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Pasture Notes.

SOIL MOISTURE

Every farmer knows that if there were no moisture in the soil there would be no vegetation, because plants can only assimilate food when it is in a state of solution. As droughts come and go, we are more and more impressed with the necessity of man coming to the aid of nature and assisting her to store and conserve the rains that fall on the surface of the soil. I say "surface of the soil" because all the rain that falls is not immediately absorbed as it falls, except the soil is brought to a condition in which it can immediately assimilate it. That the arable farmer can aid in the storing and conserving of soil moisture is without a doubt, but the man who farms pasture land only, is more or less helpless.

The relations between soil and water are the same everywhere, but the laws which govern them require modification for soils of different types. The water in the soil acts in three different ways, the types of water being known as hygroscopic, capillary, and gravitational. The hygroscopic water is that which is absorbed by a dry soil from the atmosphere, and the quantity absorbed depends upon the character of the soil. The soil with the finest particles absorbes the greatest quantity of atmospheric moisture, but water of this kind affords little help to the farmer. Capillary water constitutes the main supply to cultivated plants, and it acts in a manner similar to the action of oil in a lamp wick. As the attraction of the oil is towards the dry part of the wick, so is the capillary water in the soil drawn to the dry parts. The attraction is principally upwards, but it also extends slowly in a horizontal direction. Gravitational water always tends downwards, but when not carried too far it may be brought back by the force of capillarity to be used by growing plants. Under certain soil conditions, capillary and gravitational laws work beneficially for the farmer. It is the farmer's part to see that such soil conditions exists; and the key to the whole matter is good cultivation. If the natural law of capillarity is allowed to run its course unchecked, there will be great waste of soil moisture, because the capillary force draws the moisture to the surface of the soil where it is wasted by evaporation.

How can the farmer prevent the waste? He can prevent it to a great extent by surface cultivation which interferes with the capillary action, and thus, to a considerable degree, blocks the passage of the moisture to the surface or, to put it more plainly, the cultivating implement cuts the connection between the upper and lower layers of soil. The newly cultivated upper layer of soil is called a soil mulch.

As to the loss of soil moisture by gravitation, the farmer can prevent it to a considerable extent by deep and thorough preparatory, cultivation, because the more completely the soil is pulverised, the greater will be the quantity of moisture held by it for the use of plants. Soil brought to such a condition, acts like a sponge, retaining and holding a maximum quantity of moisture.

The question naturally arises, do New Zealand farmers aid nature to minimise the serious effects of drought by acting so as to regulate the laws which govern the action of capillari / and gravitation? It requires only a currory glance to convince us that, in the average case, we do not, although there are many exceptions.

As a rule, we sow or plant our crops in such a way as to make surface cultivation impossible, and nature punishes us for our carelessness. We sow our turnips, rape and other forage, or fallow crops broadcast, close the gate of the paddock, and allow nature to work her will. In a suitable season we get a crop. In a dry one we may get half a crop, or none at all.

Nature will work unaided, but the result is often disastrous to the farmer when his intelligent help is withheld. The principle of surface cultivation, as a means of conserving the soil moisture, has for many years been recognised by the British farmer, and the drier the weather, the more does he realise the necessity of persistently stirring the soil among his forage or fallow crops. To that end he sows or plants his crops in rows, sufficiently far apart to admit of intercultivation, and he never dreams of doing otherwise, under any circumstances.

The soil mulch, which is the result of intercultivation, is of the greatest benefit when the soil is thoroughly dry, and such cultivation should never be attempted when the soil is wet or even

very damp. It is then of little value. When the surface soil is very dry, and heavy rains come, the benefit of the soil mulch is cancelled for the time being, and the cultivation must be repeated as soon as the surface soil is sufficiently dry. When heavy rains fall, they have the effect of connecting the dry surface soil with the sub-soil, and if the cultivation is not renewed, the moisture is drawn quickly to the surface and wasted by evaporation.

If the laws of nature never vary, and we are quite convinced that they do not, we can but conclude that heavy rolling, after the seed is sown, must also result in a waste of soil moisture, and if we do roll, we should at once form a soil mulch by using the harrows. This remark, of course, refers more to heavy clay soils than to light sandy ones.

All gardeners are well aware of the benefits accruing from a mulch consisting of dry straw, leaves, or dry manure, and such soil coverings are even more effective than a natural soil mulch. A thin layer of soil on top of the straw will make the mulch still more effective. Many farmers regard a covering of stones as the best of all mulches, and the contention seems to be proved by the fact that the dry chalk soils of some of the Southern English counties—have remarkable power of retaining their moisture and the mulch consists of a thick covering of flints which are, of course, quite

It should be perfectly clear that one of the sources of soil moisture waste, namely, evaporation from the surface, may be controlled to a certain extent on arable land by judicious surface cultivation. Another source of waste, and a very serious one, is the growth of weeds among the cultivated crops, and this may also be controlled by intercultivation. Weeds rob the crops, not only of food, but also of a very considerable quantity of moisture. They take up water directly from the soil through their roots, and evaporate a great deal through their leaves.

PAST AND FUTURE.

