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Reduce Smut Losses



It Can Be Done by Following the
Directions in This Folder

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REDUCE SMUT LOSSES BY PROPER TREATMENT OF SEED GRAIN

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Cereal smuts cause enormous losses annually to growers of small grain in all sections of the United States. In Minnesota alone this loss is estimated to be \$4,000,000 each year. All of the smuts of cereals can be almost entirely controlled and the tremendous loss greatly reduced by proper treatment of the seed. Extensive experiments have been made to determine the best chemicals for controlling the various smuts and the methods for applying them to the seed, in order to get the best effect. Because the various cereal smuts are by nature quite different, no one method of treating the seed is equally effective against all smuts. Consequently, there usually is much confusion as to which method to use for the different smuts. Therefore, it seems desirable to present in a tabular form the more modern methods recommended for controlling smuts of small grains. These recommendations are based on conditions existing in Minnesota and may or may not apply to

Table. 1. Recommended Methods for Controlling the Various Cereal Smuts by Seed Treatment

TREATMENT	CROP	DISEASE	AMOUNT, STRENGTH, TEMPERATURE	METHOD OF APPLICATION AND DURATION OF TREATMENT
Dry treatment Copper carbonate (20 per cent for seed not heavily smutted; 50 per cent for seed heavily smutted).	Wheat	Covered or stinking smut (Bunt)	3 ounces per bushel	Mix thoroughly in an agitating machine (preferably a commercial smut treating machine) until each kernel is well covered with the dust. The same method can be used for all grains. It is very important to coat thoroughly each kernel with the dust. Best results are obtained with especially constructed machines. A cement mixer can be substituted. Hand methods, such as mixing the dust and grain in the bin or drill hopper, are entirely unreliable and should not be used.
	Rye	Stem smut	3 ounces per bushel	
Ceresan	Barley	Covered smut Stripe	3 ounces per bushel	
	Oats	Loose and covered smuts	3 ounces per bushel	
Wet treatment Formaldehyde	Oats	Loose and covered smuts	1 pint to 40 gallons of water for 40 bushels	Soak seed 5 to 10 minutes or sprinkle the formaldehyde on while shoveling the seed over in the bin or a wagon box. Spread out and cover over night with a canvas or horse blanket.
	Barley	Covered smut	1 pint to 40 gallons of water for 40 bushels	
Hot water	Wheat	Loose smut	129° F. Range 124° F. to 131° F.	Fill sacks half full. Presoak 5 hours in cold water. Dip seed in warm water to remove the chill which prevents lowering of temperature of the main bath. Treat with water at 129° F. for 10 minutes. Use burlap sacks. Dry seed. See <i>E</i> under "Important Points to Remember."
	Barley	Loose smut	126° F. Range 124° F. to 129° F.	

NOTE: Be sure to clean the seed thoroly with a fanning mill before treating. This will remove smut balls from wheat and barley.

conditions elsewhere. The treating materials recommended are copper carbonate, Ceresan (both of which are dry treatments), and formaldehyde. All of these compounds may be obtained from your local druggist or seed store.

Important Points to Remember

A. Copper carbonate, Ceresan, and formaldehyde are poisonous chemical compounds. Care should be exercised in working with these compounds in order to avoid ill effects. Inhaling the dust often results in sickness. Therefore, it is advisable to wear a simple gas mask or a damp cloth over the nose and mouth to keep from inhaling these dusts.

B. Formaldehyde treated seed should be planted in moist soil immediately after the treatment is completed. Failure to observe this often results in considerable seed injury.

C. It is of the utmost importance to do a thorough job of treating the seed. Survey reports show that "short-cut" methods of seed treatment invariably give poor control. Remember that each kernel of grain must have its share of the treating material if good control is to be expected.

D. Be sure that your treating material is

of good quality. Materials kept from one season to the next usually lose strength if not kept in closed containers. It is best to obtain a new supply each year in order to be sure of full strength material.

E. The hot water treatment for loose smuts of wheat and barley is a cumbersome and impractical treatment for the individual to apply on a large scale. It is best adapted to the treating of small quantities of seed for seed plots, which should be grown as far away from other wheat and barley as possible. In either case the county agent or extension pathologist should be consulted in regard to the application of the treatment. More detailed information may be obtained by writing to the Agricultural Extension Division of the University of Minnesota.

F. Altho little is known in regard to the effect of treated grain on livestock, it is not considered advisable to use such grain for feed.

Table 2. Comparative Approximate Costs of Treating Materials for One Bushel of Grain

TREATING MATERIAL	COST PER BU. OF GRAIN
Copper carbonate, 20 per cent.....	5 to 6 cents
Copper carbonate, 50 per cent.....	7 to 8 cents
Ceresan	10 to 15 cents
Formaldehyde	1 to 2 cents