

Preparation of Tank-Mix Bordeaux Mixture

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In Oregon, Bordeaux mixture continues to be an outstanding fungicide and bactericide for use in controlling some diseases of tree fruits, small fruits, and ornamentals. The ability of Bordeaux mixture to weather the fall, winter, and spring rains and adhere to plants is a valuable characteristic. Probably the most effective solution of Bordeaux is made the "old-fashioned way" by preparing "stock" solutions of lime and of copper sulfate which are later mixed by pouring into water in the spray tank. Many growers, however, do not have the proper containers or the time required to make Bordeaux in this way.

Tank-mix Bordeaux is an excellent fungicide and bactericide which requires little time and no special containers for preparation. Tank-mix Bordeaux is used by many growers in Oregon and throughout the Northwest.

Bordeaux Formulas

There are many Bordeaux formulas for the control of plant diseases. Each formula recommended is the result of research on a disease of a specific crop, e.g., Bordeaux 8-8-100 is recommended for control of peach coryneum blight and Bordeaux 12-12-100 for control of dead bud of cherry. Because Bordeaux colors the sprayed plants blue and because it may discolor house paint, it is not used as often on ornamental plants as it is on agricultural plants. The application of Bordeaux during hot weather can cause yellowing and leaf drop.

Bordeaux formulas are given by a series of three hyphenated numbers, e.g., 8-8-100. The first number refers to the pounds of bluestone (copper sulfate), the second number refers to the pounds of spray (hydrated) lime, and the last number refers to the total gallons of water to be used. Thus, an 8-8-100 Bordeaux means eight pounds of copper sulfate, eight pounds of spray lime, and 100 gallons of water.

Small amounts of Bordeaux spray can be prepared by using the following table:

	If 100-gallon formula requires	Use for 1 gallon
Copper sulfate	1 pound	1/3 tablespoon
Spray lime	1 pound	1 tablespoon

Thus, a one-gallon mixture of 8-8-100 Bordeaux will contain:

Copper sulfate $8 \times 1/3 = 8/3 = 2 \frac{2}{3}$ tablespoons
 Spray lime $8 \times 1 = 8$ tablespoons
 in one gallon of water.

"Ready-mix" preparations of Bordeaux mixture are available on the market but are usually less effective than the tank mix or "home-made" Bordeaux.

Copper sulfate

Powdered copper sulfate (bluestone or blue vitriol), often referred to as copper sulfate "snow" because it is finely ground and dissolves relatively quickly in water, is a must for the preparation of tank-mix Bordeaux. Ordinary lump copper sulfate is not satisfactory.

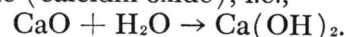
Store copper sulfate "snow" in a dry place. Moist "snow" becomes lumpy and is difficult to work through the screen into the tank.

Lime

To prepare tank-mix Bordeaux, use only good quality hydrated lime (calcium hydroxide). The hydrated lime should be fresh, i.e., not carbonated by prolonged exposure to air. Hydrated lime is stable and usually readily available under several trade names.

Slaked lime

Slaked lime (calcium hydroxide) is prepared by adding water to "quick" (hot, burned, unslaked) lime (calcium oxide); i.e.,



Slaking quick lime with water produces heat sufficient to boil the water, so caution must be used to regulate the amount of lime exposed to the water at any one time to avoid splashing. Slaked lime makes an excellent suspension and



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may be used in the preparation of tank-mix Bordeaux mixture, but the slaking requires more time, effort, and containers than the use of prepared hydrated lime.

Making the Tank-Mix Bordeaux

Both the copper sulfate and the lime should be in solution before they are mixed. If this principle is followed, the lime solution may be poured into the copper solution or vice versa. Both methods are commonly used.

1. Start water flowing into spray tank.

2. When tank is about one-third full and mechanical agitator is in operation, start washing the copper sulfate "snow" into the tank through a screen with water from the supply hose. A wooden spoon or paddle is often helpful in working the "snow" through the screen. Do not hurry the "snow" through the screen—give the copper sulfate time to go into solution in the tank.

3. By the time the tank is two-thirds full, all of the "snow" should be in the tank. Then wash the lime, using the water supply hose, through the screen into the solution of copper sulfate in the tank. Again, a wooden spoon or paddle will be useful in working the lime through the screen into the tank. The lime should be as dilute as possible before it meets the copper sulfate solution in the tank. Use lots of water to wash the lime through the screen.

The mechanical agitator in the tank should be started before the copper sulfate "snow" is put in the tank, continued while the lime is being added, and kept going until the spray is applied. A bypass agitator system usually is not adequate for the preparation of a tank-mix Bordeaux. Bordeaux should be applied the same day it is prepared—it deteriorates upon standing. If a Bordeaux mix has to be left overnight before use, add an eighth of an ounce of sugar for each pound of copper in the tank, e.g., for 100 gallons of 8-8-100 Bordeaux, add one ounce of sugar to the spray mixture.