CURRENT SECTION OF FEATURES

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Spring Spraying Highly Important

Use of Proper Methods Goes Far to Protect Orchards Against Insect Pests and to Make Good Crops Certain

IT IS not necessary that one know all about all the many different kinds of sprays, commercial and home-made, or that one be a scientific expert in entomology and plant pathology in order to wage a successful warfare against the hosts of orchard and garden pests which marshal their forces in the springtime. If one understands the usefulness of three or four of the standard sprays, gets a good pump, and goes to work with a determination to do the thing thoroughly, the odds are all against the pests.

But first, of course, it is understood that spraying is not an absolute cure-all for every ill that trees are heir to. Many diseases and some insects as well cannot be reached in this way. Most of the more important ones can be held in check so, however, if the application is made at the right time. And sprays that are good for one difficulty may have no effect whatever in the control of another, even if used at the proper time, just as the right spray will do no good if used at the wrong time of year.

Know the pests rife in your particular neighborhood and those to which the crop you are trying to grow is particularly prone, and then learn the sprays that are best adapted to their control, and the use of them.

Classes of Pests

Most of the insect pests may be divided roughly into two classes, those that chew and those that suck. To overcome the former a poison application must be used—something they will swallow—while for the others a spray must be used which will kill by direct contact with their bodies.

For the codling moth, for instance (one of the "chewers"), the usual poison is arsenate of lead, and many reasonably pure commercial brands are to be had on the market. These, however, may be divided into two classes, for general purposes,—The acid arsenates and the neutral, or normal arsenates. It seems better, from experiment, to use the neutral rather than the acid arsenates with a lime-sulphur spray. Usually the directions given say three pounds of the arsenate of lead to 50 gallons of water, but in dry climates, such as that in eastern Oregon, equally good results are obtained in spraying for codling moth when but a third as much arsenate is used. If one wishes to hit both insects and fungus pests with one spray, the arsenate of lead may be combined with a Bordeaux or a lime-sulphur solution as though the latter were water.

Kerosene (coal oil, as it is commonly known) is a very powerful weapon against the sucking insects, but if used undiluted will cause serious injury to the plants. By making an emulsion (soap is usually used) it can be diluted with water easily, the common combination being two gallons of the oil to a gallon of water and about half a pound of soap. Whale-oil soap is best, but others may be used.

To make such an emulsion the soap should be dissolved in the water by boiling it, and then added, while still boiling, to the oil. A spray pump is the easiest and most thorough method of churning the mixture into the proper consistency, a thick, creamy mass on which the oil will not rise, even when left standing some time. It may be used at once or kept in stock, as one chooses. Eight or ten parts of water to one of the emulsion is the right dilution for the final spray solution. For green aphis, woolly aphis, red spiders, mealy bugs and some scale insects this is a good remedy.

Some of the sucking insects "just can't stand tobacco," and in that they resemble the elephant and the monkey. Therefore "black-leaf" and "black-leaf 40" are too well known insecticides for use on the plant lice, leaf-hoppers, apple tingis and others. The former is used with six times as much water or lime-sulphur. The latter, however, is extremely concentrated, and as such is considered much cheaper. It is used with 800 times as much water or lime-sulphur mixture.

The part of fungus pests which absorbs the food materials for their growth develops under the surface tissues of the fruit or leaf, and thus cannot be reached by fungicides. Spraying is, therefore, a preventive rather than a cure, the object being to destroy the activity of the germ before it penetrates the surface.

By combining the sprays for insect and fungus pests often it is possible to save time, money, and annoyance. Apple scab and codling moth, for instance, are often controlled with a single spray mixture, a combination of Paris green or arsenate of lead with the Bordeaux spray. Scale insects, plant lice and other sucking pests, however, are not touched by this combination.

