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## THE CONSERVATION OF SOIL MOISTURE.

**The Loss of Soil Moisture is due largely to Evaporation. This may be controlled to a large extent by having recourse to Mulches.**

**M**ULCHING is the great agency for conserving soil moisture. Many kinds of mulches are available. The one most generally used is the earth mulch. It is simply a loose blanket of earth, which dries out, preventing the water below from passing up through it to the atmosphere. Experiments have proven that a mulch three inches deep prevented a loss of 36 per cent. of the amount lost where no mulch was used. The average saving by means of mulches ranges from 25 to 50 per cent., varying with the depth of the mulch. The time to form these mulches is as soon as the soil is fit to work in the spring,

as well as after every rain in summer, if the crop will permit. A delay of one week in spring, or after a heavy rain, will result in a loss of moisture by evaporation, equal to one and three-quarters inches of rain, or enough to tide a crop over two weeks of drought. From this, the advantage of seeding at the earliest possible date, is apparent. From the O. A. C. report for 1905, it will be observed that for every day's delay in the seeding after the first week had passed in which the seeding took place, there was an average decrease of 56 lbs. of oats, 53 lbs. of barley, 29 lbs. of spring wheat, and 23 lbs. of peas per acre, due to the loss of moisture through the neglect of mulching.

The first effect of mulching is greater evaporation, due to the larger surface of wet soil exposed. This loss, however, is from the stirred soil only. Very little water can pass through a mulch after it becomes dry. Should the mulch settle back, and appear moist, a second stirring will be necessary. Mulches should not be made too deep. They are made of the best soil, and when dry it is of no use for plant feeding. They should be made as thin as they can be, without permitting too heavy waste of the deeper soil water. They must vary with the seasons and the crops.

Early seeding enables crops to use the water otherwise lost by evaporation. It may also save plant food from leaching in the drainage waters, by having made use of this water in the plant economy. There is danger of too great haste in seeding, however. One might better be a little too late, than too early. If too early, the plants come weak and sickly, or the seed rots in the

soil. The effectiveness of tillage in conserving soil moisture, is greater in the spring than at almost any other time. In the spring there is invariably a wet surface exposed and this wet surface carries water off much more rapidly than dry soil can. Too frequent stirring of the soil is undesirable. Simply keep a dry, loose blanket of soil, which will make an effective mulch. Where one has not time to form a thorough mulch a single cut of the disc, or even of the spiked-toothed harrow will work wonders in conserving soil moisture.

All mulches are not made from soil. Some of



### THE BEST AYRSHIRE COW AS YET IN THE TEST.

In the test for the Record of Performance, conducted by the Dominion Department of Agriculture, this cow, Daisy Queen No. 9765, owned by E. Coburn, Harriestville, Ont., made the highest record of any cow entered. She gave the large yield of 13,108.3 lbs. milk and 485.4 lbs. of fat in one year. See article on Liberal Feeding, page 11.

the best and most effective are made from manure. By applying manure as a top-dressing, one obtains a physical as well as chemical benefit from it. The season's rains wash the fertilizing constituents into the soil where it is available to the plants. The refuse remaining on top makes an effective mulch for retarding evaporation. Herein rests one strong argument for the manure spreader. By its use, it is possible to apply all kinds of farm yard manure as a top-dressing, thus getting full returns for this by-product.

There are few fields upon which crops of any kind, in any climate, can be brought to maturity, with the maximum yields the soils are capable of producing, without adopting some means of saving the soil moisture. There are fields, where, at times, the moisture in the soil is too

great, and drainage becomes necessary; but even under these conditions, it will usually be found advisable to adopt measures for conserving the moisture not so removed. Water is the great vehicle of plant food materials. Plants must have water in order to live. In most cases the rains of summer are insufficient, and we must rely upon stored up moisture. Hence the great need of conserving this moisture.

Experiments conducted at our experiment stations have shown that, on the average, crops require two and one-quarter times the water that falls during the growing season. Therefore, we must aim to store up water in seasons when no growth is taking place. Some seasons we get too much water, and it is necessary to provide for the carrying off of it. Paradoxical, as it may seem, by preparing for a wet season, one prepares for a dry. The loosening which favors absorption, also

favors retention of moisture.

Evaporation is the great source of loss of moisture. Few realize the amount of evaporation which goes on from a given area of soil on a summer day. It has been estimated that from a surface of water, 100 x 60 feet, there was an average daily loss from May to October, of 20 barrels. At this rate, there would be a daily loss of 140 bbls. an acre. The amount thus lost, would of course, vary with the situation, the exposure and the temperature. No definite data to show how the evaporation from soil would compare with that from water, has ever been compiled, but it is believed where soil is bare, and looks moist on top, the evaporation would be the same, or possibly greater.

Realizing, then, that there is a tremendous loss of soil water through the agency of evaporation, let us look to it in future that the same, yet effective, means at our disposal.

### Western Horse Breeding Legislation

Geo. H. Greig, Agriculture Dept., Winnipeg

The horse census in Ontario has shown that hundreds of stallions are travelled in Ontario that are unsound. Such animals should not be used for breeding purposes. Farmers, therefore, should be very careful when selecting the stallions to mate with their mares.

In Western Canada we have a law that makes it difficult for a man to travel an unsound stallion. Several years ago, the territorial government introduced a horse breeders' ordinance, which, in addition to providing for a lien on foals of registered stallions to cover the service