



THE SIMPLE LIFE

Bush Fruits—Cultivation, Diseases and Remedies—Article III.

By W. T. Macoun, Horticulturist of the Dominion Central Experimental Farm

INJURIOUS INSECTS

Common Pests of the Currant and Gooseberry

By James Fletcher, Dominion Entomologist.

The various kinds of injurious insects which attack red, white and black currants and cultivated gooseberries, although more attracted to one or other kind of these plants, occasionally injure the others also, so that it is possible and more convenient to treat of them all in one article. The different kinds are arranged alphabetically under their best known popular names.

American Currant Borer (*Psenocorus supernotatus*, Say).—When red and white currants are leaving out in spring, some bushes are noticeably slower in coming than others, and occasionally individuals of the same variety. This is frequently due to the presence of stem-boring larvae, either those of the above beetle, which are white, cylindrical, and without feet, about a quarter of an inch in length, or those of the Imported Currant Borer, which somewhat resemble the above but have a brown head and short legs beneath the body. The parent of the American Currant Borer is a small, narrow, brownish-black beetle, about 1-1/2 inch long, with long slender feelers and two conspicuous white spots on the back towards the end of the body, and two smaller dots about the middle. These beetles may sometimes be found in the month of June crawling about upon the bushes. The eggs are laid in summer, the young grub-like burrow inside the canes and do not change to pupae until the following May. The attack of this insect, although occasionally serious to fruit growers, is only an exceptional one, for the species propagates much more freely in the stems of the Virginian Creeper.

Remedy.—When currant bushes are pruned, all the wood which is cut out should be burnt, and if the presence of this insect or of the Currant Borer is detected by the black burrows in the centres of the stems, such stems should be pruned down until the larva is found so that it may be destroyed.

Currant Aphid (*Myzus ribis*, L.).—When the leaves of currant bushes are nearly full grown, many of them bear blister-like elevations of a reddish color, beneath which will be found yellowish plant-lice, some winged and some wingless. The blisters are due to the attacks of these insects, and when, as is sometimes the case, they are very abundant, considerable injury is done to the bushes.

Remedy.—Spraying forcibly with emulsion will destroy large numbers of these plant-lice at each application; but the liquid must be thoroughly applied and driven well up beneath the foliage by means of an angled nozzle. Two or three applications at short intervals may be necessary.

Currant Borer (*Aegeria tipuliformis*, L.).—Early in June a beautiful little bluish-black fly-like moth, with three bright yellow bands around the body may be seen darting about around or at rest on the leaves of currant bushes of all kinds. This is one of the most troublesome enemies of these fruits. The moth lays an egg at a bud on the young wood, and the caterpillar, when hatched, eats its way into the cane and destroys the pith. It remains in the wood during the winter, and the moth emerges during the following summer.

Remedy.—As in the case of the American Currant-borer, close pruning is the best remedy.

Currant Maggot (*Epiphyas canadensis*, Loew.).—Red, black and white currants, in British Columbia and in several places in the Northwest Territories and Manitoba, have of recent years been seriously attacked by the maggots of a small fly. These maggots come to full growth just as the berries are about to ripen, causing them to fall from the bush, when the insects leave them and burrow into the ground to pupate. Attacked fruit is rendered useless by the presence of the maggots inside the berries; and frequently it is not until the fruit is cooked that the white maggots can be detected. Gooseberries are sometimes injured, but far less frequently than black and red currants.

Remedy.—The only treatment which has given any results is the laborious one of removing about three inches of the soil from beneath bushes which are known to have been infested, and replacing this with fresh soil. That which was removed must be treated in some way, so that the contained puparia may be destroyed. This may be done either by throwing it into a pond or by burying it deeply in the earth.

Currant Soft-scale (*Aspidiotus ribis*, Fitch).—These are occasionally noticed upon the stems of currants and gooseberries clusters of large swollen dark-brown polished scales, about 1-10 of an inch in diameter, beneath which, when mature in July, large numbers of white eggs may be found. These hatch during that month, and the small, mite-like young crawl all over the plant and suck the sap from the leaves and young growth. By autumn they have grown but little and are covered with a flat brown scale about 1-32 of an inch in length. As winter approaches, they crawl on to the twigs and pass the winter there. During the spring of the next year they grow rapidly, and as they are sometimes in such numbers as almost to cover the twigs, they do a considerable amount of harm by sucking the sap the time when the bushes require all their vigor to ripen fruit.

Remedy.—Spraying the bushes in winter time either with the lime-sulphur wash or with kerosene emulsion is the best treatment for this scale.

