a portion of the lawn has been killed, the dead grass should be dug, the soil poisoned, and the plot reseeded the same as when building a new lawn. The portion of the lawn where the grass has not been seriously injured should be top-dressed several times with a mixture of lead arsenate and soil, to build up gradually a poisoned layer at the surface. Use 5 pounds of lead arsenate and 1 bushel of moist soil for each 1,000 square feet of lawn to be treated, and mix as follows: Spread the soil about 3 inches deep on a cement floor or other hard surface, and spread the lead arsenate on top as shown in Figure 116. Turn the mass over with a shovel until the ingredients are thoroughly mixed, after which it may be broadcast by hand or applied with a fertilizer spreader.

The lead arsenate may be applied at any time during the growing season. New lawns are usually treated during early spring or early fall, just before the seed is sown. The top-dressings are usually applied at least twice during the growing season until a poisoned layer has been established.

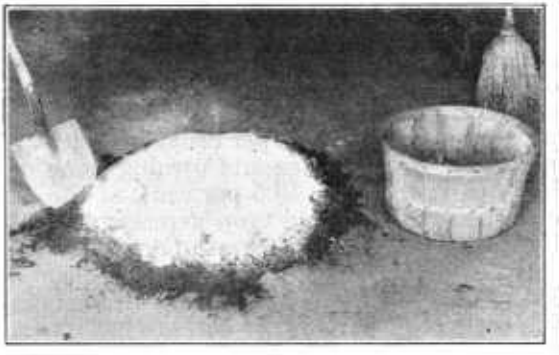

FIGURE 116.—One bushel of soil and 5 pounds of lead arsenate ready for mixing

Lawns which have been treated with lead arsenate should not be fertilized with sodium nitrate, potassium chloride, or potassium sulphate; but organic manures, ammonium sulphate, urea, cottonseed meal, and activated sludge may be used.

Lead-arsenate treatment of lawns in suburban districts is a practical method for controlling Japanese and Asiatic beetle grubs. Since the area of the average suburban lawn is less than 3,000 square feet, it would require less than 100 pounds of lead arsenate to poison the soil of a new lawn to a depth of 3 inches, and the cost should not exceed $15. This would protect the grass roots from injury by grubs for a period of four to five years. To top-dress an established lawn with lead arsenate and soil would cost proportionately less.

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LEASED Farm Land in U. S. Two-fifths Greater in 1925 Than in 1900

It is costly for a man with limited funds to attempt farm ownership. Property in farm land gives low returns on the values involved as compared with property invested in the operation of a farm. With the same capital it is possible to operate a much bigger farm and do a much bigger business as a tenant than as an owner. Perhaps, in part, increased realization of facts such as these explains why it is that,

measured by the percentage of land in farms operated under lease, farm owners as a class have been losing ground.

The farm acreage operated under lease was two-fifths greater in 1925 than in 1900. During the same period the farm acreage operated by its owners decreased. Yet even in 1925 considerably more farm land was operated by its owners than was leased. But in six of the best agricultural States half or more of the land in farms in 1925 was farmed by persons who did not own it.

Land leased to farmers in 1925 was almost two-fifths of all land in farms in the 48 States. Nearly half of the crop acreage harvested was on this leased land. The figures given include acreages leased to part owners; that is, farmers who own some farm land and lease additional land. Included also are acreages operated by "croppers," who are laborers with a share interest in the crop, a class of tenants numerous in the South. The land farmed by tenants paying a share or cash rent is included.

Tenancy Increases Since 1900

Each census beginning with that taken in 1900 has shown the acreage operated by tenant farmers; that is, farmers who own none of the land in their farms. The percentage of all land in farms so operated has risen with every succeeding census; in 1900 it was 23.3 per cent; in 1910, 25.8 per cent; in 1920, 27.7 per cent; in 1925, 28.7 per cent. In 1925 tenants owning none of the land in their farms had over two-fifths, 40.6 per cent, of the entire acreage in harvested crops. The harvested crop acreage under lease was more than this by the amount under lease to part owners.

