

# Ground Pearls on Grape Roots

subterranean scale insect known to infest roots of  
Bermudagrass found established in Imperial Valley

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**Grapevines** in Imperial Valley have been found to be a host for the ground pearl—*Margarodes meridionalis* Morr.—a subterranean scale insect previously unreported in California.

Heretofore, this insect has been found infesting roots of grasses, notably Bermudagrass, in southern United States—from South Carolina to Arizona only—but it is apparent from its present wide distribution that it has been in the Imperial Valley for many years. Although it has not been encountered in Bermudagrass lawns in California—as in Phoenix, Arizona, where it has caused severe damage—this insect has been found infesting Bermudagrass in permanent pastures and in areas adjacent to cultivated fields. It has also been found along irrigation ditch banks—which suggests that it is spread in irrigation water as well as by other means.

A different species of *Margarodes* is known as a serious pest of grapevines in Chile, and other species attack grapes in Brazil and South Africa, so *Margarodes meridionalis* should be considered as a potential pest of grapes in California.

## Varieties Infested

In the Imperial Valley, both Thompson seedless and Cardinal grapevines have been found to be infested by the ground pearl. In a young Thompson seedless vineyard near Seeley, heavily infested vines were found, though no root damage was apparent. Although many

vines in this vineyard showed poor top growth, not all of these were infested, while infestation was seen in vines showing good top growth. Because of the presence of other factors responsible for poor top growth and because the vineyard was young—and infestation necessarily recent—no conclusion was possible as to the present or eventual influence of the infestation. In an older vineyard on the same property, there again appeared to be little correlation between infestation and appearance of top growth because of the presence of other factors causing poor vine growth.

Scale-insect infested vineyards and Bermudagrass are in sandy soils. No in-

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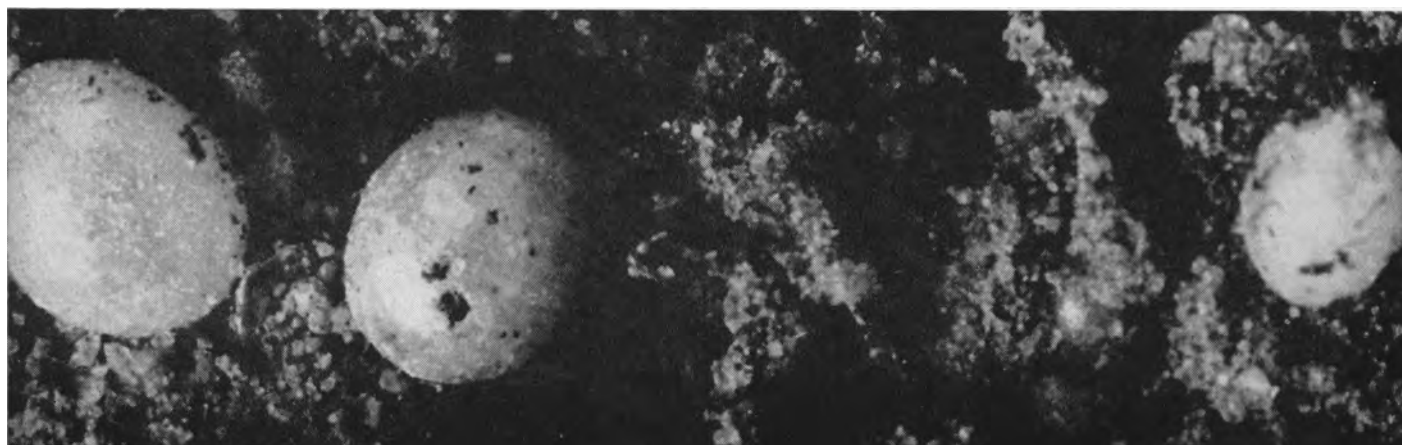


The ground pearl adult. Greatly magnified.



Eggs of the ground pearl. Greatly magnified.

Below. Pre-adult stages—ground pearls. Greatly magnified.



## CARROTS

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were grown near San Jose for comparison as to composition.

The test roots were harvested at the proper stage for market. Two lots were grown in the same area; one was harvested in August and the other in February. Examination showed some variation in composition within the four varieties. Imperator seemed to be high in composition for several of the constituents—dry matter, energy, calcium, and phosphorus. The Nantes variety was low in phosphorus, vitamin A, and riboflavin. Imperator seemed relatively high in many of the nutrients. The differences between varieties as to waste in preparing the roots were not important.

