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PROGRAM AREA: Root and Root Zone Problems

PROJECT LEADER: D. E. Kester

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OBJECTIVES:

To evaluate, for prune, certain peach x almond rootstocks being developed for Prunus.

WORK IN PROGRESS:

1. The principal effort relative to prune production is the establishment in 1970 of a planting at UCD of 'French' prune on hybrid clonal rootstocks, 'PA 2-16-8-63' and 'PA 3-8-9-63' compared to 'Myro 3J' and 'Marianna 2624'. Trees on the hybrid clones are larger and have grown better than those on plum.
2. A program is underway for developing and selecting a whole series of new hybrid rootstocks involving the peach x almond class. These include a number of groups of hybrids designed to combine nematode immunity or resistance from certain peach parents with almond clones selected for crown gall and bacterial canker resistance. The studies have originally been instigated to develop stocks for almond but the research also has application for peach, plum, prune and possibly apricot.
3. Orchard trials of various peach x almond hybrid clones with almond tops are now growing in various commercial orchards in the state. Some go back to 1958.

EXPERIMENTS COMPLETED:

1. Basic propagation techniques and nursery procedures have been worked out for both vegetative propagation and seed propagation. Nursery stands of 75-80% or more are possible with hardwood cuttings. A key part of this procedure is selection of easily propagatable clones.
2. Preliminary selections have been made of about 20 hybrid clones that can be readily propagated vegetatively and have nematode resistance or immunity. In addition, selections have been made for resistance to crown gall and(or) bacterial canker. As a group these show vigor and wide adaptation to soils but total range of characteristics is not yet worked out.

3. Selection has been made of one almond and peach combination that produces exceptionally vigorous and uniform F_1 hybrids. Other studies have shown that certain almond varieties used as parents segregate groups of weak, rough-bark individuals in the hybrid population indicating that parental selection is critical.

WORK PLANNED:

1. Additional propagations are being made in the 1973 season of all the new clonal material of this project along with several hybrid seed populations. Some of these will be budded to 'French' prune for orchard trials.
2. Observations on 'French/PA 2-16-8-63' and 'PA 3-8-9-63' will be continued.
3. Further information on resistance to crown gall, bacterial canker and crown rot is needed.

MAJOR ACCOMPLISHMENTS:

A completely new class of Prunus rootstock has been developed which shows wide adaptation to various soils and incorporates resistance to nematodes and potentially to other pathogens. Propagation and production techniques have been devised such that the materials selected so far need be only the first of a series of new clones or seed propagated hybrids that can be produced as additional parental material is fed into the system.

IMMEDIATELY APPLICABLE RESEARCH RESULTS

Limited orchard plants on a test basis may be made in prune orchards, particularly utilizing 'PA 2-16-8-63'. However, trials should be very limited, as some of the other clones may supersede 'PA 2-16-8-63'.

EVALUATION

This project is producing material that could have direct value in prune production. Perhaps more important is the potential of using the concepts of hybrid production in development of new combinations not now tested.

PUBLICATIONS

None.