sulphate, also report success. One gentleman writes as follows: "Having followed the instructions given to use sulphate of iron and water (two pounds of iron sulphate to a gallon of water), I am pleased to say that at least seventy-five per cent. of the dandelions have disappeared, and I am now going after the other twenty-five per cent."

In our experiments here no permanent harm was done to the grass. It looked blackened and discolored just after the spraying, but in a few days was as green as ever. This spring the grass is greener and more luxuriant on the sprayed plots than on the unsprayed plot. It is, however, noticeable that the White Dutch Clover has almost entirely disappeared from the sprayed plots. This we hope to replace by reseeding this spring.

GIVE SPRAYING A TRIAL

The results warrant giving spraying with iron sulphate a trial on lawns that are badly infested with dandelions. Prepare a twenty per cent. solution of iron sulphate by dissolving two pounds of iron sulphate in each gallon of water. Apply this solution with a hand sprayer or a watering can with a very fine rose. See that all the dandelions are thoroughly drenched with the solution. Rake off the blackened leaves two or three days after spraying and in dry weather, if possible, thoroughly water the lawn. Spray frequently enough during the season to prevent the dandelion leaves getting a start. Six applications at least will be necessary. Next season, in order to fill up the spaces caused by the destruction of the dandelions, reseed with pure lawn grass seed. Prepare the lawn for reseeding by raking it over with a coarse rake so as to stir the soil. Sow the seed when the ground is moist, rake it in well and roll. There is nothing like a good thick stand of grass to keep out dandelions and other weeds.

Spraying with iron sulphate is not very expensive. The iron sulphate may be obtained retail at from two to three cents a pound, or wholesale at a cent a pound. Forty pounds of iron sulphate, costing wholesale one cent a pound, will make twenty gallons of the solution, which is enough to spray at least one-eighth of an acre, so that if a lawn this size is sprayed six times during the season the cost for material will be only two dollars and forty cents if the iron sulphate is purchased wholesale

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After the cabbage worm enters the cabbage measures, such as the use of pads, or lime, or sand sprinkled with foul-smelling and repelling substances will fail to destroy the larvae. You must then use a carbolic emulsion, made by making a regular kerosene emulsion, and adding one-half pint of crude carbolic acid to each barrel of the material.

The Use of Lime on the Farm

Prof. E. M. Straight

NOT so many years ago lime was very popular with many farmers. Nearly every farm in some sections was limed. In the same sections at present, lime is not used. The popularity of lime did not prove that lime was profitably used in every case; nor the decline in its use that lime is no longer necessary. From the number of questions the writer receives concerning the use of lime it would seem that there is a revival of interest in lime and liming.

Such questions as "Which is the better fertilizer, lime or ashes?" or "What should I apply, lime or stable manure?" would indicate that the problem is not well understood. In some cases the press has been responsible for extending error regarding lime, by making statements such as the following: "Lime is Nature's best and most universal fertilizer."

IS NOT A FERTILIZER

Strictly speaking lime is not a fertilizer at all, and is not applied for such purposes, for lime always exists in soils in sufficient quantities to meet the immediate needs of the crops. Therefore, lime has no right to be compared with fertilizers. The situation has been aptly stated thus: "The use of lime without manure will make the farm and farmer poorer."

This is not intended to discourage the use of lime. Production is often doubled on a given area by its use through chemical, physical and biological action, but not on all soils. We learn, very slowly, that what is good for our neighbor's soil may not be good for our's. Iron is an excellent remedy for some human ills, yet no physician would recommend it for every man who is sick. Why, then, should lime be the panacea for all sick soils?

Lime is used with great benefit for a number of soil conditions, but not as a fertilizer. Many soils are sour. Especially is this true of poorly drained soils. Soils become sour largely from the formation of humic acid, caused by the breaking down of humus in the soil. Peat and muck soils are usually acid, as they are composed almost entirely of plant remains in some stage of decomposition. The character of the vegetation growing on a certain soil is some indication of its degree of acidity. Abundant growth of sorrel is a good indication of a sour soil, while the most of our cultivated crops make sickly growth or refuse to grow at all on such areas.

Applications of fertilizers to such a soil, before it has been sweetened, are of no avail. To sweeten or neutralize the acid present a base is necessary. Lime is one of the cheapest, most available, and best correcters of sour soils known, and is used for this purpose extensively.

Many of the constituents of plants, supplied in manures, are locked up in soils in the form of insoluble compounds. They constitute plant food, but plants are unable to use them. The function of lime is to unlock this food and make it available for plant growth. If plants take up this food, made available by the lime, it follows that such a soil would become constantly poorer, unless manure were supplied in sufficient quantities to meet the demands of the plant.

Heavy clay soils are improved by lime through the improved physical condition. Lime causes soil particles to flocculate, that is, to adhere to each other in minute bundles. The effect of liming such a soil is to cause it to behave afterwards as a coarse grained soil. It becomes more open, porous, less likely to bake and easy to work.

Lime favors the multiplication and activity of many forms of bacterial life, especially those that live in tubercles on roots of legumes. These bacteria are all important to the growth of the clovers, in that they have power to take up free nitrogen from the air. By favoring the growth of the bacteria through lime, we favor the growth of the clover. This effect has been noticed by many who have applied lime or ashes just before seeding with clover.

WHAT LIME DOES

Lime is applied to correct acidity; to make available plant food already in the soil; to improve physical conditions, and to favor the growth of certain soil bacteria. If soils are already right in these particulars, applications of lime cannot help them.

Lime is purchased for the farm under the names of quicklime, air-slaked lime, hydrated lime, ground limestone, and agricultural lime. All of these forms are of some use agriculturally, but the comparative value of any one form may be little or great.

If a soil is sour, quicklime or hydrated lime is the form that should be used. It being a base, acts quickly on the acid and neutralizes it. Other forms of lime cannot do this, for they are already neutral. The other effects of lime may be secured by lime in any form, if used in sufficient quantities. Quicklime plus air gives air-slaked lime; quicklime plus water gives hydrated lime, while agricultural lime may be almost anything—usually a mixture of air-slaked and water-slaked lime and sometimes a percentage of ashes.

It should be clear that if air-slaked or water-slaked lime is used, much larger quantities should be used than quicklime. It is seldom profitable for farmers to buy either air or water.