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**Farmers Lose Thousands of Dollars
Annually Due To Presence of Smut**

**Treat The Grain Before Sowing and Save The Loss
In Harvest Time.**

The farmers of Ontario lose thousands of bushels of grain every year on account of smut, and the greater part of this loss can easily be prevented by treating the seed grain.

Smut spreads with the seed, grows up inside of the plant and destroys the head, thus reducing the yield.

Treat the seed before sowing and destroy the smut. Formaldehyde is one of the best substances for seed treatment. It will control oat smut, stinking smut (bunt) of wheat, and covered smut of barley.

Formaldehyde is sold under the trade name of Formalin, which is a 40 per cent. solution of Formaldehyde. It can be purchased in drug stores by the pound (16 oz.) or by the pint (20 oz.)

All bags, sacks, etc. that are to be used for handling treated grain are likely to be contaminated with smut and should be treated with formalin.

Barrels or pails are not injured with formalin and so may be used for holding the solution when treating the seed.

Grain that has been treated with formalin may be fed to live stock after it has been exposed to the air for some time and the fumes have disappeared.

Do not allow wet grain to freeze as it may injure the germination.

When the seed is damp and swollen after treating, the drill should be set to sow 1/2 to 3/4 bushels more per acre than usual.

Copper carbonate dust is recommended for treating wheat for stinking smut and also for treating hullless oats.

OATS
Numerous experiments have been tried for a number of years using various dusts for the treatment of oat smut but none of these have given as good control of smut as formalin.

Three different methods of treating the seed may be used.

1. Spraying or dry formaldehyde. Use equal quantities of formalin and water; that is one pint of formalin and one pint of water. A quart of this solution is sufficient for 40 or 50 bushels of oats. The most convenient method of applying this solution is to use a quart sealer sprayer, a sprinkling can will not do.

When treating the oats, open the doors so as to give plenty of ventilation, and hold the sprayer close to the oats, otherwise the fumes are very irritating to the nose and throat. Spray part of the floor and while one man shovels the grain into a heap on this part of the floor, another sprays on the solution. When finished, spray the bags on both the inside and the outside and cover the pile of oats with them. Old carpets, blankets, tarpaulin etc. may be used to cover the pile but should first be treated the same as the bags. Leave covered four or five hours, then uncover and the oats are ready to sow.

The advantages of this method:— (1) A large quantity can be treated in a short time. (2) The oats have not been wet and can be sown at once. (3) They may be treated a week or more before sowing.

Note:—This method cannot be used for hullless oats nor for wheat as the germination will be injured. It is not recommended for barley but where a mixture of oats and barley is to be treated, it may be used without much germination injury to the barley.

2. Sprinkling.
Use a pint of formalin to 40 gals. of water. Place the grain in a pile on the floor and by means of an ordinary sprinkling can, sprinkle this solution on the grain at the same

time shovelling over the grain several times to make sure that all the seed is wet. If any part of the seed is left dry, the smut may live. It will take 2-3 gallon or more of this solution per bushel. Cover the pile with bags, sacks, blankets, etc. which have been treated by dipping them in this solution and leave for two or three hours then uncover and spread out to dry. Sow as soon as sufficient dry to run through the drill or dry thoroughly and store in clean bags until sown.

3. Dipping.
Use a pint of formalin to 40 gals. water or a pound (16 oz.) to 32 gals. water. Put the grain in loosely filled sacks, dip into the solution, see that all grain is wet and soak for 5 minutes. Drain the sacks over the barrel and then pile the grain on a clean floor and cover for two hours. Covering is important as it prevents too rapid evaporation of the formalin. Sow when sufficiently dry to run through the drill.

HULLLESS OATS
Hullless oats are very susceptible to smut and if treated with formalin there is likely to be considerable germination injury. Copper carbonate dust is very effective in controlling this smut when applied at the rate of 2 or 3 oz. per bushel.

WHEAT
There are two kinds of smut in wheat, loose smut and stinking smut, also called bunt, covered smut and ball smut.

When loose smut develops the whole "head" of wheat is affected and at harvest nothing remains but the bare stalk. This smut is carried from one crop to another as little thread like structures (mycelium) inside of the grain and hence cannot be destroyed with formalin. It may be controlled by dipping the wheat in hot water but this is not recommended under ordinary farm conditions.

When stinking smut or bunt develops the "head" of wheat is somewhat similar to an ordinary "head" but in place of good kernels of wheat small shrunken ones develop, which are called smut balls. These are filled with a black mass of smut spores. Many of these smut balls are broken open during harvesting and threshing and the spores (which function as seeds) adhere to the good grain. Stinking smut is thus carried from one crop to another as spores on the outside of the grain, and these spores can be destroyed with formalin or some other substances such as copper carbonate dust.

Seed wheat should be well cleaned through a good fanning mill before being treated for stinking smut in order to remove as many of the smut balls as possible. If this is not done, some of them may be broken open after the grain is treated and affect the grain again.

Wheat may be treated for stinking smut either with formalin or with copper carbonate dust.

Formalin Treatment.—Two methods may be used—either sprinkling or dipping the same as for oats. (See oats Nos. 2 and 3).

Disadvantages of Treating with Formalin.

(1) The wheat is wet and it frequently takes considerable time to dry it so that it can be sown with the drill.

(2) Germination is frequently injured especially if the wheat is not sown for some time after treating or if the ground is very dry at time of seeding.

Copper Carbonate Treatment.—Use two or three ounces of copper carbonate per bushel, depending on amount of smut present. Put the wheat and copper carbonate into a mixing machine and rotate for one or two minutes or until every grain is thoroughly covered. It is advisable to wear a dust mask or wet handkerchief over the nose and mouth while treating the grain. If a smut treating machine cannot be obtained, a barrel, churn or an ordinary barrel fastened in a frame or some types of cement mixers, may be used for treating the grain.

Advantages of Treating With Copper Carbonate.

(1) It does not injure germination.

(2) Seed can be treated whenever convenient and stored without injury.

(3) Dusty seed can be sown at any time in dry or moist soil.

Disadvantages.
(1) Seed treated cannot be used for feeding or for milling purposes.

(2) Seed treated must be kept dry and should not stand in the seed drill under moist conditions.

(3) Any dust collecting in the seed drill should be cleaned out as it

may become caked and injure the drill.

If the drill as not been used for a few hours it is advisable to rock the wheels before starting to loosen the grain and the gearings.

BARLEY
There are two kinds of smut in barley—Loose smut and Covered smut. Each is somewhat similar in general appearance to the wheat smuts. When loose smut develops the whole "head" turns black and blows away, whereas when covered smut develops the "head" remains somewhat similar to an ordinary "head" but is much blacker.

It is sometimes difficult to distinguish loose smut from covered smut. Covered smut is later in developing and the black mass of spores, which takes the place of a kernel of barley, is covered by a white membrane.

Treatment.—Use one pint. Covered Smut.—Treat the barley by sprinkling or by dipping for a few minutes the same as for oats.

Loose Smut.—This smut may be controlled to some extent by soaking the barley in a solution of formalin for two hours but the only wholly effective treatment is by dipping in hot water as for loose smut of wheat.

Concord

Sunday last brought a very successful three week's mission to a close at Concord United Church the Pilgrims Misses Gibbs and Rowden conducted the campaign also visiting in the homes of the people and many homes are much brighter and happier through their prayers.

The children came in for special attention and many took a definite stand, acknowledging Christ as their Saviour.

The officials of the Church want to thank the friends from other churches who came out loyally to help and support the work of extending God's Kingdom and pray that God will bless the Pilgrims in their endeavours in other fields.

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