Connecticut Agricultural Experiment Station
NEW HAVEN, CONN.
W. L. SLATE, JR., *Director.*

Bulletin of Immediate Information, No. 31

March 28, 1924.

WHY AND HOW TO SPRAY.

G. P. CLINTON and E. M. STODDARD, Botanists,
W. E. BRITTON and PHILIP GARMAN, Entomologists.

THE WHY.

To get a high percentage of perfect fruit is the aim of the intelligent fruit grower. To attain this, proper control measures for the various fungous and insect pests are very important, and succeed best when the following points are taken into consideration:

Know your troubles. One must determine as accurately as possible what pests will probably attack the fruit before planning the spray schedule. The Experiment Station will gladly assist in this determination. After determining your common troubles remember that arsenical poisons, as arsenate of lead, control chewing insects and must be applied before or soon after they start feeding; that contact poisons, as nicotine sulphate, control sucking insects and must be applied to the insects themselves; that fungicides prevent but do not cure injuries by fungi and so must be applied before infection takes place.

Know your varieties. Varieties vary in susceptibility to different injuries especially fungous, and it is important to know the troubles to which each variety is subject. As, for instance, scab is bad on McIntosh, and red mite is most serious on Baldwin. A Bulletin of Immediate Information will follow this, giving a list of the most injurious fungous diseases on the apple varieties commonly grown in the State.

The environment. Environmental conditions are often determining factors in the severity of injury. Dry or moist localities cause variation in fungous attacks. In the case of cedar rust, nearness to cedars is the important consideration. Many insects are worse on trees near to woodland or brush and rubbish along fences. The age of the trees, the method of cultivation and pruning, the location as to air drainage and extreme temperatures are also important factors. The latter, as regards winter injuries, is not subject to control by spraying.

The material. Use the materials recommended for the particular pests to be controlled. Usually several materials are combined to control more than one pest in a single application. (See Bulletin of Immediate Information No. 30, Insecticides and Fungicides.)

The machinery. Use a spray outfit to fit the work at hand and do not expect a worn out machine to give the best results. Do not wait until the outfit is in the orchard to find out what is the matter with it—know beforehand and fix it. Many growers are turning from the spray gun to the rod and nozzles and we believe this is good sense unless experienced men are handling the gun. High pressure is the latest notion, but we contend that excessive pressure frequently wastes material and causes injury, and that 200 lbs. or less, with proper nozzles will do the work. Clean the spray tank frequently.

The method. Make your sprayings thoroughly and timely. This does not mean drenching the bottom and missing the top, but just enough to cover all over, inside and out. Do not wait until the aphids have curled the leaves so that the spray will not reach them.

The weather. For control of fungi try to plan the spraying ahead of a storm, especially the early sprays for scab. This prevents the spores from germinating on the tender young leaves. Most sprays will stick if they may dry an hour before it rains. Avoid spraying in high winds and do not dust in more than a gentle breeze—better no breeze at all. With the late summer sprays do not apply them during very hot periods, preferably doing the work in the morning or late afternoon, to avoid burning of the foliage.

Number of treatments. The number of treatments will depend on the pests to be controlled—usually five or six as a maximum and three as the minimum, for fungi. In most seasons we cannot control apple scab with less than five sprayings, but varieties that do not scab can be handled with three, the calyx and two later sprays, unless some other pest becomes serious, when an extension of the schedule is necessary. Insects, especially chewing insects, can be controlled with one or two sprayings even if applied after they appear, but fungi must be controlled by spraying before they get a start and the plants need to be protected with a spray coating during the entire season of their infection, which means more careful and frequent sprayings.