

WASHINGTON VOLUNTARY FOUNDATION SEED TRIAL

by

Robert Thornton, Extension Horticulturist
Washington State University, Pullman, Washington

The bacterial disease of potatoes known as Ring Rot, caused by *Corinabacterium sepedonicum* has been and continues to be a major concern in the commercial production of potatoes in Washington. (For further details concerning the disease see article by T. J. Smith, in this proceedings.) The fact that the occurrence of this disease in terms of acres involved, (and number of sources of seed involved) has increased from 500 acres to 6,000 acres since 1975, suggests that the program of seed lot testing carried out by Washington State University in co-operation with the Washington State Department of Agriculture and the Washington State Potato Commission since 1960 was not accomplishing what was needed. (For a full discussion of the Washington Seed Lot program, see 9th Annual Washington State Potato Conference Proceedings, pg. 13 and 14th Annual Washington State Potato Conference Proceedings, pg. 5.) In the fall of 1978 a modification of the Seed Lot trial was proposed and after considerable debate, revision and consternation, the Washington Voluntary Foundation Seed Trial came into being. This trial is cooperatively sponsored by the Washington State Potato Commission, the Washington State Potato Seed Commission, the Washington State Department of Agriculture and Washington State University.

The Voluntary Foundation Seed trial has two separate but equally important objectives: 1) To reduce the incidence of Ring Rot disease in Commercial Potatoes in Washington and 2) Provide a location where potato seed samples can be grown in long, warm season climate favorable for Ring Rot disease symptom expression.

The whole intent of the program is to work with growers and potato seed certifying agencies from areas supplying seed for planting into commercial potato fields in Washington to obtain as near as is feasible Ring Rot free potato seed.

One of the major differences between the current Foundation Seed Trial and the Seed Lot Trial, as it has been conducted previously, is that seed samples for the present trial are submitted by seed growers. Previously seed samples came primarily, if not entirely, from seed receivers within the State of Washington. This system of sample submission was chosen for two specific reasons: 1) Ability to maintain identity of samples and 2) Minimizing possibility of seed lot contamination and/or mixing from any source during loading transit and/or receipt of seed prior to sample selection.

Seed growers who request to have samples entered in the trial (there is an official entry form) and pay a per sample charge, are provided with an official seed lot sample box. These are heavy duty telescoping cardboard boxes used to reduce, if not prevent, the possibility of sample mixing and/or contamination. No samples are included for planting into the trial unless they are submitted in these containers. Samples consist of no fewer than 400 randomly selected tubers.

Upon receipt, the samples are held in refrigerated storage by WSU until planting time in the original unopened boxes. The samples are planted about mid-March in attempt to assure early disease symptom expression of infected plants.

At planting time each sample is handled in the original container. All tubers in a lot are cut lengthwise with a knife, thoroughly sterilized, between lots. The tubers are cut with the intent of optimizing the spread of ring rot, blackleg and mosaic virus within the sample. After cutting the portion(s) of each tuber to be planted is deposited in the outer or lid portion of the original container. It is held and handled in this container until planted. The knives used for cutting the tubers are rinsed with clean water, soaked 5 to 10 minutes in a chemical

disinfectant, boiled in water for 10 minutes and alcohol flamed between each seed lot. People handling the samples wear plastic throw-away gloves that are discarded after handling a single individual lot.

Seed is planted by hand at 12 inch in row spacing, with 36 inches between rows. The open furrows are covered and a hilling operation occurs immediately after planting. Prior to the emergence of plants weed control materials are incorporated over the hills by use of a rolling cultivator. No further cultivation or in-field work occurs following plant emergence.

Although all disease symptoms that are observed are recorded and reported the three diseases of primary interest are: 1) Ring Rot, 2) Leaf Roll, and 3) Black Leg. The mosaics are reported as a group and no concerted effort is made to identify the exact strain of the virus(s). All plants with visual symptoms of Ring Rot or those suspected of Ring Rot are subjected to confirmation tests. The confirmation tests include both the gram stain and seriological tests. These tests are performed on the plant(s) and on samples of tubers from the plant(s).

In 1979 four separate field readings were performed at approximately 10 day intervals, beginning about mid-June. A public field day was held following the final field observation. At the time of the field day, the identification of the lots entered was made public for the first time (during the readings all lot identification was unknown to the observers). At this time the results of the disease readings were made public. The results can be obtained on request from the Washington State Potato Commission at any time following their release at the public field day.

In addition all growers who have samples represented in the trial are direct mailed a copy of the results. Seed certification agencies in the seed areas having samples entered are notified of the availability of the results.

To be assured that all certifying agencies, in areas where potato seed is routinely supplied for commercial planting in Washington, are aware of our on-going effort to improve seed quality, each is notified in advance of: 1) All reading dates, 2) Field day date and 3) Availability of readings.

It is our intent to conduct the trial in such a manner that seed growers from all areas can feel confident that the Washington Volunteer Foundation Seed Lot will be of value to them in supplying the best in Certified seed to the potato growers of the State of Washington.