

MISCELLANEOUS.

Written for this Paper

SPRAYING FOR FUNGUS FRUIT DISEASES.

Probably in no other country of the world is spraying for fungous diseases of fruits practiced to the same extent as in the United States. Seven years ago practically nothing was known of this subject, in fact the number actively engaged in spraying their trees, vines, etc., for such diseases of the grape, did not exceed half a hundred, all told. Now as a fair estimate probably no less than 50,000 fruit growers are engaged in this work. From the Atlantic to the Pacific and from the great Lakes to the Gulf, the methods recommended by the department of agriculture are practiced every year. Canada has also adopted many of the suggestions made, and even Australia is actively engaged in experiments in the treatments of apple, pear, peach and other diseases, in accordance with suggestions made from the N. S. department.

DOES IT PAY TO SPRAY?

This question is in large part answered by the facts already given. No work that did not carry merit with it could have had such a phenomenal growth. To give a more direct answer, however, it may be stated that the season of 1892 two hundred and fifty grape growers in different parts of the country made a series of observations with a view of obtaining some definite information as to the value in dollars and cents of the recommendations made by the department in the treatment of grape diseases. The facts reported by these men show conclusively that the actual profit to them over all expenses resulting from the treatment of black-rot and downy mildew was in round numbers \$37,000. Thirteen thousand dollars of this sum was reported from the state of New York alone.

Other examples equally as striking could be given, but this is sufficient for the purpose. Of course, every one is not successful, but where failure is reported it is usually easy to locate and remedy the trouble.

FUNGICIDES OR REMEDIES USED IN SPRAYING.

Numerous preparations have been recommended and used for this work. For all practical purposes, however, there are but four which properly may be called remedies. They are 1. Bordeaux mixture; 2. ammoniacal solution of copper carbonate; 3. raw eileste; and 4. modified raw celeste. The latest experiments indicate that the best result will follow the use of these preparations when made as follows:

(1.) *Bordeaux mixture*.—In a barrel that will hold forty-five gallons dissolve six pounds of copper sulphate, using eight or ten gallons of water or as much as may be necessary for the purpose. In a tub or half barrel slack four pounds of fresh lime. When completely slaked, add enough water to make a creamy white-wash. Pour this slowly into the barrel containing the copper sulphate solution, using a coarse gunny sack stretched over the head of the barrel for a strainer. Finally fill the barrel with water, stir thoroughly, and the mixture

is ready for use. Prepared in this way the cost of one gallon of the mixture will not exceed one cent, the price of copper sulphate being seven cents per pound and lime twenty-five cents per bushel. In all cases it is desirable to use powdered sulphate, as it costs but little more, and dissolves more rapidly. It is highly important also that fresh lime be used. It will be seen by those familiar with former suggestions made by the department of agriculture that the strength of this mixture has been diminished one-half. It was found as the result of experiments made that a mixture of this strength, and even much weaker, gave practically as good results as the old formula, which required six pounds of copper sulphate and four pounds of lime to twenty two gallons of water.

(2.) *Ammonical Solution of Copper Carbonate*.—In an ordinary water pail mix five ounces of copper carbonate with enough water to make a thick paste. Dissolve this paste in three pints of strong aqua ammonia; then dilute to forty five gallons. If three pints of ammonia are not sufficient to dissolve all the paste, add enough to bring about this result. Copper carbonate occurs in the market in the form of a fine greenish powder. The retail prices is usually sixty cents per pound. Aqua ammonia having a strength of twenty-six retail at eight cents per pound. Upon this basis one gallon of the ammonical solution of copper carbonate will cost one cent.

(3.) *Eau Celeste*.—Dissolve two pounds of copper sulphate in eight gallons of water. When completely dissolved add three pints of strong ammonia and dilute to forty-five gallons. Prepared in this way the solution will cost about two thirds of a cent per gallon.

(4.) *Modified Eau Celeste*.—Dissolve four pounds of copper sulphate in to eighteen gallons of water, and stir in five pounds of washing or sol soda, then add three pints of aqua ammonia, dilute to forty-five gallons. The cost will be 1½ cents per gallon.

HOW AND WHEN TO SPRAY.

It should always be borne in mind that no hard and fast rules can be laid down for work of this kind. Frequently the fruit grower will have to use his own judgment, especially as regards the number of sprayings and the proper time to discontinue them. If this be not done serious results may follow. In the treatment of blackrot of the grape we have known vine-growers to continue the application of Bordeaux mixture through a protracted drought up to the time of ripening of the fruit. As a result, when the time arrived to send the grapes to market they were so spotted with the mixture that no one would buy them. Again we have found fruit-growers thoroughly imbued with the idea that the only proper way to spray was to rush through an orchard or vineyard with some new fangled complicated machines, apply the solutions in daubs at one point and admitting whole trees or blocks of vines at another. Such work is to be regretted, and it may be the cause of much loss to those who

have acted carefully and intelligently in the matter.

Before taking up the subject of treatments proper it may be well to emphasize the importance and necessity of using the right kind of machinery. A sprayer to be effective requires first of all a good strong force pump. Next in importance is a nozzle that will throw a mist like spray and will not clog when thick fluids are used. There are plenty of machines on the market filling all these requirements. For convenience they may be divided into three classes: (1), horse power automatic machines; (2), machines drawn by horse power but operated by hand; and (3) hand machines. All belonging to the first group may be dismissed with the statement that they are unnecessarily expensive and complicated, and will not, even in the most careful hands, do the work thoroughly and effectively as the machines belonging to the second and third groups, in which the cheapest, most practical and efficient example is found in a strong, light, double-acting, double discharge force pump mounted on a barrel. It may be said that while they can not do the work as rapidly as the machines of the first class they are more effective, much cheaper and far less wasteful of the liquid used. To the third class belong the knapsack sprayers, which are the only ones necessary to notice in this connection. There is no question that for all moderately low growing crops the knapsack sprayer fills every requirement. In no other machine is the work so absolutely at all times under control, it being possible to place nearly every drop of liquid exactly where it is wanted. Knapsack pumps are now used in many moderate size vineyards; also in places where the horse power apparatus, owing to the nature of the land or the manner of cultivation, can not be utilized.

Many firms throughout the country as will be seen by reference to the columns of any good agricultural paper, are engaged in the manufacture and sale of the various machines mentioned.

Taking up the question of spraying more specifically I will call attention, first to the apple diseases and their treatment, but time not allowing me more for this week I will continue this in next week's News.

Respectfully,

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PREACHING THE GOSPEL.

JANUARY 11, 1862, BASLE, Switzerland.
—At 2 o'clock p. m. fifteen of the brethren of the Priesthood met in fast and prayer meeting, which we continued until a late hour, when we adjourned until the morning. We then conversed upon the prospects of the Lord's work in these lands, and asked questions as to what could be done, to improve us, and make each of us more useful in our labors. During the conversation I discovered that several felt that their way would be the best. I then requested Elder Serge L. Ballif to address the brethren. He arose and for a moment looked each one in the face. Turning to me, his face fairly shining, he said: "Shall I speak what I feel?" I replied, "Certainly." For a few moments he looked down from one to the other, and