

The amount of lead arsenate to use in spraying varies all the way from 1 to 6 pounds per 40 gallons (either water or lime-sulphur solution). The amount to use depends on the insect to be attacked, the season of the year and the kind of plant. Full information on this point can be found in any reputable spray calendar.

#### COMMERCIAL LEAD ARSENATE.

This term is applied to those brands of lead arsenate which are manufactured by various chemical companies or firms. The commercial brands come on the market in two forms, as the *paste* and as the *powder*. The former has enough water in it to keep it in a moist and pasty condition, whereas the latter is dry and ground to a powder. The manufacturer of the paste usually sells on the 40% water basis, *i.e.*, that his product will contain 40 pounds of water in every 100 pounds. But this will vary slightly up and down for the same brand. Among different brands the range runs from 25 the 50 per cent. of water. The powders run about  $\frac{1}{2}$  to 1%. In arsenic ( $As_2O_3$ ) the powders are fairly constant, varying only with the form of the lead arsenate, whether it be neutral or acid; while the pastes, besides varying from the same factor also vary with the water content, and thus show a wider difference in arsenic content. If a limit were given for arsenic content it would be that the pastes should not go much below 15 per cent. and the powders 23.5 per cent.  $As_2O_3$ . The advantage claimed for the pastes over the powders is that they work up more easily with water and in a much more finely divided condition, and thus require less agitation in the spray tank and also adhere more firmly to bark and foliage. This advantage is largely over-estimated. The powders can be worked into a paste with a small quantity of water, if care be exercised before putting it into the spray tank, which will put it into practically as good a physical condition as that possessed by the pastes. Further than this the powders are less bulky to handle and ship. They are also more uniform in their composition, varying only within narrow limits in regard to their moisture content, whereas the pastes vary as much as 25 per cent. among different brands. This latter point is very important when it comes to weigh out the required quantity of lead arsenate to use. A pound of lead arsenate paste containing 25 per cent. of water will contain half as much again of actual lead arsenate as a pound of lead arsenate paste containing 50 per cent. of water. If the manufacturer of pastes would ship his output with always 40 per cent. of water in it as nearly as he can make it, and if the user would keep it from drying out after he buys it, the above difficulty would of course be overcome. If the buyer uses the paste form he should keep a layer of water over its surface all the time in order to keep it from drying out and to maintain its water content uniform.

The composition of some of the more common commercial lead arsenates is given in the following table: