

Control Of Potato Tuber Diseases Is Commented Upon

Diseased Spuds Undesirable For Marketing Purposes.

By R. R. HURST,
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Diseased potato tubers are undesirable for marketing purposes because diseased stock may rot in storage or in transit, necessitating sales at discount prices or possible disqualification. As a consequence consumers' costs are increased while the growers' profits are lowered accordingly. Surpassing these difficulties met in the marketing phase of this industry in Canada, however, is the more serious problem arising from the use of diseased potatoes for seed, a practice leading to seed-piece rot, weak germination, poor stands and low yields. Moreover, the use of diseased seed tubers results in contamination of the soil, thus making it most difficult, if not impossible, to produce disease-free potatoes on the same location for several years. The importance of this new principle is better appreciated when it is known that new land is relatively free from disease organisms and should be safeguarded against contamination. In seeking to control potato tuber diseases it is well to know that a number of them attack both tubers and tops, so that they must be dealt with in the seed stock supply and in the field. Those diseases confined to the tubers alone necessitate such measures as seed treatment, soil treatment and seed-selection, all of which are being investigated by the Division of Botany of the Dominion Experimental Farms through its branch laboratories. Although such practices are subject to limitations, when carefully conducted they provide a means of bettering crop production, and of reducing, very materially, the otherwise appreciable losses. It must be clearly understood that seed treatment will not prevent diseases originating in the soil. Under these circumstances a scheme of soil treatment or soil management is a distinct advantage. Seed treatment, of course, can only be effective against diseases occurring on the surface of the potato tubers, whereas the more deeply seated infections, notably late blight rot, black leg, and Fusarium rot cannot be reached by seed treatment. In these instances the correct preventive measure is to avoid using the diseased tubers.

Certain diseases such as leaf roll, mosaic and spindle tuber cannot be detected in the seed-tubers, although they give rise to definite symptoms in the growing tops. The eradication of these disorders can be accomplished only by a system of thorough roguing combined with the operation of a tuber-unit seed-plot.

Detailed information on the subject under consideration may be secured from the nearest Dominion Laboratory of Plant Pathology.

BLIND AND DEAF

Dr. Helen Keller, the blind and deaf American authoress who toured America to raise a million dollars for the American blind, has been visiting England.

A grey-haired, elderly woman possessing a sweet personality, she has been blind since she was nineteen months old. She triumphed over her blindness, however, by taking the highest varsity degrees and then embarked on a successful literary career.

When a friend brought her a wonderful basket of choice flowers the other day she ran her hands over them, and was able to name each one of them individually.

Her most pressing ambition on her return to the United States is to resume lecturing right away in an effort to raise another million dollars for the blind.

AGRICULTURE

The Treatment Of Greenhouse Soils With Chemicals

Loss to Greenhouse Industry in Canada Is Very Extensive.

By J. E. BOSHER,
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The loss sustained by the greenhouse industry of Canada through wilt, blackleg, root-knot and other diseases is very heavy. The parasitic fungi and nematodes that cause these diseases are more apt to develop in greenhouse soils than out-of-doors owing to the practical impossibility of establishing satisfactory crop rotations and to the more or less artificial conditions of greenhouse crop production.

Many growers eliminate these troubles by systematic steam sterilization of the soil, but steam is not always available, especially to small growers. These small growers usually rely upon replacing their "sick" soils with fresh soil from outside. These growers are cautioned to prevent re-contamination, by sterilizing with chemicals all seed-bed and potting soils not removed, and to sterilize at once any area upon which a diseased plant appears.

The Dominion Laboratory of Plant Pathology, at Saanichton, has tested many chemicals for this purpose and studies to date suggest that formalin is the best general disinfectant. Soil for seed-beds or potting should be moistened with the formalin solution and placed in heaps. Start with a layer about six inches deep and build up in layers, soaking each with a solution containing one gallon commercial formalin to each 100 gallons water. Finally cover the heaps with canvas or burlap dipped in the one per cent. solution. Ten days should elapse before using this soil, and plants with clean healthy roots should result. A cubic yard of soil requires 15 to 20 gallons of solution.

Infected areas in beds or benches should be dug and soaked with one gallon of one per cent. solution per square foot; go well beyond the area of infection and cover with formalin disinfectant and burlap. Before placing fresh soil in a bed or bench, the bottom and walks should be soaked with the formalin solution. Formalin vapor is toxic to plants so the greenhouse should be empty for several days after using.

Cheshunt compound, prepared by grinding two parts of copper sulphate and eleven parts ammonium carbonate, mixing and storing in an air-tight vessel for at least twenty-four hours, is a useful fungicide for use when damping off or wilt first appears in a crop. A solution made by dissolving one ounce of this Cheshunt powder in a little hot water is made up to two gallons with cold water and it will check these diseases if the soil is well watered without significant injury even to small seedlings. A pint or so of Cheshunt compound should be poured into the hole before replacing diseased plants.

The importance of regular sterilization of seed-bed and potting soils cannot be too strongly emphasized, since so many root troubles originate in the early stages of plant growth.

LUMBERMEN MEET

In order to draw up a plan of co-operation, lumbermen of Eastern Canada are meeting in Halifax. The organization will favor grading and stamping of lumber. It is likely that a sales representative will be sent to England.

FISH MEAL AS A PROTEIN SUPPLEMENT IS GOOD FOR DAIRY COWS

Three Factors Combine in Favor of This Product; Two Years of Experimenting To Determine Value.

By S. A. HILTON,
Dominion Experimental Farm,
Nappan, N. S.

There are three factors that combine to make fish meal deserving of consideration in our livestock feeding program: It is a Canadian product; it carries a very high protein content of animal origin; it contains a high percentage of minerals, chiefly phosphorus and calcium, both lacking in our home-grown feeds.

