

RESEARCH PROPOSAL FOR 1983-84

Rob Davidson

1. Potato leafroll virus - IPM effectiveness.

Can we measure the effectiveness of the IPM program? At what level are aphids a realistic problem in a potato field? Do the late aphid flights consistently show the most leafroll virus spread, or is this done earlier?

Answering questions like these may shed some light on one of the most common dilemmas faced by a potato grower, i.e., are the measures I'm using to control leafroll spread effective, and if not, are there other ways to deal with the problem.

Research has indicated that high levels of the green peach aphid correlate well with higher levels of PLRV in the field and an increased spread of PLRV to the following year's crop. The question raised, however, is whether or not this is just a coincidence or actually a fact.

Proposal: To stake out a number of plots in growers' fields to observe trends in PLRV spread as well as year to year carryover. Included would be subsequent use of the winter test plots in California and use of the ELISA technique for detecting PLRV. (In cooperation with Ken Knutson and Mike Lewis).

2. Examination of potential new clonal releases in regard to their reaction against PLRV.

Of major importance in new clonal releases is their reaction to a given disease. To become an effective, successful cultivar the growers must accept the potato and as such must know how it will perform in the field.

Proposal: To accomplish the winter phase of PLRV clonal evaluation. Included are the establishment of a viable aphid colony for transmission studies, building of aphid cages (whole plant and leaf clip), and the winter (inside) growth of clones to be tested. This should work into a routine testing program to examine current season symptoms, tuber set, plant yield reaction and plant reaction following a previous year's infection. (In cooperation with the Potato Breeding Program and Ken Knutson).

3. Microwave treatment of tubers vs. dormancy of apical bud and lateral shoots.

Initial experiments have shown some interesting results concerning terminal sprouting and overall lateral sprouting. Indications are that the microwaves affect the two dormancy factors, showing some effect on the initial tuber dormancy (apical bud) and on later lateral dormancy (as dictated by the apical bud). Also, there appears to be a cycling evident in tuber germination with certain levels of microwaves giving a consistently higher sprouting potential than others.

Proposal: A continuation of this work. (In cooperation with Dr. David Holm).

BUDGET PROPOSAL, 1983-84

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Equipment and Supplies	\$ 800.00
Labor	1,050.00
Travel	<u>250.00</u>
TOTAL	\$2,100.00