Lime Sulphur

Some four years' experiment and test by the Oregon Agriculaural College experts on orchards in different parts of the state have proven the lime-sulphur spray excellent, in combination with arsenate of lead, for combating both sucking and chewing insects and fungus pests as well. It may be used, in proper dilution, either for winter or summer spraying. The lime-sulphur spray may be applied in the spring to peach trees as a preventive of the peach-leaf curl, and it will also be likely to kill off the hibernating larvae of the bud moth.

These Men Are Helping Fruit to Become Healthy

Commercial lime-sulphur sprays to which one need only add water to make them ready for use are now to be had on the market in variety, and most of them are fully equal to the old home-made sprays. They are expensive, however, being $7 to $10 for a 50-gallon barrel. The same amount can be made at home at a cost of $3, and it will do the work just as well. A 110-pound sack of the best finely ground sulphur, 60 pounds of the best grade of unslaked lime, and enough water added to make 60 gallons will do the business ordinarily. First the lime is slaked, the sulphur mixed into a thin paste with water and added to the lime, and the water is then added. It should then be boiled hard for half or three-quarters of an hour, with constant stirring. The sediment is then allowed to settle, and the clear, amber colored liquid is drawn off and stored for future use or diluted and put at once on the trees.

It is important to know the strength of the solution, as injury to the orchard may occur otherwise, if the spray is too weak to do the work or so strong as to cause lime-burn. If one intends to prepare his own spray he should have a Beaume's acid scale hydrometer, which costs not more than $1 and gives one a simple, convenient way of testing the spray.

"General directions as to how many times to spray and when the applications should be made are at best unsatisfactory," says a recent crop pest bulletin published by the Oregon Experiment Station. "The answer to both questions depends not only upon the variety of fruit to be sprayed, but also upon the conditions prevailing in the orchard to be sprayed, and the relative importance of the orchard crop to other crops. The orchardist can afford to do more spraying than can the farmer, but usually obtains satisfactory results with fewer applications—first, because he is ordinarily better equipped for the work and has a better knowledge of why he sprays; and second, because his orchard is usually less seriously infested owing to the better care it has received.

"An almost universal practice in Oregon—and a good one—is to spray the orchard whatever the kind of fruit, with lime-sulphur at some time when the trees are dormant. While this application is made primarily for San Jose scale, we believe there is no other which has such a generally beneficial result. It is the annual 'house-cleaning' of the orchards."

A Good Time

Just before the buds open in the spring is a good time for this spraying, in case there is a serious infection of the scale. Since spring and fall spraying with lime-sulphur for apple scab and anthracnose was introduced, there has been far less need of winter spraying, which may, indeed, be omitted entirely in such case, except where the orchards have been neglected for a long time.

The young orchard should be given a spray with summer-strength lime-sulphur mixture just at the time the trees are coming into bloom. If the aphis in any form is troublesome, either of the black-leaf preparations may be added. A bearing orchard ought to be sprayed just as the blossom buds begin to show color, or even slightly before. This is the first spray for apple scab. If the bud moth is found, or other leaf-eating insects, two pounds of arsenate of lead may be added to every 50 gallons of the spray. In case of aphis troubles, the black-leaf may be used.

Orchards badly infested with the apple scab should have a second spray ten days or two weeks after the first. This is the time, too, to spray for codling moth, using two pounds of the arsenate of lead to 50 gallons of lime-sulphur. Where there is no scab, but there is trouble with leaf-eating insects, water may be used instead of the lime-sulphur with the poison.

As was mentioned before, the most important spray for peaches is that just before the terminal buds begin to show green, to prevent the peach leaf curl. If there has been serious trouble with peach spot, after the fruit is set a spray of self-boiled lime-sulphur may be used, in the proportion of 8-8-50. It will have to be applied about May 10 in southern Oregon, and correspondingly later as the orchards are further north. Ordinarily, however, spring sprayings for fruit spot will be necessary only where the orchards have been badly neglected.