With these points in mind, experiments were conducted during the last two years at the Dominion Experimental Farm, Nappan, N.S., to determine the value of high quality fish meal as a source of protein for milch cows. A basal ration of home-grown grain (oats and barley), was balanced with fish meal in one case and oil meal in the other, 125 pounds oil meal or 50 pounds of fish meal being used for each 300 pounds of grain.

The results of these experiments may be summarized as follows:

Slightly higher milk production was secured from oil meal as compared with fish meal, but the difference was not significant. The actual production secured was 22.56 pounds per cow per day from fish meal and 23 pounds from oil meal.

On the basis of the consumption of dry matter per unit of

production, the two feeds were practically equal.

The feed cost to produce 100 pounds of milk was one cent higher on the fish meal ration than on oil meal, an insignificant amount.

During the second experiment, records were kept of the body weights of the cows on test. When receiving the fish meal ration, the average gain per cow was 36 pounds, while the oil meal ration gave a gain of 6.5 pounds.

The fish meal used was of high quality (below three per cent. in oil content), and no difficulty was experienced in feeding, either as to palatability or from milk flavor.

Using oats and barley as a basal ration, costing \$30 per ton, the results would indicate that with an oil meal costing \$40 per ton, fish meal would be worth \$50.56, or with oil meal at \$45, fish meal would be worth \$60.80.

While the data given are based on only two experiments the results are so nearly identical that they indicate: Fish meal is a valuable and economical source of protein and minerals for the feeding of dairy cows; fish meal may be recommended without fear of any injurious results, providing it is of good quality, that is, high in protein and minerals and low in oil.

Use of Phosphatic Fertilizers for the Field Crops Noted

Experiments Have Been Conducted at Various Farms.

By L. E. WRIGHT,
Central Experimental Farm,
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The results of investigational work with fertilizers conducted by the Division of Chemistry in co-operation with the Branch Farms and Stations of the Experimental Farms System, have emphasized the importance of applications of phosphoric acid in the production of field crops. In this work the beneficial effect of phosphatic fertilizers has been particularly marked in the Maritime Provinces, Northern Ontario, the grain growing districts of the Prairie Provinces, and in the Columbia and Fraser River Valleys of British Columbia.

At Kentville, N.S., during the period 1931-1933 an application of 75 pounds of phosphoric acid (furnished by superphosphate or basic slag) per acre applied for the oat crop of a three year rotation of oats, clover hay and timothy hay resulted in an increase of 18 per cent. of grain, 39 per cent. of clover hay and 28 per cent. of timothy hay. At Kapuskasing, Ont., 40 pounds of phosphoric acid (furnished by 250 pounds of superphosphate) per acre applied for the O.P.V. crop of a four year rotation gave an increased return above cost of fertilizer of \$10.44 per acre. At Windermere, B.C., an application of 96 pounds of phosphoric acid (furnished by 600 pounds of 16 per cent. superphosphate) for the potato crop gave an average increase in yield of 75 per cent. over the five year period 1928 to 1932. At Agassiz, B.C., 500 pounds of 16 per cent. superphosphate supplying 80 pounds of phosphoric

acid per acre increased the mangel crop by 35 per cent. during the four year period, 1930 to 1933. In many districts of the Prairie Provinces an application of from 30 to 50 pounds of treble superphosphate applied for grain crops has given market increases in yield when soil moisture has not been the limiting factor of growth.

Feeding, Covering Lasts Tasks Of The Season With Bees

All Fall Apiary Work Completed Early in November.

By C. B. GOODERHAM,
Dominion Apiarist

The active season closes for the beekeeper with the feeding of his bees and giving them the necessary protection for the coming winter. Feeding should be completed by the second week in October, but if any colony is short of forty pounds of food at that time, and the weather is suitable, feeding may be continued until the necessary amount is stored. Bees that are to be wintered outside should be placed in their cases and given bottom and side packing before being fed, as they are then easier to handle, and there is no disturbance to the bees after feeding. When the feeding is done, the top packing can be put in place any time before cold weather sets in. Any type of case may be used, provided it is large enough to allow for at least four inches of packing material at the bottom and sides of the colony, and eight inches on top, together with a two inch air space above the top packing. The case must also keep the packing material dry during the winter months. It must also provide for free flight of the bees at all times. It is also advisable to drill a hole, at least one inch in diameter, at each end of the case just below the cover, so that a current of air playing above the top packing may carry off any moisture that may arise from the colonies. The Bee Division, Central Experimental Farm, Ottawa, has experimented with many types of cases, but has found the quadruple case holding four colonies en bloc the most economical. Wind breaks are important in winter protection. If natural ones are not available, open board fences should be erected on at least three sides of the apiary. Bees that are to be wintered in cellar or dug-out, should be carried in immediately after the last good clearing flight they are likely to get. At Ottawa, this is usually the first week of November.



Eat and Remain Merry

THE holidays will get you if you do not watch out. Feast you must and suffer the consequences—by sudden Colds, Flu, and what not.

There is no perfect cure except prevention. Neglect that and suffer ten days' misery and more. First sign of sneeze, nose or throat tickle, dissolve a DR. JACK'S TABLET in a little water and gargle. Swallow two Dr. Jack's Tablets with water, repeat in two hours. Follow with a good laxative.

Better be well than sorry.

DR. JACK'S TABLETS mean more than this. They bring down fever, stop headaches, stop all aches—help the heart and soothe the stomach. The big improving difference, no matter what—whether first aid for Flu and Colds or Rheumatism, Neuralgia, Neuritis, Earache, etc. A Maritime discovery of superior success. At all druggists.

Dr. Jack's Tablets