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U. S. DEPARTMENT OF AGRICULTURE,  
STATES RELATIONS SERVICE.

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**HOW TEACHERS IN RURAL ELEMENTARY SCHOOLS MAY  
USE FARMERS' BULLETIN 868, HOW TO INCREASE THE  
POTATO CROPS BY SPRAYING.**

*Range for use.*—All sections in which insects or plant diseases decrease the potato crop.

*Relation to the course of study.*—The material in this bulletin will be of use in the study of farm crops and in nature study and biology courses, also through correlation in other school subjects.

*Topics for study.*—(1) Amount of loss in potato crop, preliminary treatment of seed, page 3; (2) insects controlled by poison sprays, pages 3-10; (3) by contact insecticides, pages 11-13; (4) blights and rots, causes, appearance and control, pages 13-18; (5) general information on making and applying sprays, pages 18-22. These topics should be studied just before the time for their application in the field.

*Study questions.*—Topic 1. What is the estimated annual loss of potatoes in the United States due to insects and disease? Which of the pests cause a loss in this district? Which are well controlled in the district? Consult Farmers' Bulletin 544 as to treatment of tubers to prevent scab, etc.

Topic 2.—What one insect is the greatest enemy of the potato? Describe the stages of the life history of the Colorado beetle and its habits in each. How may it be best controlled? What advantages has arsenate of lead over Paris green? How should this poison be applied? Why do we use such poisons for beetles and not for aphids? What caution is needed with arsenicals? What other practices assist in controlling the Colorado beetle? Are there other "host" plants upon which we find this beetle? What other plants harbor the blister beetles? How are these controlled? What damage is done by flea beetles? What other plants do they damage? What are the best methods of control? When and how do cutworms damage potato plants? How best control them? (This practice is common in protecting small cabbage plants and others destroyed by cutworms.) Repeat the caution.

Topic 3.—How do leaf hoppers and plant lice damage the plants? Why do not arsenical poisons control them? What spray is recommended for them? If the leaf hoppers are numerous, consult Farmers' Bulletin 747, Grasshopper Control. Do not have pupils learn the formulas they may not need but have them copied and taken home for the summer vacation, when the emergencies may arise suddenly.

Topic 4.—What blights and rots cause much damage? Which are common in this district? Which cause the greatest damage? Observe on the map the area in which the late blight is common. What causes late blight? What factors influence it? How can it best be

controlled? How care for the tubers after harvesting? Discuss such other diseases as are common in the district.

Topic 5.—What value has there been found in spraying regularly? Why not wait for the appearance of disease? What mixtures are best for general use? What is the best method for spraying a garden area? A small field? A large area? Describe the steps in preparing Bordeaux mixture, also in keeping stock solutions.

*Illustrative material.*—Have various potato pests collected and properly prepared for the school museum. (See Farmers' Bulletins 586 and 606.) Have small samples of stone lime and copper sulphate, "bluestone," in air-tight jars. Have small amounts of various poisons properly labeled in sealed bottles. Collect and mount pictures of spraying apparatus and borrow smaller appliances for school demonstration.

*Practical exercises.*—Take the class on a field trip to observe the work of any pest or to see practice in control. Examine the operation of spray apparatus and show how to adjust the simpler forms which pupils may use. Have the class prepare Bordeaux mixture in such a quantity as may be needed for some project plot. Some member of the school should grow a field of potatoes as a project and the teacher should assist him in avoiding losses from pests, largely by prevention.

*Correlations.*—Have pupils find the acreage and yield of potatoes on each farm in the district, the methods used for control of insects and blight, expense involved, estimated loss from blight or rot and the selling price of marketable potatoes. Have the class compile such data on survey chart forms.

*Potato pest survey.*

Name of farmer.	Farm acreage.			Times sprayed.			Cost of spray.	Total yield.	Value.
	Total.	Crops.	Potatoes.	Insects.	Blight.	Combined.			
Mr. A.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Etc.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Add other items as local conditions may demand.

In arithmetic class find totals, percentages, etc., needed to complete survey form. Have the class compute material needed to spray different areas one or more times.

Find out what laws there are concerning the shipment or sale of diseased potatoes for general use or for seed. On the map of the State and the United States have pupils locate the great potato areas, the areas infested with the Colorado beetle and with any particular potato disease. Which of these areas touches or approaches this district?

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