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Plant Pathology
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POTATO RING ROT

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POTATO RING ROT CONTROL

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Every potato grower should be on guard against the destructive disease known as bacterial ring rot of potatoes, whether the potatoes are grown for seed or for table purposes. If even a trace of the disease was found in your crop this year, every effort should be made to eliminate it. If no ring rot appeared this year, precautions should be taken to prevent its introduction to the farm through seed, sacks, machinery, hauling equipment, or other means. It does not pay to take a chance with bacterial ring rot.

SYMPTOMS OF RING ROT

The symptoms of bacterial ring rot in the growing potato plant usually become apparent late in the season. The leaves become blotched as the color fades from dark green through pale green to pale yellow. Soon brown patches of dead tissue develop, usually at the margins. The leaflets curl upwards, are thin, and feel limp to the touch. At first one or more stalks in a hill may wilt while the rest appear normal, but eventually the whole plant dies down.

Ring rot is most readily detected during harvesting operations. All tubers from an infected plant are likely to carry the bacteria that cause the disease, though all stages from apparently sound to completely rotted tubers may be found in the same hill. The bacteria enter through the stem and spread through the ring of water-conducting vessels that lies a short distance under the skin. If you cut an infected tuber crosswise you can see the characteristic ring of soft, discolored tissue that gives the disease

its name. The affected tissues are at first creamy yellow to light brown in color, cheesy in texture, and odorless. Eventually these tissues darken and shrivel, leaving small cavities. In advanced stages of decay, patches of dead tissue can be seen on the outside of the tuber, at the stem end and around the eyes, and deep cracks may appear in the skin. These wounds provide an entrance for organisms from the soil which cause soft rot, and the whole interior of the tuber may be converted to a slimy, foul-smelling mass.

HOW RING ROT IS SPREAD

Fortunately, the organism causing ring rot does not survive the winter in the soil. However, it does live over winter in infected tubers, some of which may show no sign of the disease. It can also survive in dried remains of decayed tubers smeared on the surface of healthy tubers, bins, machinery, tools, shoes, sacks, etc.

The disease is spread and multiplied mainly in the process of cutting tubers for seed. Ring rot is so infectious that a knife which has cut through an infected tuber can transmit the disease to the next 25 healthy tubers that are cut. By this means, ring rot can increase from a trace in one season to 50 per cent or more in the next. This is the reason that seed certification regulations require a zero tolerance for ring rot in certified seed potatoes.

RESISTANT VARIETIES

No commercial variety has yet been developed that has sufficient resistance to bacterial ring rot to be recommended for planting as a means of satisfactorily controlling or eliminating the disease. It is true that certain varieties have sufficient resistance to permit the production of a high

percentage of marketable tubers in spite of ring rot infection. However, such varieties are not immune to ring rot, and they can be a source of infection for other varieties because resistant tubers can carry ring rot bacteria from one season to the next without showing obvious symptoms.

HOW TO CONTROL RING ROT

In order to get rid of ring rot and to keep it off your farm, the following recommendations should be followed carefully:

1. If even a trace of ring rot develops in any of your plantings, harvest these potatoes last and get rid of them as soon as you can. Do not put potatoes known to contain ring rot into your storage pit if you can avoid it. Keep them well away from your seed stock so there will be no chance of contamination or mixing.

2. Never plant potatoes known to contain ring rot, regardless of the amount. It is impossible to eliminate all infected tubers when cutting for seed and the disease will be multiplied in this process. There is no method of seed treatment known that will kill the ring rot organism within the tubers without killing the tubers themselves.

3. Obtain new seed known to be free from ring rot (CERTIFIED) for planting next season. See that it comes in new bags and store it in a place where there is no chance of mixing with other potato stocks. Reserve a special section in your potato storage pit for the storage of seed potatoes year after year.

4. Before putting any potatoes into storage, clean the bins thoroughly, removing all remains of old tubers. Disinfect the bin boards, floors, and

all surfaces that have been in contact with potatoes by spraying or drenching them until saturated, with one of the following solutions:

- (a) Bluestone (copper sulphate)-----1 lb. to 10 gals. of water
- (b) Formalin (formaldehyde) -----1 qt. to 30 gals. of water
- (c) Lysol -----1 qt. to 10 gals. of water
- (d) Cresol (Kreso Dip or liquor cresolis) ---1 qt. to 5 gals. of water

5. Clean all machinery and equipment (planter, diggers, truck boxes, graders, baskets, etc.) and spray, drench, or soak them with formalin (1 qt. to 30 gals. of water) or Lysol (1 qt. to 10 gals.) Repeat this process before handling a different lot of seed.

6. Use new sacks and gloves in planting and harvesting operations wherever possible, otherwise soak them for 2 hours in formalin (1 qt. to 30 gals. of water) and dry.

7. Disinfect knives and cutters with mercuric chloride (corrosive sublimate), 1 oz. to 3 gals. of water, or acid-mercury (Mercurmol). It may be necessary to heat the solution in order to dissolve the crystals completely. A strong solution of Lysol (1 qt. to 5 gals. of water) may also be used. Keep extra knives standing in disinfectant and change knives frequently or every time a tuber showing any internal discoloration is cut. Discard all doubtful tubers. If a rotary cutter is used, the lower half of the blade should pass through a bath of mercuric chloride or Lysol. These disinfectants lose their strength as potatoes are cut and should be renewed several times a day, particularly where a small volume of solution is used at a time.

8. Discourage visitors and prospective buyers from cutting potatoes promiscuously in your field or storage bins with their own knives - you never know what they might have been cutting before. Do not allow cut tubers to be put back into the bin or hill.

9. Avoid exchanging machinery and equipment with other growers if possible. If you must use equipment that has been used on another farm, clean and disinfect it thoroughly before using it for your own crop as directed under No. 5 above.

10. If you find tubers in your seed potatoes that you suspect might have ring rot or any other disease, send a few typical specimens for laboratory analysis to:

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