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Bordeaux mixture

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cause a reduction in seed viability. From the results (Table 3) it is evident that seedling emergence was significantly reduced by using seed in which the moisture content was increased temporarily. During thunderstorms, much the same effect occurs to grain nearing maturity, and it is possible the viability of such seed may also be reduced significantly. Grain maturing under these conditions is characterised by the copious development of secondary black moulds on all parts of the head.

REFERENCES


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BORDEAUX MIXTURE

By the PLANT PATHOLOGY BRANCH

BORDEAUX mixture is still proving a most effective spray against many serious plant diseases in this State despite the increasing use of the newer organic fungicides. When properly made and applied it adheres to the plants with great tenacity and strongly resists the weathering action by rain.

Amongst the diseases controlled by Bordeaux mixture are Brown Rot (Phytophthora hibernalis and P. citrophthora) of citrus, Shot Hole (Clasterosporium carpophila) and Leaf Curl (Taphrina deformans) of stone fruit, Leaf Spot (Septoria api) of celery, Brown Spot (Alternaria passiflorae) of passion vine and Bacterial Blight (Pseudomonas juglandis) of walnut.

COMPOSITION

The fungicide is a light blue gelatinous precipitate containing copper in a complex form and obtained by mixing together bluestone (copper sulphate) solution and a suspension of quick lime slaked in water.

The strength of the mixture is shown by use of a standard formula, written for example 4:4:50. The first figure states the amount of bluestone (copper sulphate) in pounds, the second figure the amount of quick or freshly burnt lime (calcium oxide) in pounds and the third figure the quantity of water in gallons in the mixture. Fresh hydrated lime can be substituted for quick lime in the formula but must be used at the rate of 1½ times the amount of quick lime. Bordeaux mixture may be applied at different strengths depending on the nature of the plant and the disease. Other formulae commonly used include 6:4:40 and 4:4:40.

PREPARATION

The following method is outlined for use by commercial growers and involves the preparation of a large spray vat of the fungicide.

To make 50 gallons of Bordeaux mixture at 4:4:50 strength:

(a) Dissolve 4 lb. of finely powdered bluestone in 45 gallons of water (nine tenths of the total volume) in the spray tank. The bluestone can conveniently be dissolved by washing it through the strainer with a stream of water. As bluestone is corrosive, it is assumed that the spray tank is made of non-corrosive metal such as copper or else is coated inside with an anti-corrosive paint. Alternatively the bluestone can be...
dissolved in a large wooden barrel but not in an iron or galvanized iron tank.

(b) Slake 4 lb. of fresh quick lime with water in a bucket and then dilute with more water to make 5 gallons of lime suspension (one tenth of the total volume). If using fresh hydrated lime dilute in the same manner but increase the amount of lime to 6 lb. (1½ times the quantity of quick lime stated in the formula.)

(c) Set the agitator of the spray tank in motion and pour the lime suspension through a suitable strainer into the bluestone solution. If using a wooden barrel the solution should be stirred with a wooden paddle.

(d) Add appropriate spreader (see later section).

The resulting Bordeaux mixture should be used immediately as it is less effective when kept for use later in the day or until the following day.

All other formulas for Bordeaux mixture are made up in a similar manner, with the required amounts of bluestone, lime and water being substituted for those in the above formula.

For preparation of small quantities the following method should be adopted:

To make 2½ gallons of Bordeaux mixture at 4 : 4 : 50 strength:

(a) Dissolve 3½ oz. of bluestone in 2½ gallons of water in a copper, wooden, glass or enamel vessel.

(b) Slake 3½ oz. of fresh quick lime (equals 5 oz. of fresh hydrated lime) in another container in ½ pint of water.

(c) Pour the lime suspension through a strainer into the dilute bluestone solution and at the same time stir the mixture with a wooden paddle.

(d) Add appropriate spreader (see later section).

The resulting Bordeaux mixture should be used immediately and not kept for use later in the day or until the following day.

**USE OF A SPREADER AND STICKER**

To ensure maximum coverage and adhesion of the Bordeaux fungicide on the plant surfaces it is usually necessary to include a spreading and sticking compound in the spray. Calcium caseinate or white oil are commonly used for this purpose and they should always be added last to the mixture in the spray vat or barrel. Calcium caseinate is available under such trade names as “Calspread” and “Nosco spray spreader.” Rates of usage of these materials are stated on the containers.

**TEST FOR NEUTRALIZATION**

If all the bluestone in the mixture is not neutralised by adding sufficient lime the plants may be burnt by the copper sulphate still in solution. The quality of local lime often varies considerably and it may be necessary to add extra lime to the spray to ensure complete neutralisation. A quick test to check if all the bluestone has been neutralised can be done by dipping a shiny nail into the spray vat for a few minutes. If insufficient lime has been added a coppery deposit will form on the nail and more lime must then be used.

**BORDEAUX PASTE**

Bordeaux mixture in paste form has proved suitable for covering over fresh cuts and wounds on limbs of fruit and other trees. It protects the exposed wood against attack by wood rotting fungi. The paste is similar in composition to standard Bordeaux mixture but contains much less water.

To make a small quantity of Bordeaux paste dissolve 1 oz. of bluestone in ½ pint of water and slake 1 oz. of quick lime (equals 1½ oz. fresh hydrated lime) in ½ pint of water. The two materials are then combined and produce a mixture of paint-like consistency.