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POPULAR ARTICLE



Bordeaux Paste and Paint as an Effective Fungicide in Horticulture

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In Horticulture, Pruning is a regular operation used for removing diseased parts, dead wood and to give shape to the fruit tree. It is undertaken as an annual process when fruit tree passes through dormant period. Pruning leads to creation of cut ends which is very susceptible site to develop different micro flora. These exposed parts need to be protected against infection by different pathogens by sealing with suitable fungicide pastes. For this purpose Bordeaux paste is a most effective treatment used as wound dressing material in Horticulture. Bordeaux mixture a blue-color fungicide authorized for use in organic farming. Its main ingredients are copper and lime. The fine layer applied on the cut ends kills the pathogen resulted from subsequent invasion and help in rapid healing of the wounds.

Bordeaux paste:

Bordeaux paste consists of same constituents as that of Bordeaux mixture, but it is different in consistency. In case of Bordeaux paste the quantity of water used is too little compared to Bordeaux mixture. Bordeaux paste is 10 per cent Bordeaux mixture and is prepared by mixing 1 kg of copper sulphate and 1 kg of lime in 10 litres of water. The method of mixing is similar to that of Bordeaux mixture. It is a very effective wound dresser and used to protect the wounded portions, cut ends of trees etc., against the infection caused by fungal pathogens.

To prepare the Bordeaux Paste following composition should be followed:

- Take Copper sulphate 1 kg, quick lime 1 kg, water 10 litres
- Make the powder of copper sulphate by crushing the copper sulphate crystals and dissolve in 5 litres of water in a mudpot or plastic bucket. Avoid using metal containers for the preparation.

- Prepare milk of Lime by dissolving 1 kg lime in remaining 5 litres of water
- For mixture preparation of copper sulphate solution and milk of lime, pour the copper sulphate solution into the milk of lime by slowly stirring the mixture all the while with wooden stick.
- Before use, mixture test to be done by dipping a polished knife in it for the presence of free copper, this is harmful to the plant. If the blade shows a reddish brown colour add more lime till the blade is not stained on dipping.
- Use a brush to apply the paste on cut ends of trees.

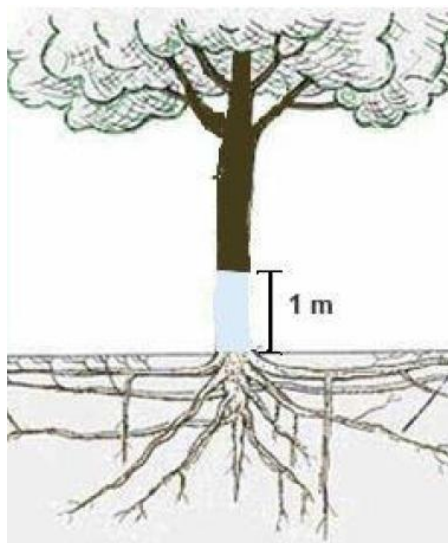
Test: To determine the pH of the mixture ratio of copper sulphate to lime solution should be taken into consideration. The mixture normally shows neutral or alkaline nature if prepared by according to the above said ratio. Its nature also depends on the quality of the used material for example if the quality of the used materials is inferior, the mixture may become acidic. Its acidic nature clearly indicate presence of free copper which is highly phyto-toxic resulting in scorching of the fruit trees. Therefore, it is highly essential to test the presence of free copper before the application of this kind mixture preparation. For this test any small equipment like clean iron knife or sickle or shaving blade is used and test the mixture by dipping in the solution for few minutes. If the knife/sickle/blade shows a reddish brown colour on the surface, it indicates presence of free copper ions in the mixture. To make this mixture free from copper ions, more lime solution is added till the knife/sickle/blade is not stained reddish brown on dipping. Bordeaux mixture should be sprayed while fresh as it loses its fungicidal property.

Bordeaux Paint: Bordeaux paint is normally used in fruit trees for curing the deep and deformed wounds caused by gummosis, cankers, collar rot/root rot and also to heal the wounds caused by surgical removal of crown gall or hairy roots from the stems of infected plants during dormancy. Use of this Bordeaux paint is very suitable recommendation in kind of areas or seasons which receive heavy downpour. It helps to protect the treated part of the host against water for longer period; as a result it ensures rapid healing of wounds.

To prepare the Bordeaux Paint following composition should be followed:

- Copper sulphate 1 kg, quick lime 2 kg, boiled linseed oil 3 litres.
- Heat the copper sulphate crystals on an iron sheet or in frying pan till it crumbles into a white amorphous form.
- Ground the heated crystals into a fine powder.
- Boil the linseed oil and allow it to cool
- Mix the copper sulphate powder thoroughly with lime dust and homogenised in 3 litres of cooled oil to make a thick paste
- Apply the paint to the plant parts with the help of a brush up to 1m from the base of the tree.
- Apply the paint during Feb-March, Sep - Oct, and Dec-Jan to protect the plant from soil borne pathogen.

- Store it in a glass jar or other suitable non-metallic vessel for future use.



Area and use of Bordeaux paste and paint: Bordeaux paste and paint are applied on tree trunk up to 1m above the ground level. These preparations are used to control many diseases in fruit trees as shown in Table.

Table. Use of Bordeaux paste and paint for control of fruit tree diseases

Disease	Time of application	Method of application
Grapes		
Anthraco nose die back and Cercospora leaf spot	Jan.-Feb.	After pruning
Stone fruits		
Gummosis	During dormancy (Dec.-Jan.)	Scarify gum oozing wounds and adjoining tissues, apply Paint
	Spring and rainy season (March-April, July-Aug.)	Apply paste on 45-60 cm trunk height and on cleaning
Pear		
Blight and bark canker	-	Application after pruning
Citrus		
Foot rot/ gummosis	Feb.-March-July-Aug.	Local application to decorticated tissue
Wither tip	Feb.-March	Application to cut ends
Mango		
Twig die-back		Application after pruning