Currant Span-worm (*Cymatophora ruficaria*, Fitch).—The voracious caterpillar, which frequently does much harm to currants and gooseberries, but particularly to the black currant, is more difficult to control than

the common Currant Worm, the larva of the Imported Currant Sawfly. The caterpillars are about an inch in length, of a whitish color, with yellow stripes down each side, and one down the middle of the back; the whole body is dotted with black spots of different sizes. There is only one brood of this insect in the year, the moths appearing at the end of June and in the beginning of July. The eggs are laid on the twigs during the latter month, and remain there unhatched until the following spring. The caterpillar may be found during June.

Remedy.—It is necessary to use a much stronger poison for the Currant Span-worm than for the ordinary Currant Worm. Paris green, arsenate of lead, or some other arsenical preparation, are preferable to the white heliothrips usually recommended. When occurring only in small numbers, hand-picking is practicable, owing to the habit of the caterpillar of letting itself down by a silken thread, when the bushes are disturbed.

In addition to the above, which is the commonest of the span-worms, there are occasionally found two much larger caterpillars of the same shape and looping movement of the body when walking. These are those of the Currant Angerona (*Xanthotrypa crocearia*, Fab.), which has a caterpillar an inch and a half long or more when full grown, of a yellowish-green color, with a whitish line down the back and a broad white band on each side bordered with pale purple, below the spiracles, and the Pepper and Salt Currant Moth (*Lycia cognataria*, Gn.), which has a large caterpillar two inches long, varying in color from green to dark brown, and when at rest standing out rigidly, like many of the other span-worms, so as to resemble a twig or the stem of a leaf. Neither of these latter caterpillars is a regular pest of the small fruit grower; but they occasionally appear in such numbers as to require attention. They are easily controlled by the same remedies as given above.

Currant Leaf-hopper (*Empoasca malis*, L. Baron).—A frequent cause of considerable injury to the leaves of currants and gooseberries, is a small pale green leaf-hopper which during May and June is found in large numbers beneath the leaves, from which it sucks the sap. This is the same insect as is often so abundant upon apple trees, and has received various names from different authors. Perhaps the best known is *Empoasca albobipuncta*, which was given to it by Dr. S. A. Forbes. The mature insect is a slender leaf-hopper less than 1-8 of an inch in length, and passes the winter beneath the leaves, etc. It flies to the bushes in spring, as soon as they leaf out. The young wingless leaf-hoppers of the first brood may be found about the beginning of June, and should be destroyed before they develop their wings and propagate.

Remedy.—Spraying the bushes with kerosene emulsion or whale-oil soap solution before the insects become winged, is the best remedy. Care must be taken to drive the liquid well up under the leaves.

Currant Worm or Currant Sawfly (*Pteronotus ribesii*, Scop.).—By far the best known of all the insects which injure currants and gooseberries, is the "Currant Worm." The black spotted dark green false-caterpillars of this insect may unfortunately be found in almost every plantation of currants or gooseberries, every year in almost all parts of Canada. The white eggs are laid in rows along the ribs of the leaf on the lower side, towards the end of May. From these the young larvae hatch and soon make their presence known by the small holes they eat through the leaves. Unless promptly destroyed, they will soon strip the bushes of their leaves, thus weakening them considerably so as to prevent them ripening fruit the first year, and also reducing the quality of the crop of the following season. There are at least two broods in a season in Canada. The first appears just as the leaves are attaining full growth, and the second just as the fruit is ripening. The perfect insect is a four-winged fly which may be seen flying about the bushes early in the spring. The male is blackish, with yellow legs and of about the same size as a house fly, but with a more slender body. The female is larger than the male and has the body as well as the legs yellow.

Remedy.—For the first brood a weak mixture of Paris green, 1 ounce to 10 gallons of water, may be sprayed over the bushes, or a dry mixture 1 ounce of Paris green to 6 pounds of flour may be dusted over the foliage after shower or when the leaves are damp with dew. For the second brood Paris green must not be used, but white heliothrips; this is dusted on as a dry powder, or a decoction of this powder, 1 ounce to 2 gallons of water may be sprayed over the bushes. It is, of course, far better to treat the first brood thoroughly, so as to reduce the all egg-bearing twigs which would lay eggs for the second brood.

