

## EFFECT OF PRUNE RUST ON YIELD, 1988

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## INTRODUCTION

Prune rust caused by the fungus Transchelia discolor, is sporadic in occurrence and favored by moderate temperatures, rain, and high humidity. The fungus infects leaves, but not fruit, of prune trees, and severely rusted leaves become chlorotic and drop prematurely. Because this chlorosis and defoliation often occur late in the season, damage to the general health and vigor of prune trees is usually not attributed to rust, and the disease is not considered a serious threat to prune culture. However, this chlorosis and defoliation may reduce the overall photosynthetic capacity of the tree at a time when fruit are rapidly accumulating sugars and result in a loss in yield through reduced dry weight of mature fruit.

## OBJECTIVE

The objective of this work is to determine the effect of rust disease on the dry weight yield of prunes.

## PROCEDURE

The test will be conducted for at least three years, beginning in 1987, in a French prune orchard in Tulare County which has had a history of rust outbreaks. The orchard is 20 plus years old, trees spaced 6.1 x 6.1 m (20' x 20'), has a full cover crop and is floor furrow irrigated. The experiment is situated in six adjacent rows near the center of the block. There are 40 single-tree replications in a randomized complete block design of these three treatments: (1) Dithane M45, 4.48 kg/ha (4.0 lb/acre) a.f. (0.59 kg/378.5 l, 1.3 lb/100 gal), (2) SuperMicroSulf, 10.08 kg/ha (9.0 lb/acre) a.f. (1.36 kg/378.5 l, 3.0 lb/100 gal), and (3) untreated check. Materials were applied with a handgun sprayer on 27 June and 28 July, 1988.

Crop was harvested on 24 August, 1987. All fruit from each tree was weighed in the field with a load cell. One subsample (approximate weight 2 kg) from each tree was weighed and the number prunes counted. These were dried for 48 hours by a commercial dryer. Dry weight then percent soluble solids was determined for each subsample.

Disease was evaluated 26 August by assignment of each tree to one of the following categories: 0 = no rust, 1 = present, difficult to find, 2 = present in several areas of the tree. A second disease evaluation was made on 3 October, 1988. Fifty leaves from each tree were gathered and rated for percent leaf area having rust pustules. Defoliation of each tree was evaluated as follows: 1 = full canopy, very little leaf loss, 2 = noticeable leaf loss, but canopy not thinned, 3 = canopy thinned, 4 = very few leaves remaining on tree.

## RESULTS

There were no significant differences in dry weight among treatments but check trees produced significantly fewer prunes per kg and fruit in checks had

significantly lower percent soluble solids than did treated trees.

## YIELD DATA

<u>Treatment</u>	<u><math>\bar{X}</math> dry weight kg (lbs)/tree</u>	<u><math>\bar{X}</math> number prunes/kg (lb)</u>	<u><math>\bar{X}</math> percent soluble solids</u>
Dithane M45	47.4 (104.2)	27.7 (60.9) a	18.3 a
SuperMicroSulf	41.5 ( 91.3)	28.9 (63.5) a	18.1 a
Check	44.2 ( 97.4)	32.0 (70.3) b	16.8 b
P = 0.05, LSD =	N.S.	1.6 ( 3.5)	0.6

Rust was not observed at the time of the second application, but was present at harvest. Incidence at that time was not great and no defoliation had occurred.

## DISEASE EVALUATION

<u>Treatment</u>	26 August <u>% trees with rust</u>	3 October <u>Average Percent</u>		
		<u>Defoliation rating</u>	<u>Healthy leaves</u>	<u>Rusted area per leaf</u>
Dithane M45	0.2	1.7 a	82.5 a	0.8 a
SuperMicroSulf	0.2	2.0 b	38.8 b	4.5 b
Check	77.5	2.4 c	13.6 c	14.2 c
P = 0.05, LSD =		0.3	6.6	1.9

## CONCLUSIONS

No conclusions can be made yet. The experiment must be repeated for at least one more year.