The object of writing this circular is to have some condensed information to give out in answer to questions relating to the treatment of seed oats to prevent smut, the Station's supply of literature upon this line being exhausted. The writer, with the assistance of seven advanced students of the College of Agriculture, has examined about all of the published data of Experiment Stations in the United States, and the methods of treatment suggested here are those which have been most generally approved.

**Formalin Treatment**

Make a solution of one pound of *concentrated formalin, to fifty gallons of water. Place the mixture into a tub or barrel. Put two bushels at a time of the seed oats to be treated into a gunny sack and immerse it in the solution, stirring it about a little to insure that every kernel of oats is saturated. Leave the oats in the solution twenty minutes.

*By concentrated formalin, is meant a forty percent solution of formaldehyde. It is sold at drug stores, usually in glass bottles holding about one pint which is near enough to one pound for practical purposes. The liquid is clear and transparent, like water. One should insist upon a concentration of forty percent, in order to be sure of results.*
In order to dry the oats after treating, let the liquid drain from the sack and then pour out the oats upon a tight floor, leaving them not over three inches deep. It will usually be necessary to shovel them over a number of times before they become dry enough to sow. The Wisconsin Station Report for 1901 makes favorable report upon the above manner of treating.

**SPRINKLING WITH FORMALIN SOLUTION**

It is oftentimes more convenient to sprinkle the formalin solution upon the oats than to immerse the oats in the solution. This is done as follows: Make a solution of 1 pound of formalin to 40 gallons of water. Spread a convenient quantity of the seed to be treated, upon a tight floor to the depth of three inches. Then with an ordinary sprinkler-pot, sprinkle the formalin solution over all parts of the grain until the top of the pile is thoroughly wet. Stir the pile over, with a scoop shovel, until the damp oats are thoroughly mixed with those below, and repeat the sprinkling and stirring until every kernel is saturated. After this, put the treated grain into a pile, and when all the seed has been treated, cover the pile with a binder canvas or an old blanket. Leave it covered for eighteen hours, then dry the oats, as in the formalin treatment.

It will be necessary to apply the solution at the rate of 1 gallon to 1 bushel in this method.

One or two things may be said in favor of the sprinkling method. It can be done more quickly than any other. The seed does not become so wet as it does in soaking, and therefore it can be more easily dried for sowing. It takes less material to treat a given amount of oats.

This way of treating is regarded as very effective in general practice and is reported as having given very good results, compared with five other treatments in the Canadian Experimental Farms' Report for 1900.

**HOT WATER TREATMENT**

Formalin will cost from sixty to eighty cents per pound at drug stores. The cost of treatment with formalin will therefore amount to from two to four cents a bushel. Even this small amount can be saved, however, if the hot water treatment is used. It is as follows: Provide two vessels for water, each holding say fifty gallons. Fill one of them conveniently full of water at from 110° - 120° Fahrenheit and fill the other in like man-
ner with hot water at 132°-133° Fahrenheit. Also have a bucket of cold water and a kettle of boiling water near at hand.

Put three bushels of the oats to be treated into a gunny sack and dip it into the water at 110°-120° F. Leave it a minute until the mass is warmed by the water, then lift it out and dip it into the water at 132°-133° F. Hold a thermometer in the water and as the temperature rises or falls be prepared to add cold or hot water as the case demands. If, by chance, the temperature gets as high as 135° F., reduce the time of keeping the seed in the water to five minutes. Ordinarily, lift the seed after it has been immersed for a few minutes, then plunge it again, and lift it again and so on, in order that the mass may become saturated, and continue the process for ten minutes.

As the successive sacks full of seed are treated, spread them upon a tight floor to dry as above.

An account of the hot water treatment is given in considerable detail in Farmer’s Bulletin No. 75, which may be secured by addressing Secretary of Agriculture, Washington, D. C.

OTHER TREATMENTS

A number of other methods of treating oats for smut have been experimented upon. A solution of copper sulfate and water will kill oat smut. Zinc sulfate and potassium sulfid have also been used with some success. Corrosive sublimate is used, but it is a deadly poison. The writer believes from practical trials and from summarizing reports that the treatments with formalin and with hot water are the most practical.