

Treatment of Oats, Wheat, Rye or Barley for Smut.

Editor of The Progressive Farmer:

Very few farmers realize the full extent of the injury suffered by these cereal crops through the inroads of smut. The smutted plants are dwarfed, therefore escape observation so completely that even very observing farmers often allow as much as 25 or 35 per cent of smut to pass unnoticed. Smut is rarely less than 10 per cent in oats and is frequently 16 to 25 per cent. This is a complete loss to the farmer as it costs as much in seed, land and tillage to raise the smutted plant as to raise the full head. All of this loss can be turned into a clear profit at a cost of about one cent per acre for material and a very slight outlay of labor. The United States is suffering annually a preventable loss of about \$18,000,000 from the smut of oats alone. Our own State is yearly losing between 10 to 20 per cent of her annual oat crop ranging in value at about \$991,516.00.

RATIONALE OF TREATMENT.

The smut of grains is caused by a fungus, the spore (the spore is the reproductive body of fungi, corresponding to the seed in higher plants) of which is carried in the seed to the young grain plant. Smutted plants in the field, and in threshing, shed their spores in the air. These spores are then carried about by the wind, many of them finding lodgment in the seed of neighboring plants. They are thus planted with the grain and the same moisture, warmth, etc., which starts the plant into renewed life quickens the smut. It thus happens that many young plants are, in earliest infancy, attacked by the smut enemy, which, having gained entrance, lurks within the plant until blooming time, when it again breaks forth in its well-recognized form. Only very young plants are susceptible to attack of the smut, therefore if we can so treat the seed of the plants as to destroy the adhering spores of the fungus without injuring the grain, we can enable the young plant to pass the critical stage of its existence in safety. It is thereafter safe. Such treatment is possible. Smut can therefore be practically eliminated from the field. Several kinds of treatment are effective, but of all those known that by formalin is by far the best and cheapest.

TREATMENT.

Formalin can be purchased from a druggist at a cost of from 75 to 95 cents per pound. One pound mixed thoroughly with 40 to 50 gallons of water is sufficient to treat 40 to 50 bushels of grain.

To treat the grain spread it in a thin layer on a smooth barn floor and sprinkle with the diluted formalin, using either a spraying machine or a watering pot. Sprinkle so as to thoroughly and evenly wet the grain with the mixture. Then shovel the grain over thoroughly a few times to insure even distribution and cover the pile with canvas, carpet, blankets or bagging, to keep the fumes of the

formalin within. The pile should stand from 6 to 12 hours in this way. The oats may then be readily dried by mixing with air-slaked lime, and the lime may be removed by the fanning-mill. The seed is then ready to sow. It may be stored, but in so doing it is liable to renewed smut infection. The best way is to treat, dry, then sow as soon as is practicable.

In general, one gallon of mixture will suffice to treat one bushel of grain. The formalin should be used at the rate of one ounce to three gallons of water.

Formalin is an irritating caustic which should not be brought into contact with the skin in pure form. In diluted condition it is harmless.

If you try this treatment simply as an experiment, sow the treated seed in a definitely marked portion of your field, using all care to keep the treated seed free from smutted seed. If you are adopting this treatment for your whole sowing, it will be instructive if you will leave a small portion, say one or two drill rows, with the same seed, untreated, thus enabling you to determine the real value of treatment. We would be pleased to have you send a letter to the Station stating the results of your treatment, its cost, labor involved, amount of smut in treated and untreated fields. The amount of smuts should be very carefully estimated in per cent from an actual count in the field.

F. L. STEVENS, Biologist,
Agricultural Experiment Station,
Raleigh, N. C.

Educated Practical Men Needed.

No less than three State Agricultural College at the present time are looking for men to teach scientific and practical animal husbandry, and are willing to pay from \$2,250 to \$3,000 per year to the right men. But the men competent to fill a position of this sort are scarce. If these colleges were looking for men to teach chemistry, or medicine, or literature, or languages, or music, or almost any other study in the curriculum the search would be ended in a week. The men who can successfully teach scientific agriculture and animal husbandry are few—so few that there are more jobs open than there are men to fill them.

In a few of the agricultural colleges there are young men coming on who will after while be ready to fill positions as teachers, but there is no danger of educating too many in this direction. The knowledge that makes a man competent to teach agriculture and live stock husbandry makes him valuable to the large landholder who is managing his land on business principles. The chair of animal husbandry at the Kansas Agricultural College is vacant now because a large land holder offered Prof. Cottrell more money than the college was willing to pay him. If the young men on the farms will attend the agricultural colleges and learn what there is to learn there about farming and stock breeding and feeding they need have no fear about a job being ready for them when they are ready for it.—D. Henry Wallace.