In 1900 the census showed the acreage operated by part owners. It was then 14.9 per cent of the acreage in farms. The relative importance of part-owner acreage has so risen that the corresponding percentage was 21.3 in 1925. The part owners of 1925 leased from other landowners 48.9 per cent of the acreage in their farms.

In six States, Montana, Wyoming, New Mexico, Arizona, Utah, and Nevada, part owners lease a greater acreage than tenants who own none of the land they farm.

Acreages Under Lease

Combining the acreages leased to tenants with that leased to part owners, it appears that approximately 30.6 per cent of all the acreage in farms was under lease in 1900, 33.4 per cent in 1910, spproximately 36.7 per cent in 1920, and 39.1 per cent in 1925. The six States in 1925 wherein the leased acreage in farms was equal to, or greater than, the acreage operated by its owners were Illinois, Oklahoma, Kansas, Iowa, South Dakota, and North Dakota. In 10 States less than a fifth of the land was farmed by persons who did not own it. The 10 States are West Virginia, Florida, Utah, Nevada, and the six New England States. In these States agriculture is of much less importance than in the six States first named. In Maine only 4 per cent of the land in farms is under lease; in Illinois the percentage is 55.

Comparing counties, and speaking in general, a high percentage of the land is under lease in counties having the best farming land. (Fig. 117.) East-central Illinois, for example, contains a large body of very valuable farming land on which two cash crops, corn and oats,

