## FARMER'S ADVOCATE AND HOME JOURNAL, WINNIPEG

as well as those between the rows. The man who SHEPPERD, N. D. Agricultural College. runs the cultivator in the corn field is a little careful about getting close to the hills with the Storing Rainfall in Dry Land Farming in maintaining an earth mulch over his cultivated fields. No set rules can be given. He should ing it up, which will make it necessary for him to stop and uncover the corn.

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the harrow is killing it and bears this be-draggled it comes in dashing showers. The soil must ciates them. Then he can intelligently conduct looking appearance for a day or two, after the be open and porous. The surface, to a depth the farm operations for maintaining the earth harrowing is done. In the course of a week or of at least a foot, should be in condition to re- mulch. ten days, however, it shows an improvement ceive and retain the maximum amount of moisture. The deeper the earth mulch, the better it will or weeder.

with, some will spring up in the hills or corn with becomes as great a help as it is a detriment when harrow should be used for economy of time. A the best cultivation and with the harrowing which plowed under unrotted. Plowing under coarse man having five horses attached to a twenty-I have described. They are not numerous, manure creates a coarse, open mulch at the four foot spike toothed harrow can put a mulch but are enough to leave a large amount of seed depth of the furrow, which prevents the water on thirty to sixty acres a day. for the following season. These can be pulled from rising through the plowed land, and it When the annual rainfall drops much below rather readily, however, and should be removed creates large air spaces. by hand pulling before they are far enough advanced to ripen seed from the sap which remains depth to form a reservoir, and it is porous and impossible, to raise a profitable crop. The land in the stem when they are uprooted.

that while' growing his corn, he is preparing for minute grain of earth becomes covered with an can be stored from two years' rainfall. During future wheat and other small grain crops. That invisible film of moisture. he is reducing the weeds in his soil for a number When these minute grains of soil are in close must be maintained, and to do this it is usually of years to come. That the easiest way to de- contact with one another, there is a constant necessary to till the surface about every ten days, stroy a weed is to coax the seed to sprout and movement of the water in the films surrounding and always after any considerable rain. then uproot it while it is young. Unsprouted them, the water flowing from a wet grain to a Weeds act as pumps constantly at work taking weed seed is there as a menace to any crop dryer one. After a rain the sun and the wind the water needed for the crops out of the soil and which is put into the land. Each harrowing dry out the surface soil and carry away the mois- evaporating it into the air. and cultivation which follows it tends to warm ture contained in it. Then the water from the The writer considers the sub-surface packer up the soil, give the weed seeds an encouraging damper soil below moves upward to wet the sur- one of the most indispensable implements for seed bed and incidentally uproots and shakes face grains and is in turn evaporated. This dry land farming, and would not attempt dry out the weeds for the sun to dry, if they have movement continues in land not cultivated and land operations without it. The sub-surface started since the last cultivation.

fact that a loose covering of soil will prevent equal to more than an inch of rainfall. water from evaporating from the soil, the corn the harrow and the cultivator. Even when the does not easily pass from one to another. The wheels fine the soil near the surface where the rain does not fail to destroy the soil mulch by movement of the moisture is checked and evapora- seed is planted and firmly packs the earth against running it toether, the constant rising of water tion is greatly reduced. Such shallow cultiva- the bottom of the furrow and around the trash

rowing has the advantage of stirring the soil in without the aid of rain, and the corn grower similar effect in holding the moisture in the soil. the hill between the stalks and throughout the should stir the ground by cultivation once a as that effected by a mulch of straw or a covering field so that the weeds in the hills are destroyed week, even if rain does not fall.-DEAN J. H. of boards.

farming is to put the soil into such tilth that it and movement of water in the soil, as here given, Corn which is two or more inches high looks like will absorb a large part of the rainfall, even when until he thoroughly understands and appre-

over the corn which has not been harrowed, It must be kept a granular condition, neither prevent evaporation from the soil. For cultiand usually at husking time the difference is very loose nor puddled, and with no large air spaces. vated crops a general rule, with many excepmarked. Many a man is scared out and gives It should be kept corrugated, the corrugations tions, is to keep the mulch three inches in depth. up the job when he sees a number of stalks up- running at right angles to the direction of the With trees, four to six inches is better. rooted and the be-draggled appearance of the prevailing winds. It is especially important A good rain packs the loose surface soil and defield throughout as a result of his harrowing. for storing moisture that every pound of manure stroys the earth mulch. It is necessary to pul-After he does this once and notes the appear- produced on the farm should be spread on the verize the ground quickly after every such rain ance at the time that the corn is in tassel, and, fields. The manure should be applied as a light to restore the earth mulch, as a week's delay therefore, he seldom hesitates again to harrow top dressing to grains, grasses or alfalfa. It then may mean the loss of water to an inch of rainfall his corn. Incidentally, I might say in passing acts as a mulch, helping to retain moisture in the Light showers do not usually destroy the mulch. that potatoes may and should be handled in ex- soil. The finer particles are imperceptibly Where the surface is hard, the earth mulch will actly the same way in cultivating with the harrow absorbed by the soil, the harrowings required have to be made with a disc harrow ; where the

Where wild oats are the weeds to be contended soil without making air spaces and the manure pulverize the soil sufficiently. A four-horse disc

fine grained, the water from a rain slowly moves can be fallowed one season and cropped the next, The corn grower should constantly bear in mind downward through it until absorbed, and each the one crop having the use of what moisture

extends to a depth of many feet, often, in a diy packer consists of a number of sharp rimmed With these points in mind, and the further time, taking out of the soil, in a weak moisture iron wheels, twenty inches in diameter, placed

When the surface soil is stirred after a rain, suitable frame. The packer follows the plow, grower can proceed to do effective work with the tiny grains are separated so that the water going lengthwise of the furrow. The sharp

The dry land farmers' supply of moisture

for his crops depends upon his skill and judgment

The first need in retaining moisture in dry land study the principles governing the absorption

by these crops slowly work the manure into the surface is mellow, a spike toothed harrow will

twelve inches and the rainfall during the growing When dry land soil has been loosened to a good season below five inches, it is difficult, and often the season that no crop is raised an earth mulch

five inches apart on a strong shaft mounted in a from below will gradually destroy the mulch tion is called an earth mulch, because it has a and manure-just the condition needed for a good seed bed and for the best control of the moisture. A corrugater roller is a fair sub-surface packer, though not nearly so effective as a machine with sharp rimmed wheels.

With good management in storing the rainfall and in holding it in the soil, the earth will be kept moist from the bottom of the mulch to a depth H M COTTRELL Colorado Experi ment Station.



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## Alfalfa Statistics

Following are a few facts regarding the area of land under alfalfa in some foreign countries. The twelfth census of the United States reported the area of alfalfa in that country, in 1899, as 2,094,011 acres, with a production of 5,220,671 tons, Colorado leading, with 455,237 acres, producing 1,107,471 tons. It may be noted that these figures do not show the yields claimed as possible averages in Canada, but, when taken in conjunction with an average yield of some twelve bushels per acre of wheat, as compared with an average of around 20 bushels in Ontario, the discrepancy is explained. Poor farming will pull down average yields of any kind of crop. and there is much poor farming in the United States.

Among records of other foreign countries, the Argentine Republic stands first, with a computation, in 1908, of 8,740,448 acres under this magnificent crop. Thrifty France follows, with 2,717,726 acres, in 1906. No comprehensive sta-