Farm Notes from East Tennessee.

Editor of The Progressive Farmer:

After a protracted rainy season in September and the early part of October, the weather has apparently settled down into an old-fashioned, warm, hazy, delicious Indian summer. The few rains during the latter part of last month were light, and were immediately followed by fine days. The wet weather damaged some corn and much fodder, but every one has since had ample opportunity to gather it all in and to sow winter grains. Most wheat is sown, and much of it is up. While conditions are ideal for growth, some fear that the fly may repeat the damage of the last two or three years. Pastures are holding up remarkably well, and most stock will enter the winter in good condition.

Farmers are generally busy; but they were not too busy to turn out last week to Hamblen County's first fair. This fair was carried through entirely by voluntary subscriptions, no fees of any kind being charged; and while it would not, of course, compare with well-established fairs, it was, all things considered, a great success and distinctly creditable to all concerned. The crowd was large both days; and all seemed pleased. The exhibits in the ladies' department were very strong; farm products not extensive but surprisingly good; while the poultry exhibit was much lighter than might have been expected in a county where poultry raising is the most important branch of agriculture. Some good stock was shown; but there was not much of it, and the display only served to emphasize the great weakness of our farming—the small number and the poor quality of the live stock raised.

A permanent fair company is being organized, and there is every prospect of success. That the education and inspiration to be had from a fair are needed may be seen from the fact that while cattle have been bringing boom prices all over the country, three and a half cents a pound has been a high price here. The local retailers have bought dressed beef all summer at \$5.00 per hundred pounds, taking the whole carcass. The beef trust has not been an issue here.

The reasons for this state of affairs are not far to seek. The most of our cattle are of poor type, and there have not been enough of them to bring in buyers from the outside. So the local dealers have, of course, held prices at the lowest notch. If there had been enough steers in the country many of those which sold for 3 or 3½ cents would have brought 4 or 5 cents. But the farmer with only two or three animals of not very high grade could not afford to hunt up an outside buyer, and took what he was offered. If the farmers had organized they could have secured better prices; but our farmers do not do that.

A review of crops this season shows a poor year. Wheat was almost a complete failure. Corn, potatoes and hay were all below the average, while fruit was very far below.

Some farmers made good crops, as may be done in our worst seasons, while others failed, as they do year after year.

There is much difference in seasons, but more in men.

E. E. MILLER.
Hamblen Co., Tenn.

More Notes from Arid America.

Editor of The Progressive Farmer:

Mountain water makes the plains smile. The train thunders down the canyon of the Arkansas in the Colorado Rockies, skirting along the edge of the angry stream of muddy swift-flowing water. The Royal Gorge, not far from where the river debauches onto the plain is one of the wonders of nature. The sides are precipitate, hundreds of feet straight up of gray and reddish rock with not a foothold for even mountain goats. The sun strikes the yellow water of the river only at midday; it is no more than a good leap across it; and during countless centuries of turbulent flow the stream has cut for itself a crack through the mountain. Yet despite the sheer cliffs and the rainless climate, wherever a crevice or a tiny ledge allows the lodgment of particles of disintegrated and decomposing rock, there the plants of the arid region find a foothold—stiff grasses, prickly woody form and tiny stunted evergreens. How different the scene just beyond the mouth of the canyon out on the plain! The Arkansas still wends his muddy course, but in less flow for much of his water is diverted to nourish fields of fodder and orchards and cantelopes and beets and yellow pumpkins even. The apple trees this year are laden to the breaking point—as I believe they are every year under irrigation—fat cattle feed on green alfalfa or fields now covered with cocks of the hay cured a bright light green. This is the third cut this year—a total crop of probably five tons to the acre.

It is a curious thing how the streams of arid lands are always muddy while those of a humid region are normally clear. The source of the arid land streams is on the mountains. The melting snow or the mountain rains rush along over the dry slopes of rock and loose dirt and sweep it down into the bed of the stream silt or sediment, worth to the irrigator a large annual fertilizer bill. But will not this stock of rich wash-off give out some day and thus compel the irrigator to fertilize? No. The source is inexhaustible so long as the forces of nature continue their work. The great rich alluvial bottom lands are but the washing down of mountains, bit by bit, and this will go on as long as the mountains last and we have freezing and thawing and sunshine. For ages the Nile has brought down silt from the Abyssinian Mountains and fertilizes her broad cultivatable plains and the land is as rich as ever. The Colorado River has cut out billions of tons of the mountains and spread them away over its lower flood areas—land wonderfully rich.

Where they can, in the West, stock