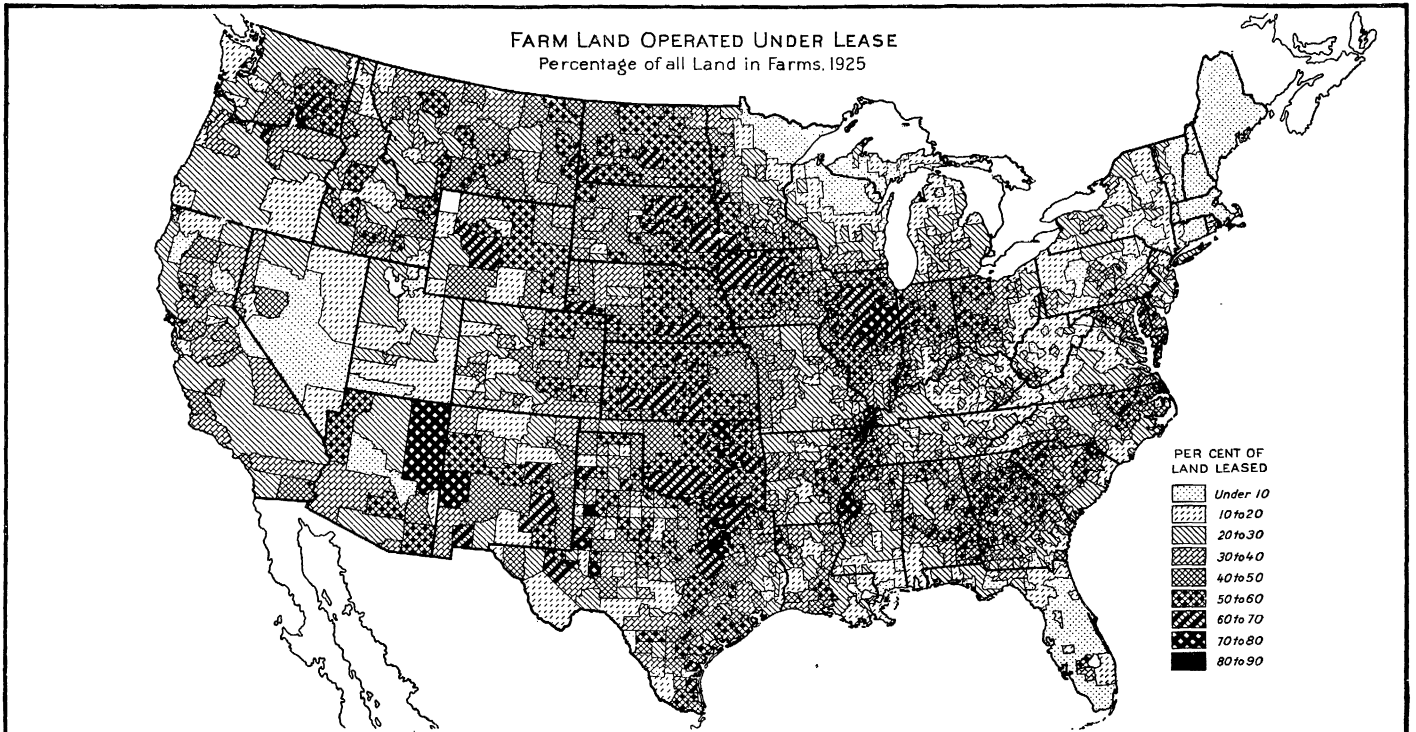

FIGURE 117.—In the Corn Belt, in wheat-growing, and in many cotton-growing counties the amount of land under lease is high. It is particularly high in central Illinois and in northwestern Iowa, where land is very valuable. Where wheat is grown, it is high in the most productive parts, eastern North Dakota, western Kansas, and southeastern Washington. Where cotton is grown, it is high on the most fertile lands, the black prairies of Texas and Oklahoma, and the delta lands north of Vicksburg. The Western States have grazing counties in which much of the land in farms is leased. Of the 2,950 counties with at least 50,000 acres of land in farms only 6 had as much as 80 per cent of the land in farms under lease, only 44 had as much as 70 per cent, and only a fourth of the counties had as much as half

have for years been the dominant crops. In the heart of this corn-and-oats country is a block of counties in which over 70 per cent of the land in farms is under lease. Surrounding counties have less valuable land and less land under lease. Land values decline toward Kentucky and Lake Superior, with the land under lease less than 10 per cent of all land in farms in certain counties.

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LIGHT-WAVE Lengths Yield Information Important to Farmer

The fact that the growth of plants constitutes a storing up of radiant energy from the sun in such a form that it becomes available for a variety of human needs has long been recognized. Within recent years very extensive studies have definitely shown that the flowering and fruiting as well as the vegetative growth of plants is greatly influenced by the relative length of day and night. In a qualitative way, two other variables of illumination have been studied, namely, the color of light and its intensity. It is common knowledge that plant stems and leaves grow differently in red light than in blue. Violet light greatly retards stem elongation, while plants grown in the longer wave lengths of the red region become elongated, weakened, and more succulent. Light intensity likewise plays an important rôle in the form and structure of leaves and other tissues. In view of this qualitative knowledge there appears to be a need for more elaborate experiments showing the quantitative relationship of light wave lengths (color) and intensity (brightness) to the various complicated processes of plant growth and metabolism, involving not only vegetative development, but also flower and seed formation.

Beyond this direct and immediately practical problem the effect of light enters into the farmer's existence in a great variety of other, and by no means unimportant, ways. It affects the health of his livestock, as well indeed as the health of his family and himself, providing an important part of protection against rickets and other diseases, including probably tuberculosis. It is required to activate the health-providing antirachitic vitamin, known as vitamin D, in order that it may have its beneficial action. It is one factor to be considered in the preparation and preservation of his commodities. The presence of light may, for instance, bring about the destruction of various essential oils which give flavor to fruits and vegetables.

Beyond the Visible Wave Lengths

Outside the region of visible wave lengths there exist light rays invisible to the eye. Beyond the red lies the region of the infra red and in the other directions beyond the blue to shorter wave lengths lies the region of the ultraviolet. While the existence of the former, largely through the heating effect it produces, which may be of therapeutic value, is recognized, the latter is often called sharply to our attention in other ways due to its particularly powerful chemical, or better, photochemical effects. It is chiefly the ultraviolet portion of the sunlight which produces sunburn. A considerable amount of ultraviolet