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SEED TREATING IS VALUABLE INSURANCE^{1/}H. Dean Bunch^{2/}

How many seedsmen and farmers reading this do not carry insurance? How many sell or plant seed not treated with a fungicide? These two questions are not entirely unrelated. A seed which has been treated with a good chemical fungicide is in much the same position as a man with an accident or hospitalization insurance policy. Under conditions of good health and trouble-free days the policy rides along giving no assistance. But in darker days when the vitality gets a little low and hard knocks begin to take their toll the policy can be very useful in helping carry the insured over until he "gets on his feet" again. It is not the intention here to sell insurance per se, but to draw a parallel between insurance and seed treatment.

Just as some people are more prone to poor health and others to accidents so it is with seeds. Some crop seeds deteriorate faster than their relatives, others are more easily damaged. Although the protection of seed treatment will not restore life to a weakened or injured seed it will help ward off the bill collectors (disease producing organisms) until germination and emergence enables the new plant to support itself.

Seed treatment will not pay off every year no more than will insurance. In fact, we would like to have conditions when we don't collect on the policy - years when we plant seed in which treatment does not pay. Because such circumstances would indicate that disease producing organisms are well under control and no help is needed. Unfortunately, such conditions do not exist with regularity, but fortunately there are means of combatting the ravages of the ever present enemies we call pathogens (a word meaning disease-producing organisms.)

Modern fungicides used in seed treatment may be classified in two principle groups, based upon chemical composition, the non-mercurial protectants and the mercurial disinfestants (some pathologists say disinfectants.)

The non-mercurials generally contain thiram, captan or chloranil as the active ingredient. These materials are used on such crops as corn, beans, peanuts, vegetable seed, etc. They provide a measure of protection to the germinating seed from soil borne organisms causing seed rot and damping-off. Since they are generally non-toxic to the seed, there is hardly any danger to seed viability by overdosage. These non-mercurials are especially useful in protecting weakened seed or seeds with damaged coats against soil borne organisms during germination.

As mentioned before, the treatment does not make seed any better, but

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it will provide a protective area about the seed enabling it to develop the potentialities it does have. Treatments with these protectants are also helpful in keeping the seed free of attack during periods of adverse environmental conditions at the time of planting or immediately following. Cold, wet, or dry soil or other conditions that tend to slow the germination process leaves the seed exposed to soil borne pathogens a longer time than normal and decreases its chance of emergence. A seed which has been treated has a better chance of surviving under these conditions.

In spite of all the attributes of the non-mercurial protectants, they have their limitations. Being non-volatile they are not effective in killing pathogens which may be on the seed. This is especially true of spores (the "seeds" of some pathogens) which may be lodged in the crevices on seed surfaces, such as the crease of the wheat kernel, or under grain coverings as the hulls of oats or barley. Therefore, let us discuss briefly the mercurial fungicides.

Certain organic compounds of mercury have had long and wide usage as seed treatments for the control of covered smut of wheat and barley and both covered and loose smut of oats. In this capacity these fungicides give very satisfactory control and are essentially the only materials on the market that do. They are also used on cotton and in some conditions on sorghums. The chemicals kill surface borne-organisms and through absorption by the seed coat give a measure of protection to the seed during the germination period. Since seeds can be injured by the mercuries certain precautions must be observed. When seed damage occurs it is usually associated with (1) dosage, (2) seed storage conditions or (3) mechanical condition of the seed.

The range of safety in dosage recommendations is rather narrow if too little treatment is applied it is ineffective, on the other hand, an overdosage may injure the seed. The safety range is wide enough, however, to insure safe treatment with modern treaters if the equipment is properly adjusted. The weight of seed in the dump pan and the size of the metering crops must be carefully checked. The treater should then be checked in operation, weighing several bushels of seed during which time the treatment material is caught outside the treater and measured.

After treatment, seed should be placed in bulk or in open mesh bags for 24 to 48 hours in a well aerated place to allow escape of excess fumes. The drier the seed and the cooler the storage area the less likely seed injury will occur. High seed moisture causes increased absorption by the seed and high temperature increases the volatility of the mercury, either condition being potentially dangerous.

Even with recommended dosage and desirable storage conditions seeds may be damaged if seed coat is severe, especially the seed coat over the germ. For this reason it is advisable that a sample of the seed be carefully checked for excessive damage.

These precautions are not given to frighten you away from using mercurial seed treatments because they are the only type that will kill smut spores and other organisms present on the seed coat. Used judiciously they are an important part of a complete processing job for high quality seed.

Finally, if you haven't taken out an insurance policy which includes the treatment of seed, we suggest that you consider the step and see a reliable agent today.