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SMALL CHERRY IN ENGLISH MORELLO

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“SMALL CHERRY” IN ENGLISH MORELLO

**A Form
of Spray
Injury**

Most English Morello cherry growers have encountered at one time or another a peculiar dwarfing, shriveling, and dropping of the fruit just before harvest. The term “small cherry” has been applied to this condition and describes the trouble quite accurately. The cause of “small cherry,” however, has not been so easy to describe and several explanations have been advanced as to what brings about the loss in the cherry crop.

The stems of the cherries which fall from the trees or of those that hang to the trees and shrivel usually show signs of disease, and it was thought at first that this disease caused the dwarfing of the fruit and subsequent loss by interfering with the sap flow. It was found upon closer study, however, that spraying for this disease did not prevent loss from “small cherry,” and furthermore, that unsprayed trees did not suffer from this trouble. The injury is first seen as a bright red spot on the stem which later turns brown and shows signs of withering. These spots are found at places where excess spray or dust tends to gather. Naturally the pocket formed by the place of attachment of the fruit and the stem serves as an excellent place for the spray and dust materials to collect.

It seems evident, therefore, that the stems are injured by certain of the spray applications and that the disease organisms simply find a favorable abode in the injured stems. The injury is sufficient to shut off the sap flow and to cause the dwarfing and shriveling of the fruit.

Other things may cause under-sized fruit such as certain cultural practices, seasonal conditions, mechanical and insect injuries, disease infections of the fruit, etc., but these are readily distinguished from typical “small cherry” by means of the characteristic markings on the stems.

*This is a brief review of Bulletin No. 540 of this Station entitled “The Dwarfing, Shriveling, and Dropping of Cherries and Prunes,” by W. O. Gloyer. A copy of the complete bulletin may be had upon request as long as the supply lasts.

**Due to
Arsenate
of Lead**

As soon as it was suspected that the sprays and dusts used to combat the insect pests and diseases of cherries, particularly the cherry fruit fly, were the chief cause of "small cherry," a series of tests were begun to discover what ingredient was responsible for the injury. Evidence was soon accumulated to show that lead arsenate was the offending material, especially when used in large quantities.

Also, the injury is progressive, becoming more noticeable with the later applications of lead arsenate sprays and dusts. In fact if the applications made before harvest could be avoided altogether, there would probably be very little loss from "small cherry." If the cherry maggot is at all abundant, however, these later applications must be made and the only other recourse is to the use of smaller amounts of spray and dust mixtures. Just how light the treatment can be made and still secure effective control of the cherry maggot is still a matter for speculation.

Late in the season injury leading to "small cherry" may also follow the use of lime-sulfur, even at a strength of 1 to 40, while heavy applications of sulfur-lead-arsenate dust have resulted in the typical stem injury and the dwarfing and shriveling of the fruit which follow.

When lead arsenate is combined with fungicides high in free lime the stem injury is reduced. The least injury was observed with wettable sulfur and where **light** applications of sulfur-lead-arsenate dusts had been made. Wettable sulfur appears to be a somewhat safer material to use and gives promise as a possible substitute for lime-sulfur for the late summer sprays.

**Other Causes
Of Dwarfing**

As mentioned above, other things besides too much lead arsenate or lime-sulfur may result in the production of dwarfed fruit. For example, in the English Morello cherry it has been observed that the trees sometimes have a tendency to produce bud sports which ripen their fruit 10 to 14 days later than normal fruit. This may extend to a twig, a branch, half a tree, or even the entire tree and may appear year after year on the same tree. The fruit on these growths will be undersized and will appear to be dwarfed at the time that the other fruit on the tree is being picked. This is due, however, to delayed maturity and the small cherries will attain normal size and ripen at a later date.

Trees growing in sod may produce undersized fruit, and if it is not

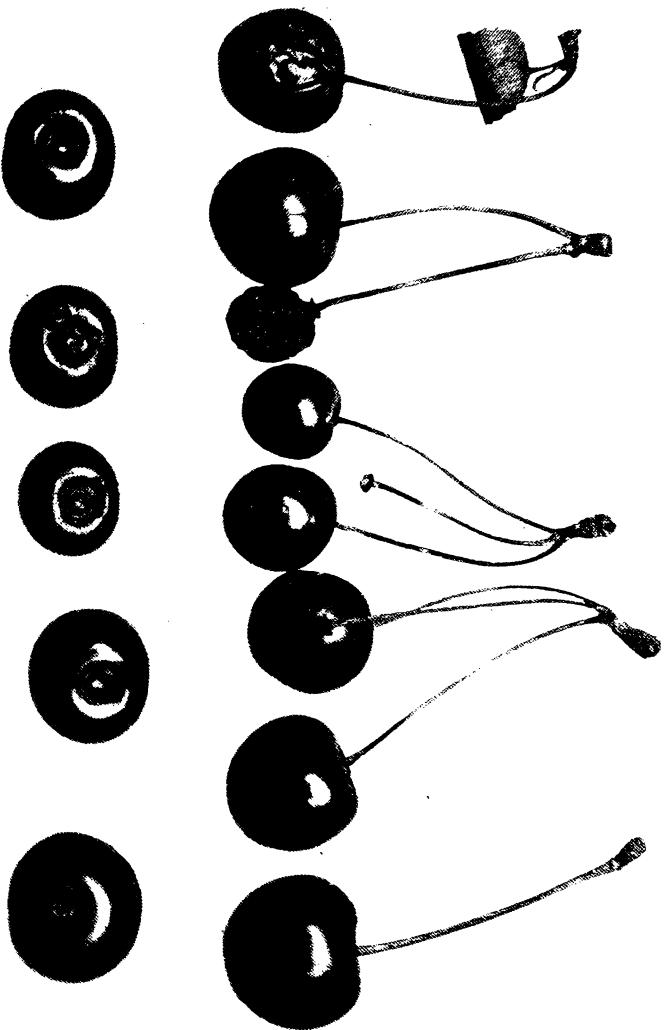


PLATE I.—FRUIT OF ENGLISH MORELLO AT HARVEST IN 1926 SHOWED LESS SHRINKING THAN WAS OBSERVED THE PREVIOUS YEAR.

