

Vegetables and Their Sprays

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WHAT is new in sprays? Not much, and yet everything is new. We sometimes fail to realize the newness of spray science! During the past year, despite our eagerness for that which is new, we have found little, actually belonging to the year, upon which the stamp of genuine worth may be placed.

Bordeaux mixture and paris green, the oldest of our spray compounds, date back only a few years. True there were spray mixtures before that time, and for some of these, remarkable properties were claimed; but they were poorly adapted to the purpose for which they were designed. For example: Hemery, a French nurseryman, made a compound which was intended to kill mildew on peaches. It was made as follows:

Aconite branches and tubercles1 kilogram
Water4 liters
Pigeon dung25 liters
Urine1 hectolier
Again, that of Mr. Yates of Albany, N.Y.:

Wormwood1 handful
Rue1 handful
Virginia tobacco2 handfuls
Water2 pailfuls

Such mixtures as these were abundant enough, but it was not until 1885 that there appeared unmistakable evidence, based upon experiment, that a substance had been found which was a specific against the grape mildew and other fungous diseases.

The following from Dr. Lodeman is of especial interest: "In south-western France, in the maritime department of Gironde, is situated the city of Bordeaux. It lies near the western border of a large horticultural district of which the grape is by far the most important fruit. It is here that the downy mildew of America first made its appearance in Europe, probably in 1878, and here also it became most severe. It was noticed that a few vines escaped the general attack. These were situated along the highways. It was also noticed in the autumn of 1882 that certain vines retained their foliage in an almost perfect condition. Vineyards in these localities had suffered considerable loss from the stealing of grapes by children and travellers. It had formerly been the custom to sprinkle verdigris upon a few rows of the vines nearest the road, for the purpose of giving the fruit the appearance of being poisoned. Several years before the appearance of the mildew, this substance was replaced by a mixture of the milk of lime and some salt of copper. The mixture was of the

consistency of cream and of a light blue color. It was then applied to the vines by means of brooms. The design was to apply enough of the mixture to each vine to give it the appearance of being well poisoned. The vines thus treated were the ones that retained their foliage, while the vines further removed from the road lost their leaves. This was the beginning of the Bordeaux mixture."

The currant worm in the east and the potato beetle in the west made the necessity for paris green, or something like it, imperative. To whom the honor of first using paris green belongs is not known. It made its appearance somewhere between 1860 and 1870. Its use as a standard insecticide began in the western states. Applications of paris green, mixed with water, do not appear to have been made during the first few years following the introduction of the poison. It is thus seen that the introduction of spray mixtures and their use are of recent date.

VEGETABLE SPRAYS

The spraying of vegetables is even newer than the spraying of the orchard or vineyard. After much experience in different parts of the country we are forced to admit, barring the potato, vegetables are little sprayed—much less than is supposed by the experiment station. We are learning, however, that quality counts, and that the spraying of vegetables is a factor which may not be neglected if quality is to be secured.

Paris green and Bordeaux mixture still form a combination not surpassed as an insecticide and fungicide in the vegetable world. Paris green has one competitor in arsenate of lead, and Bordeaux mixture and paris green or arsenate of lead are the great weapons the gardener has in his fight against insect pests and fungous diseases. With these he is able to wage effective warfare.

Nothing that we have here said is meant to throw discredit on the use of lime-sulphur in the apple-orchard. There it has a place and is destined to replace other fungicides; but even we believe that Bordeaux mixture is the better fungicide. It is because of the insecticidal value of lime-sulphur and because there is less danger of spotting the fruit when used as compared with Bordeaux mixture, that lime-sulphur is coming into common use. In the vegetable world however, lime-sulphur has little or nothing to recommend it.

BEST SPRAY FOR POTATOES

Our experiments with the various sprays on potatoes at Mardonald College have already been reported in The

Canadian Horticulturist. Any person seeing the plots could not fail to be convinced that Bordeaux was the proper spray for potatoes. Lime-sulphur for potatoes was much worse than no spray. The yields told the same story as seen by the illustrations. Between paris green and arsenate of lead for potatoes, we have little choice. Paris green is cheaper and is the poison we use and recommend in our work.

A great deal of exact and interesting work has been done by the experiment station, Storrs, Connecticut, in the spraying of cucumbers and melons. The table shows the result with cucumbers. Melons gave similar results, so that the figures may be taken as an example of spraying vine crops.

YIELD OF CUCUMBERS

Date of Harvesting.	Bordeaux 4-4-50	Check.	Self-bolled Lime-Sulphur.	Commercial Lime-Sulphur 1 to 50
July 11	72 (fruit)	74	102	68
" 14	97	187	177	129
" 18	111	289	160	54
" 21	160	371	112	23
" 25	281	410	91	
" 29	412	711	44	
Aug. 2	875	977		
" 6	1,124	1214		
" 9	1,490	841		
" 13	1,807	679		
" 17	1,881	115		
" 22	1,645	92		
" 27	1,316			
Sept. 1	874			
" 5	665			
" 10	365			
	13,115	5960	686	23

The conclusions arrived at by the station are as follow:

1. Bordeaux mixture is the best remedy for the spraying of melons and cucumbers, but it will not completely control the common diseases of cucumbers and melons.

2. In seasons favorable to the spread of the disease plants that have received three or four applications of Bordeaux mixture may be kept alive and in a productive condition from two to three weeks longer than unsprayed plants.

3. In seasons when the disease is not troublesome, or when it appears late in the season, unsprayed plants are usually more productive than those that have been sprayed with Bordeaux.

4. Bordeaux mixture applied to cucumbers has an injurious effect upon the foliage. Applied to melons, the injury is chiefly to the foliage, but seems to retard the maturing of the fruit.

5. Strong Bordeaux is more effective in keeping the disease in check than weak Bordeaux. As might be expected, it also causes greater injury to the plants. Half-strength Bordeaux causes less injury than the full strength mixture.

6. Spraying with a very fine spray and avoiding the formation of clods on the foliage gives the best results.