If brown rot is prevalent in the prune and plum orchards, three or four weeks after the petals fall the trees should be sprayed with Bordeaux mixture or lime-sulphur, in summer strength, with a repetition three weeks later and again a month before the fruit is ripe. Cherry rarely need spraying except just when the buds begin to swell, but in regions afflicted with the shot hole borer they may be sprayed a month before blossoming time with Bordeaux (3-4-50), lime-sulphur (1-40 with a basis of 30-degree Beaume stock solution), or self-boiled lime-sulphur (10-10-50).

Knowledge Needed

"In considering the cost of spraying," says Professor C. I. Lewis, of the division of horticulture of the Oregon Agricultural College, "it seems to me that the waste could come under the following heads: Using the wrong mixture; spraying when it is not necessary; mixing sprays that do not combine well; abandoning fairly satisfactory mixtures for new, untried preparations; carelessness in applying; and using the wrong apparatus.

"Each grower should understand thoroughly whether he is trying to destroy a pest that is already present in his orchard, or whether he is trying to prevent the spread of a disease to

(Continued on page two)

Working in an Orchard With a Spraying Outfit

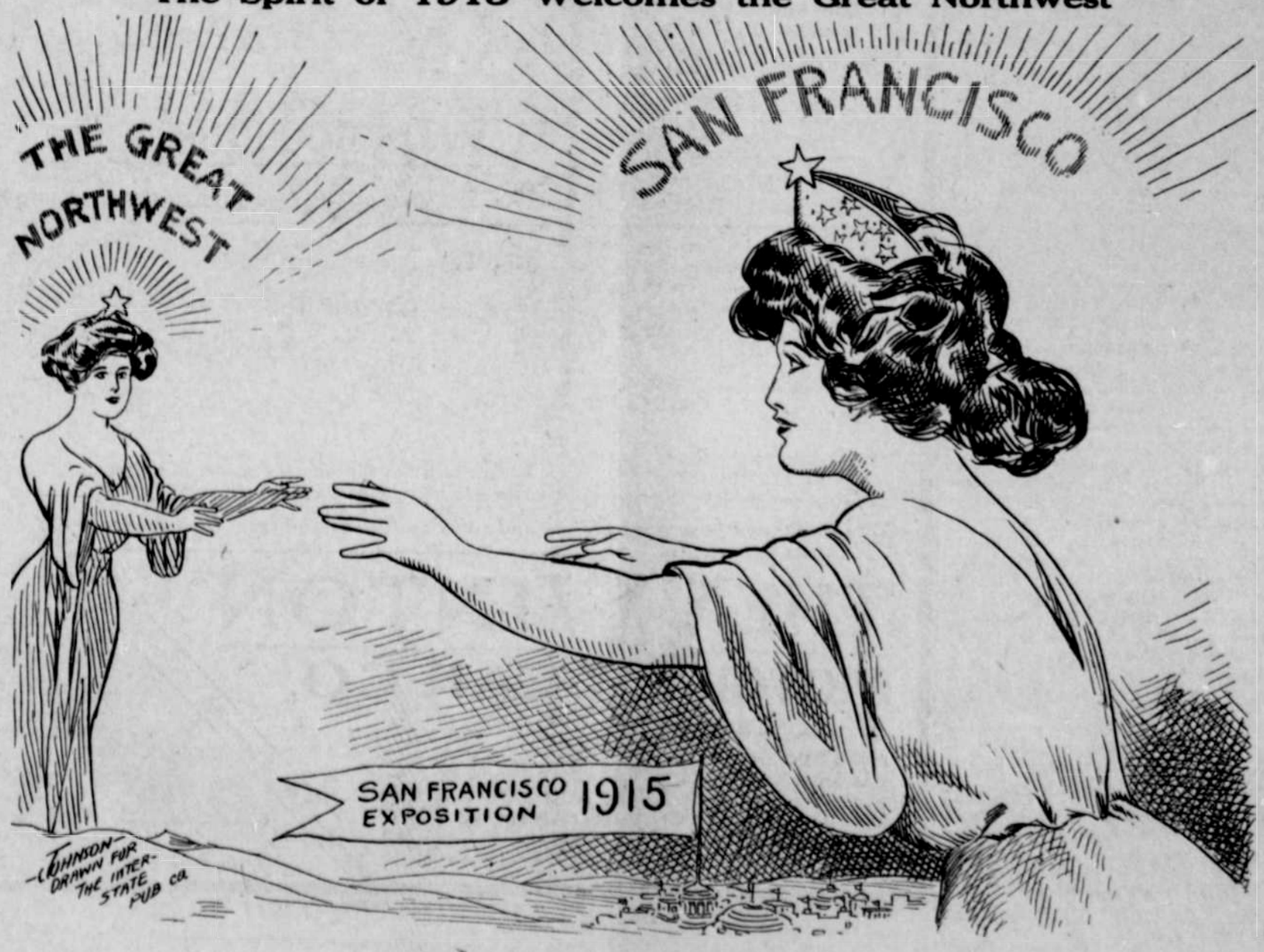
Poet Joaquin Passes Away

Writer Who Immortalized the Sierras Comes to the End of His Life

CINCINNATUS HEINE MILLER, known to fame as Joaquin Miller, the "Poet of the Sierras," is dead. He died as he had lived, in the romance of the west, his last days being spent in a cabin in the mountains. He was distinctly a product of the Pacific border, only 10 years of his boyhood having been spent east of the Rockies. His passion was the mountain land; he lived in it and of it, sang of it, made it stand out in stencil boldness in weird tales.

He was born in 1841 in Indiana and in 1850 came to Oregon with his father. He attended school for a while and at the age of 16 was a miner in Shasta county, California. He was in a battle with the Indians at Castlecraig and was wounded twice. Afterward he lived three years with the Indians. Later he went back to Oregon, attending school at Eugene. He studied law and was elected a judge in Grant county. While on the bench, he published a book, "Joaquin et Al." In 1870 he left