The lower row of fruit shows the sunken, darkened areas about the place of attachment. The fruit at the left was taken from trees sprayed with lead arsenate in water, while the fruit at the extreme right was taken from an unsprayed tree.

possible to cultivate the orchard, applications of nitrate of soda at the rate of 1 to 2 pounds per tree may prove well worth while.

Also, premature dropping of the leaves due to leaf-spot should be avoided, for heavy foliage shades the fruit and tends to minimize the effect of stem injury.

Mechanical injuries and sometimes infection of the brown-rot organism cause small or mummified cherries, but these can be readily distinguished from fruits injured by arsenate of lead.

From the results of the Station tests it seems evident that there is no absolutely safe spray or dust mixture for use on cherries under the present spray schedule. Could applications be limited to the early weeks of the season, much of the loss from "small cherry" would doubtless be avoided; but this is not possible with such insect pests to combat as the curculio and the cherry maggot.

To control the maggot, applications of arsenical spray or dust must be made just as the fruit begins to show color and two weeks later, and it is at these applications that most of the injury from "small cherry" is encountered. It seems necessary, then, to effect a compromise on the sprays and dusts applied at this critical period. The standard spray schedule for English Morello cherries is given herewith as a guide for spraying and dusting operations.

If heavy applications of a dust are made stem injury may result, and if the applications are light the cherry fruit fly may not be properly controlled. If lime-sulfur is used in combination with lead arsenate, stem injury may occur, especially in hot sultry weather. If wettable sulfur is used with the lead arsenate, the fruit should be free or almost free of stem injury and of injury from the cherry fruit fly; altho its efficiency toward the shot-hole fungus has not been demonstrated. Also, in a season when the rains are not well distributed the fruit may show discoloration from lime-sulfur solutions, and, to a lesser degree, from applications of wettable sulfur.

Considering the discoloration of the fruit at harvest time and the highest efficiency with the least injury, it appears that the most satisfactory procedure where losses from "small cherry" have been sustained is to use lime-sulfur solution for the first three applications. Then, where sprays are to be used, and especially in hot, sultry

ENGLISH MORELLO CHERRY SPRAY SCHEDULE

TIME OF APPLICATION	SPRAY MIXTURE	ENEMY	DUST MIXTURES†
1. When petals fall	Lime-sulfur 2½ gallons Arsenate of lead 2½ pounds* Water to make 100 gallons	Leaf-spot Curculio	90-10 sulfur-lead-arsenate dust
2. Three to four days after shucks fall	Lime-sulfur 2½ gallons Arsenate of lead 2½ pounds* Water to make 100 gallons	Leaf-spot Curculio	90-10 sulfur-lead-arsenate dust
3. As Montmorency cherries show red on one side	Lime-sulfur 2½ gallons Arsenate of lead 2½ pounds* Water to make 100 gallons	Maggot Leaf-spot	90-10 sulfur-lead-arsenate dust
4. Two weeks later	Lime-sulfur 2½ gallons Arsenate of lead 2½ pounds* Water to make 100 gallons	Maggot Leaf-spot	90-10 sulfur-lead-arsenate dust
5. After picking	Lime-sulfur 2½ gallons Arsenate of lead 1 to 2 pounds‡ Water to make 100 gallons	Leaf-spot Slug	90-10 sulfur-lead-arsenate dust

*The amount of arsenate of lead is given for powder form; if paste form is used, twice as much is required.

†If heavy rains are of frequent occurrence, apply dust mixtures about one week after the first treatment and make a third application one week after the second treatment.

‡If slugs or other insects are not present lead arsenate may be omitted.

weather, it is recommended that lime-sulfur be replaced with wettable sulfur in the following proportions:

Superfine sulfur	16 pounds
Hydrated lime	8 pounds
Calcium caseinate (Kayso)	1 pound
Water	100 gallons

The usual amount of lead arsenate may be added to this mixture when needed.

If a duster is available, a **light** application of a 90-10 sulfur-lead-arsenate dust might well be substituted for the fourth application to be followed by a light application of plain sulfur dust before harvest if leaf-spot is abundant.

Cherry growers should bear in mind that in orchards where "small cherry" has not caused serious losses there is no reason why the regular spray schedule should be modified.

An injury similar in every way to that occurring on cherries was found on certain varieties of plums and prunes on the Station grounds. The injury was met with more frequently when bordeaux was used more extensively in spraying prunes. However, lime-sulfur and lead arsenate was observed to produce the typical stem injury with the characteristic dwarfing and shriveling of the fruit.

The varieties which have shown shriveling of the fruit in the Station orchard are as follows: Agen, Althann, Englebert, Golden Drop, Hungarian, Imperial Epineuse, Italian Prune, Madame Nicolle, McLaughlin, Pearl, Purple Gage, Late Muscatelle, Red Date, Reine Claude, and Sannois. Some of this shriveling of the fruit is due to the normal process of curing of the fruit on the trees and is easily distinguished from the premature shriveling due to lead arsenate injury.

As in the case of the cherry, prevention is the best cure. Since it is necessary to spray or dust for insect pests of prunes, the aim should be to obtain maximum efficiency in insect control with the least possible injury to the fruit. Knowing this, the grower should avoid applications of lead arsenate alone, but should combine with it a fungicide high in lime content so as to counteract any ill effects that the lead arsenate may exert.