

tion. While the practice has become quite general during the past few years, and is growing more so, the principles underlying the operation are not so fully understood as they should be. A better understanding of these principles will make the operation more effective, because it will be more thorough.

The offices of tillage are several. Among the more important ones are:

1. The setting free of plant food by increasing the chemical activities in the soil.

2. The soil is made finer and hence presents greater surfaces to the roots, thus increasing the area from which the roots can absorb nutriment.

3. The surface of the soil is kept in such condition that it immediately absorbs all the rain that falls during the summer, when it is apt to be dry. Little is lost by surface drainage.

4. Moisture is conserved thereby. Where the surface remains undisturbed for weeks the soil becomes packed, so that the moisture from below readily passes to the surface and is evaporated, thus being lost to the growing crop. If the surface is kept light and loose by tillage, so that the capillarity is broken, but little of the soil moisture comes to the surface and evaporation is not so great. In this way nearly all the moisture remains in the soil, where it can be used by the plants.

5. Thorough tillage has a tendency to cause deeper rooting of the plants. The surface of the soil is made drier by tillage during the early part of the season than it would otherwise be; hence the roots go where the soil is moist. The advantage of deep rooting during drouth is obvious.

The relation of plant food and moisture to the welfare of crops and the influence of tillage thereon should perhaps receive some further attention. Doubtless all farm crops—not excepting the tree fruits—suffer more from lack of moisture than they do from lack

of plant food in the soil. All of the nourishment which the plant gets from the soil is taken in solution, and unless there is an abundance of soil moisture to dissolve the mineral plant foods it is evident that their presence in the soil, even in limitless quantities, could avail nothing for the good of the crop. The ideal tillage, then, is that which begins as early in the season as the soil can be worked, while there is still an abundance of moisture in it, and continues until mid season—that is, through the growing season of the plant. The aim should be to keep the surface, to a depth of 2 or 3 inches, as light and as loose as possible. This will be equivalent, so far as conserving the moisture is concerned, to spreading a mulch of straw or sawdust over the soil. The constantly moist condition of the soil under such a mulch is a matter of frequent observation.

But tillage, to be of value in fruit growing, must be practiced judiciously. If the soil is tilled when it is too wet, more damage may be done by a single cultivation than a whole season's effort in corrective methods can overcome.

There are cases where conditions will suggest that tillage of any kind is unwise. Such fruits as the strawberry, which produces its crop close to the ground and early in the season, obviously should receive little, if any, cultivation before the fruit is harvested. The practice of tillage, however, is correct in principle. The wisdom of the grower must suggest the proper application of it.

SOW A COVER CROP.

THIS is the month to cease cultivation of the orchard, and to seed it down to some cover crop; a course which not only lessens the labor of cultivation, but gives the busy fruit grower an opportunity to harvest his fruit during the autumn months. Oats or rye have been sown in some parts, but if rye is used it must be plowed under early in