When I was through with war and strife and finished with the army,

I said, "Henceforth my style of life is one that cannot harm me;

No, not for me the speedy plane I used to pot the hun with:

A second-handed little Ford will do to have my fun with.

This thing of dodging through the skies has made me tense and nervous.

I'll make my tours in Pullman trains

when I am through the service,

And bump to work in trolley cars like other city dwellers,

And thank new stars I'm not behind the blast of air-propellers.

"That's me when I

Don't have to fly

With army aviators; The only time

I'll ever climb Will be in elevators."

For, oh, how sick I was of war! how

weary of the army!
I thought that always I'd ablier what-

ever might alarm me.
I said, "I'm done with split-tail stunts

and wild and reckless chances;
It's me to play things safe and sane in

placid circumstances.

I'll take my risks in auction bridge and

penny-ante poker,
Where there's no German Fokker bus

to be the little joker. Let others gamble in the games of danger

and endurance,

My family'll be old and gray when they

get my insurance!
'I'll never take

The jobs that make

A fellow's frame grow thinner:

I plan to plod, Acquire a pod,

And nod each night at dinner."

But now—I'm thinking of the bus I

used to roam the sky in,

That roaring, darting combat Spad that

once was mine to fly in,

For she was swift and sure and true,
a lulu and a dayling,

a lufu and a davling,

And in my dreams I zoom aloft, I hear
the motor snarling.

Ah, that was living like a man! a game of zest and danger,

While here, in all this humdrum round

I feel myself a stranger.

Does someone seek the rainbow's end

-the gold that lurks below there?

If I can have a plane to drive, I'll take the chance and go there!

A plane that's trim
And swift and slim.
As through the clouds I

As through the clouds I weave her, And till I crash In one last smash

You won't get me to leave her!

Berton Braley.

CARDEN NOTES.

THE KITCHEN GARDEN.

With the lengthening of the days we shall have to be up and doing if we are to reap the full benefits of a successful season. Digging, manuring, and trenching where required should be pushed on with all possible speed. Those of my readers who took time by the forelock, and got their ground trenched and dug up to the action of the weather, as I advised them in the autumn and early winter, will, I am sure, find their ground in quite a different condition to that which has been only recently dug, and it is as to this diverse condition of soil that my readers will have to exercise judgment in the sowing of early vegetable seeds.

Ground that was dug up early will be found to break down quite free and light, and will be in a fit state, and quite safe for sowing of early peas, broad beans, spinach, and a small sowing of early turnips; but care should be taken not to sow for a week or two yet, unless the position is open and sunny and the ground in a free condition. One must be guided by circumstances. If cold and wet, it would be a mistake to sow seeds for a few weeks yet.

Make a small sowing of lettuce in a warm border, and if a spade's depth of the soil be thrown out and the space filled with barrowload of warm stable manure with the soil on top, the seeds will come away very much better and quicker.

A few radish seeds may be sown in such a position, and those who are fortunate enough to possess a sunny place should get in a few early potatoes, though for most positions this is rather early.

Plant cabbages and cauliflowers, but where the latter are at all weak they are better left in the seed beds for a while yet.

THE FRUIT GARDEN.

Continue to plant all fruit trees, weather permitting, if the soil is in a fairly dry state. It is better to delay the work a little than to rush the trees in irrespective of the condition of the soil, so if the weather keeps up seize the opportunity for getting this work completed.

THE VINERY.

Pruning of the vines should now be done as expeditiously as possible. The sooner after the leaves have fallen the better it will be for the vines and the less risk of their suffering from bleeding in the spring. When late :pruning is adopted the wounds or cuts have not time for properly healing up before the sap commences to flow again in the spring. In some cases the bleeding is so severe that the soil is quite wet and sloppy from this cause. It stands to reason that a very great amount of energy is thus wasted. Of course, the bleeding will stop of its own accord, but not until sufficient young growth is made to utilise the flow of sap that is forced up the cane So do not on any account delay this work

Young vines that have been planted one season may have made strong growth, 10ft or 12ft long. In such case they should be pruned back to about 4ft. On the other hand, if they have made only about 2ft or 3ft, which is often the case, they should be cut back to about 1ft. They will then break away much stronger than if left too long. When they do break, and the young shoots from the eyes have each made one foot long, pinch off the points of each shoot, except the top one, which should be allowed to make as much growth as possible to form the future cane, unless only one or two canes have been planted, and these are expected to fill a house; in this case, instead of pinching off the points, some at the bottom of the cane should be left and trained along the wires and carried upwards at a distance of 3ft 6m from cane to cane. By this means one is enabled to furnish a vinery with one or two plants. But this way of planting is not to be recommended.

Now we will touch upon pruning oldestablished vines. It is necessary that sharp knives be used so that the cut is clean. Firstly, cut the strings and let the vines down to the ground; then proceed at the base of each cane, cutting back each lateral close to the first plump eye next to the old wood, and if these are cut off with pruners shave off a small piece with a sharp knife. This is a safeguard against rough or bruised cuts. Cut all in this manner from the bottom to the top, but if the cane has not reached the top of the vinery then you must leave the top shoot to continue up the wires until it reaches the ton, only shortening the leaders back according to the strength of the growth, as with the young canes, as described above. .

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