SOME WAR-TIME DEVELOPMENTS IN SPRAYING ILLINOIS FRUITS

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Many of the advances during the past few years in spraying fruits are not the direct result of war-time conditions, but have been accentuated to a considerable extent because of these conditions. The purpose of this paper is to present some of the recent changes in practical spray schedules and the factors which have brought them about.

For several years prior to the war, nicotine sulphate was used in a limited way to supplement the program of coddling moth control in apples. Its advantage is that it can be used until immediately before harvest without the necessity of washing the fruit in order to comply with spray residue regulations. Experimental work has shown also that nicotine products are less injurious to the foliage of apple trees than arsenate of lead. Fruit properly sprayed with nicotine usually has less stings because the coddling moth larvae are killed before they actually have an opportunity to eat into the fruit skin. Although this program was well under way before the war, it was encouraged to a much greater extent because it appeared that the domestic supply of arsenicals would be limited. Nicotine products showed much greater promise of being available in sufficient quantities and consequently were included in many spray programs. Even though the situation is reversed at present, that is, nicotine preparations are scarce whereas arsenicals are available in fairly satisfactory quantities, many growers prefer to use nicotine sprays because of the advantage in growing high quality fruit without the need of washing. This trend will continue long after the close of the present war.

Hormone sprays made of a sodium salt of naphthalene acetic acid were also being used experimentally at the outbreak of the war. Their principal purpose is to keep the apples from dropping from the trees as they approach maturity. With a shortage of labor on fruit farms, however, it soon became evident that the same material could be used to prolong the harvest period and consequently level out necessary peaks of labor. The material is especially effective on long stemmed varieties of apples such as Delicious and Jonathan. It is least effective on short stemmed varieties such as Winesaps.

DDT, which is the common designation for dichloro diphenyl trichloroethane, is a new material which has had a great amount of experimental work for war-time uses. It has not been developed primarily as a spray material, but rather because of its promise in controlling insect pests of the Armed Forces. A certain amount of experimental work, however, has been done with this material in order to discover its adaptability for controlling insects injurious to fruit. It has not yet reached the stage where definite recommendations are offered. In

fact, for the first time this year limited amounts are being made available for experimental work to be carried on by a few commercial orchardists. It seems to have very definite promise of fortifying the nicotine spray program in order to further combat the coddling moth. It is well known that this material is very effective in controlling many insects. Just what its effects will be, however, in damaging beneficial parasites is yet to be determined. In fact, so little definite information is known about what can be accomplished with DDT that its future lies in the field of speculation. Its potentialities, once realized, will probably decrease the number of applications needed during a growing season and thereby appreciably reduce the cost and the labor needed to grow good fruit.

Another very new material is an emulsified wax made of a mixture of vegetable oils and mineral waxes. The primary purpose of this is for spraying heavily blossoming trees at the time of full bloom in order to cover some of the blossoms thereby giving the remaining ones a better chance of setting fruit than when all are equally competing for the stored-up energy in the tree. The success of this depends upon the physical aspect of sealing the pistils thereby eliminating the possibility of the entrance of pollen. In addition to the value of helping trees to set fruit, it has the added possibility of regulating the set. If this condition is later to be corroborated, a great deal of labor normally used in thinning overloaded trees could be saved. Not enough experimental work has been done with wax emulsion sprays to offer definite recommendations for spray schedules. A small amount of material is being made available to commercial growers for experimental work for the first time this year. It will probably take several years before the full value of wax emulsion sprays is known.

In addition to the various new materials which have been mentioned, other developments have been speeded up because of war-time conditions. Although dusting of peaches and apples has been done for a number of years, the labor-saving angle of this practice has been especially appreciated since the outbreak of war. Many more dusters are now in use because an orchard can be dusted in much less time than it takes to apply a wet spray. Even hormone dusting is now accepted as an efficient and effective method of applying hormones to prevent the well known summer drop in apples.

Innovations in spraying equipment may also be attributed to labor shortage due to the war. Larger and more powerful sprayers are coming into common use, the so-called speed sprayer being one of the latest developments. The principal advantage of the new speed sprayer is that the tractor and spray outfit can be operated by one man. Airplane dusting, while not entirely new from the standpoint of field crops, is being discussed by Illinois fruit growers and has been tried in a small way by a few commercial orchardists in other parts of the United States.

The recent trend in spray programs in Illinois is characterized by improved and new spray materials, more powerful machinery, and a relatively smaller need for labor. This has been caused largely by the present war and its many effects on the practical fruit growers.