returns we had were eleven live chicks, but in most cases every egg brought out a live chick. The reports from those we sold settings to were equally satisfactory. They were the strongest chickens I ever had. On the evening of the nineteenth day after the eggs were set they would be chipped, and next morning would all be out ready for their breakfast. To prove that my conclusions were correct I set two hens the fifteenth of June, and the results were not nearly so good; the eggs required twenty-one days to hatch; the chick with difficulty broke the shells, and in some cases had to be taken out. They were not nearly so strong as the early ones, and at time of writing they still show their delicate constitutions.

My March and April male birds weigh from eight to nine pounds each, while our June birds only weigh from four to five pounds.

I am thoroughly convinced that, to get good, strong, healthy chickens, the eggs must be saved for setting during the early part of the hens' term of laying. Many honest breeders are blamed for tampering with their hatching eggs before sending them out to customers because the results were poor, while the reason was, the hens had laid too long and had expended their vitality.

MRS. JOS. YUILL.

Carleton Place, November 7th, 1899.

Manuring

Home Resources of the Farm

To the Editor of FARMING:

Mr. Thomas Laidlaw's letter in October 31st number of FARMING suggests to me some further remarks on the manurial question. It is true that such "fertilizing agents as the home resources of the farm provide" should have serious consideration, but it seems to me that one of these "home resources," and to my mind an all important one, is almost wholly neglected. I refer to humus, the first essential in improving the physical condition of the soil, and providing a basis for plant food and for the dissolving of the mineral ingredients by the humic acids secreted. Judged by simple examination by sight the clay and sand is changed to a mould by a plentiful supply of vegetable matter to form humus. This improves the texture of the soil, making it more friable and less liable to pack or settle solid, and bake. Such soil retains moisture better, but what is more important the water in such soil is more thoroughly impregnated with dissolved food ingredients and the plants flourish and produce fruit of a better quality, and earlier, as they do not require to absorb such a large quantity of liquid to obtain a living. As one result the produce of such lands is firmer and less watery, being better keeping fruit and roots and harder grain. It is the same difference as occurs between the skim milk-fed calf or the one fed on whole milk, between the feeding value of milk rich in solids and watery milk. The lands from the wild prairie or primeval forest were rich in humus from the decomposition of the accumulated annually dying vegetation. Our methods of farming, and depending entirely on the meagre supply of matter obtainable from our barn-yards, has pretty well exhausted the humus earth supply we inherited. It is within the power of every farmer to renew this supply by the growing of green crops, more particularly clover and peas, and turning them down green with the plow. This is a "home resource" of the farm, the neglect of which accounts nearly always for the failures to obtain successful results from the use of the various fertilizing agents, including farmyard manure. Unfortunately, the men trained in agricultural colleges who undertake to instruct farmers on the clover manuring question too frequently tell them that a crop will prove as beneficial for manuring if fed to stock as if it is ploughed down green. Methods of detail work in caring for and applying manures are secondary; a knowledge of principles and the far-reaching effect of our work is eminently more important. For instance, take the matter of packing fruit for export. Great stress is laid upon the detailed methods of packing, but all the care one may lavish upon this operation will frequently fail to save fruit which is watery because soil waters from which the plant fed were so poor in food ingredients that it had to consume an immensely greater quantity of water than it was able to successfully throw off for evaporation. A crop on poor, insoluble soil uses hundreds of tons more water per acre than a crop on a richer mould, but, even though the one may produce as much as the other, the produce from the poor soil is softer and inferior, either as food or seed.

You cannot do a greater benefit, Mr. Editor, than encourage correspondence on the manuring question, but the discussion must be broad and deep, and the result of carefully matured thought. We should carefully keep in mind that it is the condition more than the kind of soil which must govern the work of manuring.

T. C. WALLACE.

Fernside, November 9th, 1899.

Plant Transpiration and Soil Fertility

To the Editor of FARMING:

The relationship between the fertility of a soil and its moisture requirements is seldom considered by the best authorities, yet it is quite evident that a poor soil requires more moisture to produce a crop than a rich soil; while either one without the moisture necessary may not produce a paying crop at at all.

Some recent experiments conducted by a French scientist show very forcibly in detail the importance of having the maximum fertility in the soil so as to insure the minimum consumption of moisture in crop production. The experiment was made with grass grown from a poor clay soil in the one case, and in the other instance a rich phosphatic soil was used to which was added dried blood and nitrate of potash. The same degree of moisture was constantly maintained in both soils during the growing of the crop.

The relative consumption of moisture in both cases was determined at three different periods. For every pound of dry weight produced the following amounts of water were used by the plants:

1st	period,	poor	soil,	transpiration	= 1190	grams.
"	"	rich	"	"	= 550	"
2nd	"	poor	"	"	= 1053	"
"	"	rich	"	"	= 581	"
3rd	"	poor	"	"	= 1084	"
"	"	rich	"	"	= 585	"
Total—		poor	"	"	= 3327	"
"		rich	"	"	= 1616	"

From these results the crop from the poor soil consumed nearly double the amount of moisture required by the crop from the rich soil. The fundamental principle to be deduced from such an experiment is to have the maximum balanced fertility in the soil, rich in nitrates, potash and phosphates. Under such a condition there might be less pessimism and fault finding with the weather during a dry season. Many a farm, however, may be abundantly rich from a chemical standpoint, but in overlooking the importance of keeping plenty of humus matter in the soil, such fertility is not profitable. Too much importance cannot be emphasized in plowing under plenty of clover and green crops to supply humus, and thus increase the capacity of a soil to hold moisture. With this principle in mind in soil cultivation, fertilizers may more often return a profit on the investment.

W. J. THOMPSON.

Bronte, Ont.