Four-lined Leaf-bug (*Pseudococcopus lineatus*, Fab.).—An occasional injury of no very great importance, as a rule, is caused by the four-lined leaf-bug, which is by the Four-lined Leaf-bug. The eggs of this insect are inserted into the twigs of bushes, particularly currants. They are usually placed near the tips and protrude slightly through the bark when they are white, they can be easily seen and, when once known can be recognized again without difficulty. Much good may be done in controlling this insect by cutting off all egg-bearing twigs when pruning. The mature insect is a flat, bright green or yellow bug, with four black lines down the back and with the tips of the wings and two large round spots on the thorax also black. The nymphs or immature bugs occur with the adults near the tips of shoots and are exceedingly active. These insects puncture the young leaves of currant and gooseberry bushes as well as of many other kinds of plants, causing

brown spots which are sometimes so numerous and close together as to make the leaves wither.

Remedy.—When, as is generally the case, only a few bushes are attacked, shaking off the nymphs and perfect insects into open pans containing water with a little coal oil on the top, is often sufficient. If the attack is more extensive, spraying the bushes with kerosene emulsion or whale-oil soap solution will destroy all the insects reached by the spray. The winter is passed in the egg state, therefore, all egg-bearing twigs should be cut off and burnt.

Gooseberry Fruit-worm (*Zophodia grossulariae*, Riley).—Just before gooseberries ripen, clusters of two or three may sometimes be noticed, which are prematurely colored, and which are joined together by the webs spun by the caterpillar of a small moth. These caterpillars are pale greenish-white and sometimes have a reddish tinge. They live inside the berries and, when the contents of one berry are consumed,

tearing the leaves apart, these wriggle quickly out of their shelters and fall to the ground. When full grown, which is during June, the caterpillars change to brown chrysalides inside their tents, and from these a little later the moths appear. These are flat and broad in shape, resembling a bell in outline when at rest. The front wings are of a pale ochre yellow. The moth extends about an inch across the wings. The caterpillars are very general feeders and may be found on a great number of trees and shrubs.

Remedy.—Spraying bushes with Paris green and water to destroy the first brood of the Currant Worm will control this caterpillar also, as it occurs about the same time. The clusters of leaves containing the larvae are easily noticed and should be pulled apart and the caterpillars killed when ever detected.

Oyster-shell Scale (*Mytilaspis ulmi*, L.).—Several kinds of scale insects attack currants and gooseberries. These plants seem to be particularly susceptible to the attacks of the oyster-shell scale, which is found in great numbers on the leaves of the plants. The scale is a small, oval, white, waxy substance, which is attached to the leaves by a long, thin, white thread. The scale is very difficult to remove, and it is necessary to use a strong solution of kerosene emulsion or whale-oil soap to destroy it.

Remedy.—It is probable that most of the kinds of "Red Spiders" pass the winter as eggs on the bushes. Plantations which have been infested once, should be thoroughly sprayed early in the spring with the lime and sulphur wash.

In dry years great injury is occasionally done in plantations of currants and gooseberries, as well as on raspberries, apples and many other kinds of fruits, by various species of spinning mites which are usually spoken of in a general way, by horticulturists, under the name of "Red Spiders." These are all very minute reddish, or greenish white mites that are found on the lower surfaces of the leaves, which they cover with a fine network of web in which they live and which renders it difficult to get at them with ordinary liquid applications. These minute creatures propagate very rapidly, and their injuries to trees by sucking out the juice of the leaves is very soon apparent by the bleached appearance of the foliage, which soon dries up and falls away.

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Remedy.—The best method of controlling this insect, which fortunately is never very abundant, is to pick by hand the clusters of injured berries. It is claimed that chickens and other poultry are useful in destroying the larvae and chrysalides, and it is certain that while chickens are very small, they are useful in a garden in destroying a great number of injurious insects. The old hen, however, should be kept securely caged up and not allowed to run at large.

Imported Currant Borer.—See Currant Borer.

Imported Currant Sawfly.—See Currant Worm.

Oblique-banded Leaf-roller (*Archips rosaceana*, Harr.).—Late in May and during June the leaves at the tips of young shoots of currants of all kinds may be seen gathered together by active pale green caterpillars about 1-4 inch long, with black heads. Upon

ed, attack another near at hand, joining it to the first by a silken web. When full grown they fall to the ground and spin brown parchment-like cocoons, just beneath the surface of the soil. The moths, which are pale grey, marked with dark streaks and bands, are very rarely observed. They fly early in spring, and there is only one brood in the year.

