

very satisfactory. By pouring the mixture on the top of the cone it will strain readily with little clogging, and is more satisfactory in this respect than a flat strainer.

The following tests are good ones to show whether the copper sulphate has all been neutralized by the lime:—

Potassium Ferrocyanide (in Solution).—No change on adding to mixture. If more lime is required, it turns a purple or reddish colour.

Blue Litmus-paper.—No change. If it turns red, more lime is required.

Knife-blade.—If metallic copper precipitates on the blade, the mixture requires more lime. The potassium ferrocyanide is the best and cheapest indicator.

Bordeaux mixture, double strength (8-8-40), is to be recommended for fall spraying for the black-spot canker. The ordinary mixture is a valuable spray for potato-blight and various other vegetable-diseases.

Sticker.—

Resin	2 lb.
Sal soda	1 lb.
Water	1 gal.

Boil this mixture until it is of a clear brown colour, which takes from one to one and a half hours. Cook in an iron kettle in an open place. Add the above to 40 gallons of Bordeaux for use on smooth foliage, like onions, cabbage, or asparagus. If used with arsenate of lead or Paris green, add 1 to 2 lb. of fresh lime to every 40 gallons.

Soluble Sulphur.—This is a patented preparation containing 58 to 60 per cent. soluble sulphur and 40 to 42 per cent. inert matter. It is recommended by the manufacturers as a spray to take the place of lime and sulphur. The compound comes in dry form in various sized packages and is easily handled. For winter spraying the strength recommended is 1 lb. soluble sulphur to 4 gallons of water, and for summer spraying 1 lb. to 40 gallons of water. Some growers have reported good results with this spray, but, on the whole, the results of the experiments carried on for two years by the Department have been varied and conflicting.

Atomic Sulphur.—A spray manufactured by the General Chemical Company of California and recommended for the summer spraying of fruit-trees, especially those with tender foliage. It is recommended for practically everything that lime and sulphur is used for during the summer and is reported giving good results. It has not been used to any extent in this country, but is worthy of trial for the powdery mildews on apples and peaches.

Precipitated Sulphur.—After testing out all standard fungicides and many new preparations this spray gave the best results in California in the control of apple-mildew. In the tests made it was prepared as follows: 2 lb. iron sulphate dissolved in 10 gallons of water. To this add concentrated lime and sulphur slowly until no more black precipitate is formed; allow to settle and pour off clear liquid. Water is added again and the same operation is repeated two or three times. The black precipitate is then mixed with 100 gallons of water and used as a spray. Arsenate of lead and nicotine sulphate can be used with this mixture without impairing its fungicidal value. Some fruit-growers in Hood River report good results from adding the iron sulphate and arsenate of lead to the lime-sulphur after the latter is diluted in the spray-tank.

Combination Sprays.—It frequently happens that the time to spray for some blighting or sucking insect coincides with that for a fungus-disease. It is therefore possible by combining various sprays to make one operation do the work of two or even three. The following has been successfully used against aphides, scab, and leaf-eating caterpillars: Lime-sulphur (concentrated), 3 gallons; 40-per-cent. nicotine sulphate, $\frac{3}{4}$ pint; lead arsenate (paste), 5 lb.; water, 100 gallons. The foregoing spray gives the best results in the Dry Belt when applied immediately before the blossoms open. If any of the ingredients are not necessary they may be omitted.

NOTE.—Never add soap to a spray containing lime-sulphur.