The results of the tests reported here are a survey and indicate possible trends, since the experiments and plots were not replicated and therefore cannot be statistically analyzed.

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*L. J. Clemente, J. W. Perdue, and Laura Morse, University of California, Davis, assisted in the experiments described in the foregoing article.*

*The foregoing article is based on the technical report Some Horticultural Aspects of the Food Value of Carrots by the same authors and published in the Proceedings of the American Society for Horticultural Science, 60:351-359, 1952.*

## BROILERS

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broilers; and c, through their oversetting and undersetting practices.

The first two of these factors have their principal influence on long-run changes in output; the last principally affects short-run changes. Except for these factors, hatcheries acted in the capacity of suppliers of chicks in accordance with the orders of their customers.

During the year of this study, California broiler chick hatcheries appeared to be a neutral influence on short-run changes in output in that there was little evidence that they made significant production decisions other than decisions to utilize their excess production capacity, to take advantage of changes in their customers' minds, and to avoid surpluses. The chicks hatched as a result of these decisions represented a small proportion of their total output.

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*California, Los Angeles, when the above-reported study was made.*

*The above-reported study is part of a larger project which will include analyses of the role of hatcheries, financing agencies, processors, and broiler producers on broiler output fluctuations. The over-all project is being conducted by the Western Regional Poultry Marketing Committee, WM-7.*

## POINSETTIA

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develop properly. These deformed bracts are unable to reach maturity but abscise and leave the open center commonly seen in plants of the Henrietta Ecke variety.

Plants which were grown under maximum light intensities—about 3,000-foot candles—produced flowers with normal central bracts. Plants under low light intensities—500- to 600-foot candles—abscised bracts readily. Furthermore, plants grown under high light conditions had larger outer bracts, a more intense color, were shorter, and were generally more desirable plants than those grown under low light conditions.

Quality plants of the double-type Henrietta Ecke variety can be produced and timed for the Christmas holiday trade by growing the plants under high light intensity conditions—with modification of usual watering and fertilizing practices—and by later propagation to avoid too tall plant growth. Such changes may take some time, but when growers do make them, the public will be rewarded with top quality double poinsettias.

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*The above progress report is based on Research Project No. 1470.*

## PONDEROSA

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demonstrated in the first experiment. It may well be that within the completely artificial system that was set up in these experiments, vapor pressure gradients exist which do not exist under natural

## GROUND PEARL

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festations have been encountered in heavy clay soils.

Since ground pearls have been found on grape roots 24" deep—which was the approximate extent of root penetration—it seems likely that they may be found even deeper.

## Insect Described

The adult female of this pest has well-developed forelegs bearing strong claws. She produces an egg sac of white waxy filaments and deposits within it over 100 eggs, which are pinkish-white in color. The dead body of the female closes off the end of the egg sac. Hatching observed in 1954 began during the latter part of June and continued into late July. The crawlers are elongate, slender, and quite active. They attach themselves by means of their needlelike mouthparts to a fine rootlet and eventually secrete the hard, glassy covering characteristic of the intermediate pre-adult stages. It is from the appearance of these later immature stages—globular in shape and with a pearly, faintly yellowish-green color—that the common name ground pearl is derived. Other details of the life history of this potential pest to California grapes are at present unknown.

Additional studies of this subterranean scale insect are planned, including chemical control tests.

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soil conditions. Continuing work should provide the answer.

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## Water Removed from Flask

Accumulative total in milliliters

Elapsed time (days)	Live seedlings started May 1				Live seedlings started July 1				Dead seedlings			
	1	2	3	4	1	2	3	4	1	2	3	4
1	1.5	1	1.5	1	3	.5	1.5	.5	0	0	0	0
4	6	5	6	5	5.5	1.5	4.5	3.5	0	0	0	0
7	17	8.5	10	8.5	7.5	2.5	6.5	6.5	0	0	0	0
13	30.5	11.5	16.5	13.5	10.5	4.5	10	11.5	0	0	0	0
19	36	14	28	21	11.5	6	13	13.5	—	—	—	—
25	65	17	40	29.5	13.5	8	16.5	16.5	—	—	—	—
31	82	—	62	45	14.5	9	20.5	18	—	—	—	—