

A progress report . . .



Mite and thrips test plot in a Tehama County olive orchard.

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THE SUSPECTED causes of extreme fluctuations of Sevillano olive yields in the Corning area are being narrowed down as the result of a study started in 1958. The project was initiated by the University of California Agricultural Extension Service at the request of the Tehama County Farm Bureau's Corning Olive Center and has utilized a team approach, including many staff members of the University from the departments of Entomology, Pomology, Plant Pathology, Irrigation, and Soils and Plant Nutrition.

Average olive yields per acre for Tehama County, as reported by the California Crop and Livestock Reporting Service, are shown in the graph. Over 99% of the olives raised in Tehama County are of the Sevillano variety, thus the yield records reflect the production of this variety.

At the beginning of this project, the factors which could be considered as possible causes of such severe crop losses were listed, as shown in the table. By experimentation and observation some of

these factors have been eliminated as "not a cause." This should not be interpreted to mean that many of these factors do not reduce yields—but only that they are not considered main causes of the general crop failure in this study. The two factors considered causes of general crop failures in some years—inadequate winter chilling and excessively warm early springs—have been reported previously. The two other factors still considered possible causes of severe yield fluctuations from year to year include

Normal shoot from a Sevillano olive tree with mites controlled, left, as compared with branch from the same tree without mite control, right.



OLIVE YIELD DECLINE STUDY IN TEHAMA COUNTY

(1) a microscopic olive mite which feeds on the buds, flowers, and developing young fruit, and (2) the possible selection of budding and grafting wood from low-producing trees which were used to propagate Sevillano trees in Corning.

Olive mites

Experimental sulfur sprays and dusts applied in 1962 and 1965 have shown that the olive mite, *Oxyceus maxwelli* (Keifer), can be controlled. Where no control measures were used, yields from individual limbs have been reduced by almost one-third. Further experimentation is necessary to verify whether the mite can be controlled, with comparable

results, under conditions in a regular commercial orchard.

Sevillano selections

A survey of 27 orchards, totaling approximately 500 acres, was conducted in 1962 to obtain yield data for the previous 10-year period. Three of the orchards had average yields exceeding the county average by over 200%. Intensive studies have not explained this phenomenal production—except for the possibility that selection of the original wood used to propagate the orchards was responsible.

The Sevillano olive is not a true variety in which all wood used in its propagation originated from a single parent source. Rather it is a large-fruited olive that orig-

inated from any of a great number of random seedling cuttings introduced into this county from Spain. As a result, it is possible to have different selections of the Sevillano, each with its own unique genetic capability to produce heavy or light crops under varying conditions. Experimental grafts were topworked onto some trees belonging to Jim Patton in 1964 in an effort to select more consistently bearing clones of Sevillano olives.

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Closeup photo of thrips sampling and isolation techniques used in Tehama County olive test plots.



FACTORS CONSIDERED POSSIBLE CAUSES OF GENERAL OLIVE CROP FAILURES AND CURRENT STATUS IN THIS PROJECT

Factors considered	Possible cause	Not a cause	Definite cause
Irrigation		X	
Alternate bearing		X	
Sad culture		X	
Plant nutrition			
Nitrogen		X	
Potassium		X	
Zinc		X	
Magnesium		X	
Tree spacing		X	
Pruning		X	
Flower thrips		X	
Peacock spot		X	
Olive mites	X		
Lack of cross pollination		X	
Possible previously unrecognized diseases		X	
Lack of adequate winter chilling			X
Excessively warm early springs			X
Windbreak effect		X	
Rootstock effect		X	
Genetic capability of selected Sevillano clones	X		
Inadequate percentage of perfect flowers		X	

AVERAGE OLIVE YIELDS PER ACRE IN TEHAMA COUNTY, 1951-1965