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Herbert Raspberry

THE RASPBERRY

The raspberry is the most popular bush fruit in Canada. Beginning to ripen just as the strawberry season is over, a supply of this fruit is kept up for three or four weeks during the hottest part of the summer, when, owing to its refreshing character, it is very much appreciated when eaten raw with cream and sugar, and used in this way in large quantities. Not only is the raspberry popular in the raw condition, but it is very generally used for canning and preserving. Raspberries, when made into "raspberry vinegar," make a very refreshing drink which is especially appreciated in the country.

Owing to its hardiness and to the fact that it will succeed fairly well

with comparatively little care, the raspberry is grown by almost every one who grows fruit at all.

The following information regarding the history of the raspberry was prepared by Mr. John Craig, when horticulturist of the Central Experimental Farm. In writing of the wild red raspberry of Europe, the native wild raspberries, and the native black cap, he gives the following particulars:

"The first was known and apparently cultivated by the ancient Greeks, who traced its origin to Mount Ida, where it flourished wild, and from which it received its name, *Rubus Idaeus*. Paladius, a Roman agricultural writer of the fourth century, mentions the raspberry as one of the cultivated fruits of his time. From the gardens of southern Europe it found its way into France, the Low countries, and England, and from sources into the United States.

To this species belong the red and white Antwerp, which have remained standards of excellence for upwards of a century, the Hudson River Antwerp, Franconia and other similar varieties. These foreign sorts, though often abundant bearers of large, finely flavored fruit, as Mr. Crozier further points out, have not proved adapted to the climatic conditions of the United States, and this is also true with regard to Canada, owing to a lack of hardiness and a liability to be injured by our hot summer suns. These defects finally directed attention to our native raspberries. The black cap (*Rubus occidentalis*) seems to have been the first of these to have been brought into cultivation, and from the time of the earliest settlements we hear of the wild bushes being occasionally transplanted to the gardens. Prof. Macoun, of the Geological Survey of Canada, kindly furnishes the following particulars regarding the distribution of this species in Canada: "*Rubus occidentalis* has a very restricted range both to the north and west. It is sparingly found in New Brunswick, quite common in Quebec, west of that city and through Ontario to Lake Huron, though apparently absent from Toronto westward to Lake Erie. On the west coast this species is replaced by one very like it named *Rubus leucodermis*, which is common on Vancouver Island, and has been collected as far east as the Columbia River valley, 100 miles south of Revelstoke.

In the east *R. strigosus* and *R. occidentalis* hybridize and form a species (*R. strigosus*) by Prof. S. A. Forbes. This form grows in abundance at Sicamous, B. C., close to the C. P. R. station, where it was found fruiting finely in July, 1899. *Rubus leucodermis* in its native state appears quite promising, but as yet has furnished no variety adapted to general cultivation.

The first distinct variety of black cap (*Rubus occidentalis*) of which we have record, is the Ohio Overbearing, which attracted attention as early as 1832, from its habit of fruiting to a greater or less extent upon the young canes in autumn. For a family garden this was considered to be a desirable feature, though no varieties of this class ever found favor for market purposes. The yellow form of the black cap, represented by Golden Cap and other varieties, was introduced about the same time. The Doubletine next came into notice, about 1850, and attained considerable prominence." (Crozier).

In some districts of the United States black raspberries are extensively cultivated for drying, the Ohio being one of the favorite varieties grown for this purpose. "Our native red raspberry has a wider range than the black cap, extending especially much farther northward. Prof. Macoun also furnishes me with the following particulars regarding the distribution of this species: "*Rubus strigosus* has a very wide range in Canada, passing without a break to the coast range in British Columbia. Mr. Low found it in Labrador on the height of land at the source of the Ungava river, down which it descends to latitude 52 degrees. Mr. J. B. Tyrrell brought back specimens from the "Barren Grounds" gathered in latitude 62 degrees, 17 minutes, longitude 103 degrees 0 minutes. Mrs. E. E. Taylor collected in the delta of the Mackenzie river, on Peel's river, 20 miles north of the Arctic circle, and lastly, Mr. Jas. McIlroy gathered abundance of ripe fruit on the Yukon, north of latitude 62 degrees. I have gathered specimens in the mountains at an altitude of 7,000 feet. It will be seen by the above that it has a very wide range."

"Mr. Crozier further states that: "This species does not take so kindly to cultivation as the black cap, and the origin of our varieties belonging to it is often obscure; we have but few well authenticated examples of the species in its native state, having been brought from the wild state into cultivation, and most of these soon disappear. The evidence by which certain of our well known red varieties are traced by botanists (doubtless correctly) to the native species is mainly structural, and not historical, since nearly all have originated, directly or by descent