Oregon, going to San Francisco, and, finally, to London, where he produced his "Songs of the Sierras." From 1870 to 1880 he wrote and published his "Songs of Italy," wrote the play, "Danites, Forty-Nine," the prose book, "Unwritten History, or Life among the Modoc Indians," and a novel, "The Destruction of Gotham." From 1880 to 1890 he wrote "Songs of the Mexican Seas" and "Building the City Beautiful." In 1883 he went back to San Francisco, associating himself with Herr Wagner, then editor of the Golden Era magazine. He bought a hundred acres on the hills above Oakland, where he built a small cabin, planted thousands of trees and made his permanent home. From 1894 to 1905 Joaquin Miller was on the lecture platform, with the exception of one year, 1897, when he went to the Klondike and made a remarkable trip of 400 miles by foot. In 1909 he published his complete poems.

The Spirit of 1915 Welcomes the Great Northwest



To Be Better Surgeon Aids

Operating Knife Is Called on to Straighten Out Crooked Minds and Bodies

UNDER the hot sun of the south, many a man has been translated through the knife and under the steel-cold stars of the north has the knife served the murderer's will. But now, instead of sending him hurriedly through the pearly gates, the knife is being made to serve to make man good on this earth. That is to say that the scalpel of the surgeon is now recognized as an agent of morality, as an accessory in science's new process of making men better as well as more healthy. You all know the bad boy, the incorrigible youth, the lad who will not learn in school and who cannot be controlled by parents or teachers. It is no longer the fashion to consider the case of a boy like this as being hopeless, as a problem for punitive measures, but it is the fashion to find out what physical imperfection is causing this mental and moral delinquency. So, the surgeon is appealed to and through him is restored the balance that means sanity, intelligence, decency.

Men who know say that the boy who is bad is usually suffering from the result of some childhood injury, some accident seemingly so unimportant at the time of its happening that it marked no date on the calendar of baby life. The child may have injured his head in some manner. Apparently, this injury has had no effect;

(Continued on page two)