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The Control of Moisture in Orchard Soils

F. T. Shutt, M.A., Chemist, Dominion Experimental Farms

I SHALL briefly state some of the more important conclusions from researches that have been made at Ottawa. For the figures and details, consult the publications of the Dominion Experimental Farms.

1. The growth of rye, oats and buckwheat as cover crops in the orchard has always resulted in the removal of larger amount of soil moisture than those lost by the growth of one of the legumes—clover, hairy vetch, soya beans, etc. The draft made by the cereals upon the stores of soil moisture is greatest between May 1st and July 15th—a period when it is most required for the use of the orchard trees. We have found that the equivalent of approximately ten inches of rain may be lost in this period from soil carrying a grain crop, over and above that lost from a cultivated soil.

It seems more than probable that the smaller amount of water lost from the soil carrying the cover crop—clover, vetch, etc.,—as compared with that carrying a grain crop may be in part accounted for by the more perfect shade from the sun and protection from wind afforded by the former crops.

2. More moisture may be conserved by sowing the cover crops—hairy vetch, soya beans, horse beans—in drills and cultivation between the rows from time to time throughout the summer, than by sowing these crops broadcast. In other words, the earth mulch is more effective than the shade offered by the crop in conserving moisture. This method of growing cover crops seems to offer a means of furnishing material for enrichment of the soil without making any excessive demand on the soil moisture supply—and hence may prove valuable for adoption in districts that are subject to drought in the late summer. It is quite possible for a soil to become so dry in the autumn months that the fruit ripens prematurely. On such soils, of course, the ordinary cover crop, sown in July, may do more harm than good.

3. There appears to be little difference between the moisture content of soils constantly cultivated throughout the summer

and that of soil under a thick mulch of straw. Ten to twelve inches of straw seems to be very effective in conserving moisture, but the objections that may be urged to such a method are cost of material, application and removal—for the latter would be necessary if there were danger of the trees continuing their growth into the late autumn—and the probability that the straw mulch would cause a surface development of the root system, resulting in injury to the trees from winter killing.

4. Undisturbed fallow land readily dries out, and further, may be taken possession of by weeds which serve to increase the loss of moisture. We have instances in which such land has been found

Leads Them All

THE CANADIAN HORTICULTURIST gives me more pleasure for the outlay than any other paper or magazine of the \$40.00 worth that I get each year. My garden last season was more productive than ever, and all through the pointers gleaned from THE CANADIAN HORTICULTURIST.—J. E. Klotz, M. D., Lanark, Ont.

to dry out to the same extent as land in sod.

The desirability of immediate cultivation after plowing an orchard has been shown, if soil moisture is to be conserved. A period of three or four days with the upturned soil as left by the plow may very seriously diminish the soil's store of water.

6. Rape has proven an excellent cover crop for drying out the soil in the late summer and autumn months. In this respect it is fully the equal of the legumes usually sown for this purpose.

In conclusion, we may emphasize the essential points we have endeavored to bring out: First, very great value of cultivation for conserving soil moisture and the desirability of employing in many districts this means during the first three months of the growing season, to supply our orchards with the water necessary for the full development of their fruit. Secondly, we have proved the extremely exhaustive effect on soil moisture of sod and of grain crops. Their injurious in-

fluence on the growth of the tree—especially the young tree—and the development of fruit, so often to be observed on dry soils, is fully accounted for by the results of our investigation. And, lastly, that legumes and rape are suitable crops in most districts to sow in mid-summer when the drying out of the soil is considered desirable to hasten the ripening of the wood before winter sets in.

Box Package for Export Apples

J. A. Webster, Sparta, Ont.

Packing in boxes has appealed to me as the best way to market Lake Erie apples; therefore, I have only used boxes for the past three years and am satisfied that boxes in this district will pay better than barrels.

Success with boxes depends upon good fruit, well graded and packed. The whole secret lies in painstaking care in growing, handling, grading, packing and then marketing, so that the fruit shall reach the consumer without a bruise.

To dispose of undergrade fruit, I have put up a small evaporating and canning plant at my orchard. This I consider the best outlet for fruit not good enough to box and it enables me to put up a fancy pack of manufactured, as well as green, fruit with my carefully handled crop, and besides dried and canned fruit will bring better returns than the usual No. 2 barrel.

I would advise papering every apple tiered in the box for export. What is not worth papering is not worth exporting. The cost of the box and paper used is slightly more than one-third of the cost of a barrel and the returns are better. However, the labor in connection with boxing is much more than in barrelling.

I have shipped apples to the British market and have personally seen them sold and would advise others to put a new brand of boxed apples on the market there by a private sale broker. Last year I called on a number of fruit brokers in Great Britain and I selected a firm to handle my crop. It is worth something to see your broker and have a chat with him about the business. I know that there are some brokers not as reliable as others. It will pay an exporter to see his apples put on the market there and to keep his eyes open from the time the ship reaches port until the fruit is retailed.

*Important conclusions from researches made by Mr. Shutt and told by him in an address before the American Pomological Society of St. Catharines, Ont., last fall. Readers that desire more complete details may obtain same by referring to the publications of the Dominion Experimental Farms, or by writing direct to Mr. Shutt, Ottawa.