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THIRD CLASS
BULK RATE

Immunity to virus infection

A growing plant can react to a virus infection in one of several ways: it may prove to be immune; it may resist infection or tolerate it with no substantial loss of vigor or yield; or it may prove to be susceptible. Crossing varieties exhibiting immunity, resistance, or tolerance with those that are susceptible has long been an effective way to control plant virus diseases, but little is known about just what makes a plant susceptible or immune to disease.

Biochemist G. Bruening and plant pathologist R. J. Shepherd, U.C., Davis, are focusing their attention on the phenomenon of immunity, seeking biochemical and genetic explanations for reduced susceptibility. They hope that an understanding of mechanisms of immunity ultimately will help develop, by artificial means, cultivars immune to viruses for which there is no known source of natural immunity.

A new plant virology technique developed in recent years is aiding in these studies—using plant cell “protoplasts” as hosts for the virus. Protoplasts are cells without a cell wall but with the cell membrane still intact.

In experiments with cowpea mosaic virus (CPMV)—chosen because of the extensive information already available on it—and utilizing a new, simplified procedure they developed for isolating protoplasts, the scientists recovered viable protoplasts from 55 immune varieties of cowpeas. All were inoculated with CPMV

under optimal conditions for infection, and, surprisingly, infection occurred in protoplasts from all the immune varieties except one.

This apparent anomaly—immunity to virus infection in an intact plant, but susceptibility in cells released from the plant—is now under intensified investigation. Researchers feel they have evidence that the intact plant may have barriers to infections that are external to the cell contents. Studies are in progress to determine the nature of the barriers and other possible mechanisms for immunity to virus infections. (XXX 3240)

Grape pests

Insect pests have played critical roles in the rapid expansions and declines of California's grape industry since the first old world grape was planted here in 1781. In their efforts to control major pests such as the grape leafhopper, the omnivorous leaf roller (OLR), spider mites, and others, entomologists have long focused solely on the insect system, when in fact the various pests respond to the changing physiology of the host plant as well.

Research by University entomologist A. P. Gutierrez, U.C., Davis, has been enlarged to show how a crop's development influences the pest potential. Data are being gathered to determine the relationships between weather, plant physiology, and insect damage. These data will be assembled into a computer simulation model similar to that previously developed for cotton and alfalfa,

which will enable scientists to develop crop protection and production strategies for grapes, and will also enable them to assemble in compact form much of the widely scattered information on grapes. (ENT 3362)

Community data bank

Both rural and urban communities are being pushed in two directions. On the one hand, recommendations are being made to consolidate governmental, political, administrative, and planning units. On the other hand, equally strong forces are at work to turn more decision-making capacity back to the local level, e.g., revenue sharing, decentralization efforts, community centers, and neighborhood city halls.

While these conflicting forces are at work, local community leaders, policy makers, and residents are helpless to plan effectively because they lack adequate data or continuing information on their local sub-unit or jurisdiction.

A four-year U.C. project by E. J. Blakely in applied behavioral sciences is designed to provide a community-oriented data system practical for both research and community decision making.

An important planning tool expected to emerge from this project is a community-developed atlas or data book that can be used by local residents, leaders, and policy makers in understanding local needs and supporting their case for a variety of governmental or other services. (ABS 3388)