Russeting of Bartlett Pears

experiments in 1953 indicate some factor other than copper in fire blight control is cause of russeting

R. W. Harris and W. H. Griggs

Copper dusts—applied to Bartlett pear trees during the blossoming period—were not the primary cause of fruit russet, during the 1953 season.

Application of copper dusts has become a standard practice for the control of fire blight. Usually, Bordeaux sprays —½-½-100—or copper-lime dusts—10–90 or 20–80—at 10 to 30 pounds per acre are applied at 5- to 7-day intervals during the blossom period, beginning at 25% to 30% full bloom. The number of applications varies from one to as many as a dozen.

It has been thought that the copper in the fire blight treatments was largely responsible for the russeting during certain seasons. This russeting is associated with the lenticles, or small openings, in the epidermis, or skin, of the fruit.

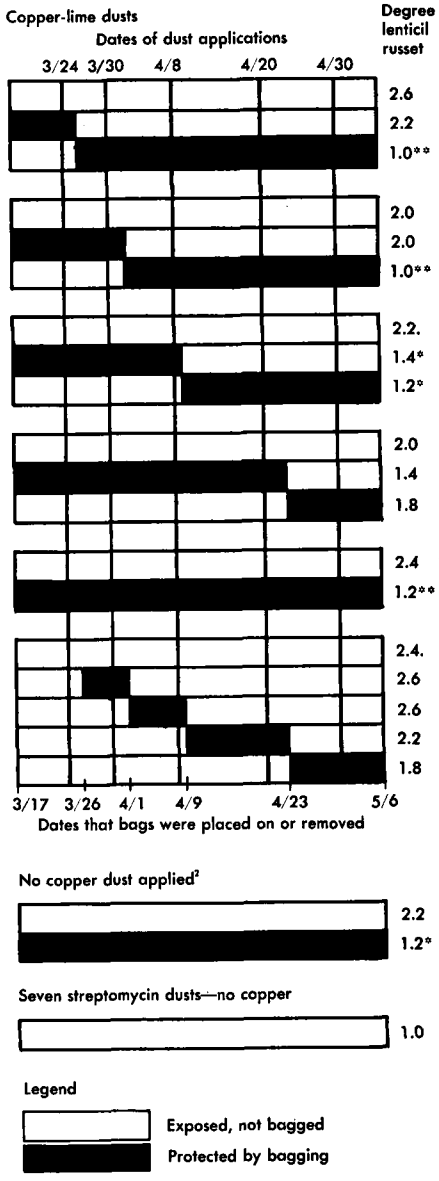
To ascertain whether pear russeting could be attributed to copper applications during bloom, three experimental plots were established in 1953 in a Sacramento Valley Bartlett pear orchard.

The first plot received copper-lime dusts—20–80—at the rate of 25 to 30 pounds per acre, when the orchard was dusted by the regular farm duster according to the standard schedule developed for that particular orchard. For the study, branches with 20 to 60 blossom clusters were bagged—with large silk or muslin bags—for various intervals during the blossoming period. Some bags were moved between dustings so certain branches were protected from single dustings or various combinations of dustings. Each treatment was replicated five times. An unprotected branch in each tree was selected as a check for comparison with the bagged branches.

A few days prior to the first commercial picking, samples of ten fruits per branch were collected and taken to the laboratory where they were rated according to their relative amounts of russeting. Fruits from branches which were protected—bagged—during all five, the last four, or the last three dustings showed significantly less russet than those which were exposed during all the dustings. The same was true—although to a lesser extent—of fruit protected during the first three, first four, or the last two dustings.

The 1953 blooming period was uneven and extended for about five weeks

The Effect of Copper and Streptomycin Dusts in Blight Control on Russeting of Bartlett Pears.



1. Russet rating: 1—Very little russet.
   2—Little to 10% of surface russeted.
   3—10 to 20% of surface russeted.

* Russet of protected fruit significantly less than unprotected (5% level).

** Russet of protected fruit significantly less than unprotected (1% level).

2. Bordeaux spray (5–5–50) applied to all trees on May 21.

—three weeks longer than normal. This complicated the blight control program and lengthened the period that copper protection was needed. At the time of the third dust application—on April 8—there were buds in the pink bud stage, flowers in bloom and petal fall, and even some fruits as large as ⅜″ in diameter. These various stages of fruit development were not segregated, so it was not possible to determine the effect of protecting the blossoms or fruit at different stages of development.

The greatest amount of russeting occurred on fruits on branches exposed late in the bloom period, when many of the fruits were up to ½″ in diameter. It would appear that copper dust—in this plot—was an important factor in causing fruit russet and that the dusts applied late in the blossoming period caused more russet than the earlier applications.

The second experimental plot was established to check the effect bagging might have on the amount of russeting when no copper dusts were applied. A block of approximately 250 pear trees separated from the main orchard by a 30′ levee was left with no application of copper dust. Branches on five trees were bagged for the fifty-day period in a manner similar to those in the first plot.

Bagging some of the branches on check trees—which were not to be copper dusted—made it possible to determine the effect of protecting the blossoms and fruit from the weather—or some other russet-causing agent. Unfortunately, blight developed to such proportions in this check block that on May 21 a Bordeaux spray—5–5–50—was applied at the rate of 1,200 gallons per acre. The spray was applied two weeks after all the bags had been removed, so all of the fruit in this block was exposed to the copper-containing spray.

In spite of this late spray, the fruit on those branches which had been covered developed significantly less russet than fruit which had been exposed.

The differences in the amounts of russet were just as great as those between the protected and the unprotected fruit in the first plot. Therefore, copper—in the Bordeaux spray, and there was no

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other copper applied—was not the primary russet-causing agent in this block.

In the third experimental block—of 302 trees, established to study the effectiveness of streptomycin dust in the control of fire blight—blossoming branches were bagged as in the other blocks. The third block received no copper dust, but streptomycin dust was applied in seven treatments—with the last on May 14.

Samples of both protected and exposed fruit from the streptomycin-treated block showed less russet than did the exposed fruit from the second—and adjacent—block which received one copper—the Bordeaux—spray or the first plot which received five dustings.

The fruit in the streptomycin-treated block was as free from russet as the average pears from the protected branches on the trees in the copper-treated blocks. Should streptomycin prove to be effective in the control of blight, it appears to show promise in reducing the incidence of russet.

Pears which developed on branches protected by bagging showed less russet than similar fruit on unprotected branches. This was the case in the check plot, where no copper was applied until after the bags were removed, as well as in the plot receiving five copper dustings. Therefore, it is apparent that some factor or factors other than copper was the primary cause of fruit russet.

Trials to determine the cause of russeting of Bartlett pears are to be continued.

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HENS

Continued from preceding page

ered significant, however. On the mash rations there was no difference in production between those hens fed barley and those fed corn. Egg weights and shell thickness were the same in all groups. On the basis of efficiency—pounds of feed per dozen eggs—all groups were the same.

A high corn ration appears to have no advantage over a high barley ration as far as egg production is concerned.

The chief factor influencing the choice of these grains in an all-mash ration would appear to be the cost of the grain.

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