

through coarse sacking to remove any lumps which would clog the nozzle of the spray pump. This done, enough water is added to make the volume up to one-half of what the final mixture will amount to. The copper sulphate solution is diluted to the same extent. The two are now mixed, the operation being best performed by two men, each with a bucket, one handling the lime and the other the copper sulphate. They are poured into the spray tank, two bucketsful at a time, until the whole is brought together. In this way a precipitate is obtained which will remain in suspension with only occasional agitation. If mixing is done before dilution, a very coarse precipitate is formed which settles rapidly to the bottom of the spray tank and requires almost constant stirring.

If large quantities of spray mixture are going to be used, it is an excellent plan to make up "stock" solutions of the copper and lime. This can be done by dissolving, say, one pound of copper sulphate in each gallon of water and making up a barrel full of it. Each gallon of the solution taken then represents one pound of the bluestone. The salt can be conveniently dissolved by filling the barrel with water and then suspending it therein, enclosed in a canvas sack. The lime can be handled in the same way, being sure, of course, that the contents of the barrel are thoroughly stirred up before dipping out any portion. Keep the barrels covered when not in use.

*Precautions to be Used in Making.* Before Bordeaux mixture is sprayed, it is absolutely necessary that all copper should be in the form of the sky-blue precipitate, i.e., enough lime must be used to act on all the bluestone. Formulæ advocated by the experiment stations always contain enough lime to precipitate all the copper, but it may sometimes happen that such a very poor quality is used that there will be some of the sulphate left unchanged. There are several simple ways by which one can tell when enough lime is present. Those who are very familiar with the reaction which occurs can tell by the colour of the precipitate, it having a greenish\* tinge when an insufficiency of lime is present instead of the deep sky-blue colour. However, those who are not familiar with the process must use more decided tests. Three simple ones can be employed, as follows:

1. Take some of the clear solution which is left on top when the sediment settles and place in a white saucer. Add a few drops of a solution of potassium ferrocyanide to it. If a reddish brown precipitate or colouration appears, more lime is needed.
2. Take a portion of the clear fluid as before, and blow the breath gently over the surface. If a thin white pellicle or covering forms over the top, enough lime has been added.
3. Take a bright piece of steel, such as a knife blade, and hold it in the mixture for a minute or more. If it becomes coated with copper, more lime is required.

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\*The green precipitate is basic copper sulphate,  $\text{CuSO}_4 \cdot \text{Cu}(\text{OH})_2$ , which would break up on the leaf under the influence of  $\text{CO}_2$ , and leave free copper sulphate.