

# THE COLORADO EXPERIMENT STATION

## FORT COLLINS

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### POISONED GRAIN FOR PRAIRIE DOGS, GROUND SQUIRRELS, KANGAROO RATS AND OTHER RODENT PESTS.

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During the past season a series of experiments for the control of prairie dogs, ground squirrels, and other rodent pests, was carried out to test the relative merits of the different forms of strychnine now being used in the State; also the merits of whole oats vs. steamed crushed oats. As a basis for comparison we used as a standard our Colorado Formula No. 46, because, after five years of use, it has proved itself second to none we have used.

To the best of our knowledge, steamed crushed oats were first used as a carrying medium for strychnine by Dr. R. R. Parker, in the Bitter Root Valley, Montana, in 1918, for the control of the Columbian ground squirrel, which at that time could not be successfully combated with whole-oat formulas then in use.

In summing up our experimental work with steamed crushed oats we find, when prepared by Formula No. 46, using 14 quarts of the oats to one ounce of strychnine, that they are not eaten as readily by prairie dogs and rodents as the whole oats prepared in the same proportions. However, when we began to increase the proportion of crushed oats, they were eaten more readily, and the increased efficiency of the poison became apparent at once. Our best results have been with crushed oats, using from 24 to 32 quarts to the ounce of strychnine; however, 28 to 30 quarts to one ounce are the proportions we would recommend.

A possible explanation of the above results may be as follows: When whole oats are used, the poison is all on the hulls, leaving the kernels free of poison. Rodents eating this grain hull it to get the kernel and, during the process of hulling, they get enough of the poison for a fatal dose. When crushed oats are used, the kernel is crushed along with the hulls, and is exposed and subject to the same coating of poison as the hulls. We know that strychnine is bitter, at least to the human taste, and the supposition is that it is the same to the rodents. It is impossible to eliminate all the bitter

taste from strychnine by the use of other chemicals. Therefore, if the poisoned solution covers both kernel and hull, used at the rate of one ounce of strychnine to 14 quarts of oats, no doubt it will be distasteful to the rodents.

If the one ounce of strychnine were distributed over twice the amount of grain, 28 to 30 quarts, the tendency would be to lessen the bitterness of the individual grain, and the supposition is that the rodents eat it more readily.

The question then comes up, if that is the case, why not use 28 or 30 quarts of whole oats? When the rodents are eating poisoned whole oats they discard practically all the hulls, and only eat the unpoisoned kernels. All the poison they get is what they take in the process of hulling, necessitating a stronger coating of poison.

We are not stating the above as a fact, but, as stated before, a possible explanation.

From our experimental work this season, we find that 28 to 32 quarts of steamed crushed oats to one ounce of powdered alkaloid strychnine, prepared according to our Formula No. 46, give practically the same results as whole oats, 14 quarts to one ounce of strychnine, prepared according to the same formula.

We also find that our crushed-oat formula is equal to any crushed-oat combination we have tried, or seen used, to the present time.

During the past five years we have distributed in the State, from the Experiment Station Laboratory, approximately 125 tons of poisoned oats prepared according to Formula No. 46. This amount does not include the grain prepared locally by the different counties. From the time this formula was first put out and up to the present time it has proved its worth as a successful all-season formula, when rodents are active.

In putting out a crushed-oat formula, which we have designated as Colorado Formula No. 46 A, we are not making any claims that it is better than the original, and, until another season's tryout, we would hesitate to state positively that it is equal to 46. However, we believe that it is.

We are putting out a crushed-oat formula at this time, because the cost to the farmer is greatly reduced. Not only are we able to sell it cheaper but, it being lighter, the express charges will be less.

When we consider that the farmers and ranchmen in the State spent approximately \$15,000 in 1924 for poisoned grain to combat rodents, a saving of even a third of the cost would amount to a considerable sum.

## Formulas mentioned in this paper:

### COLORADO FORMULA NO. 46

Whole oats .....	14 quarts
Strychnine (alkaloid powdered).....	1 ounce
Baking soda .....	1 ounce
Saccharine .....	$\frac{1}{8}$ ounce
Fine salt .....	$\frac{1}{2}$ pint
Petrolatum oil .....	$\frac{1}{4}$ pint
Water .....	1 pint
Flour to thicken to a creamy paste.	

Directions: Dissolve strychnine in one-half pint of cold water, then add one-half pint of hot water. Stir in soda and saccharine, add salt and oil, put over fire and heat until salt is dissolved, stirring constantly. Remove from fire, stir in flour, making a creamy paste. Pour the poisoned solution over the grain and thoroughly mix. When mixed, the grain is ready to use.

### COLORADO FORMULA NO. 46 A

Steamed crushed oats .....	30 quarts
Strychnine (alkaloid powdered) .....	1 ounce
Baking soda .....	1 ounce
Saccharine .....	$\frac{1}{8}$ ounce
Fine salt .....	$\frac{1}{2}$ pint
Petrolatum oil .....	$\frac{1}{2}$ pint
Water .....	3 pints
Flour to thicken to creamy paste.	

Directions for mixing same as 46.

The poisoned grain may be used at any season the rodents are active, and is recommended for prairie dogs, ground squirrels, kangaroo rats, and field mice (not house mice or rats).

The amount of grain to use is about one teaspoonful, or what may be picked up between the four fingers and the thumb, and should be thrown against a hard surface of the ground, on the outside of the burrow, and a foot or two from the opening. When using the crushed oats, we prefer not to scatter as much as of the whole oats.

The first time over the ground, it is very important that every burrow should be treated, regardless of whether it shows signs of being inhabited or not. On going over the ground the second time, it is only necessary to treat the burrows that show signs of life, but the time between the first treatment and the second should be at least two weeks.

We have had prairie dogs under observation for a number of years and we find that the poisoned grain is eaten more readily in the summer months than in the fall when they are fat and lazy, and not so active. Another observation we have made is that in the fall we get fewer dead dogs on the surface than in the summer, even when the kill is practically 100 percent. Our opinion is that

in the fall when the dogs are fat, they are not so hungry and play around the grain for some time before eating it; also that after they eat it the excessive fat possibly delays the action of the strychnine, which gives them a chance to reach their burrows to die.

### POISONED GRAIN FOR SALE

We have for sale, at cost for material and overhead expense, poisoned grain prepared from Colorado Formulas 46 and 46 A. This grain is put up in containers of 1, 3, 5, 10 and 15 gallons. The present price per gallon for Formula 46 is 50 cents and for Formula 46 A, 30-cents. Prices are subject to change without notice.

One gallon will treat about 10 to 15 acres, depending on the extent of the infestation. **This grain is not mailable and must be sent by express or freight**, preferably by express. On all orders to be shipped by freight, \$1 must be added for transportation from the grain room to freight depot. The express company picks up express packages free.

**All orders must be accompanied by postal or express money order or bank draft. No personal checks will be accepted, nor will shipments be sent C. O. D.** These rules may seem unreasonable, but in the past we have received a large number of checks which were returned to us from the banks marked "no funds" or "short." In practically all cases, these checks are never made good. Many C. O. D. packages have been refused at their destination, and we have been compelled to pay charges both ways.

This grain is put out by the Agricultural Experiment Station of the Colorado Agricultural College, co-operating with the office of the State Entomologist.

W. L. BURNETT,  
In Charge of Rodent Control.