INFORMATION BULLETIN NO. 7

MONTANA DEPARTMENT OF AGRICULTURE
ENVIRONMENTAL MANAGEMENT DIVISION
TECHNICAL SERVICES BUREAU
HELENA, MONTANA 59620
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USE AND CALIBRATION OF THE CYCLONE SEEDER FOR CONTROL OF
THE RICHARDSON GROUND SQUIRREL ON RANGELAND, PASTURE AND
HARVESTED FIELDS

Cyclone Seeder Application

To calibrate the cyclone seeder for Richardson ground squirrel
control utilizing strychnine grain bait, you will need the
following equipment and materials:

-- cyclone seeder (electric fan model)
-- wood or metal frame with inside measurement of one
   square foot
-- scale (20 lbs or greater capacity)
-- 5 gallon bucket or plastic tub
-- measuring tape
-- untreated whole oats (20 to 30 lbs)
-- strychnine treated whole oats (i.e. Sebesta brand
   0.44% strychnine)

First, securely mount the cyclone seeder onto your vehicle,
either on the front or rear. Once fastened, determine what
vehicle speed you wish to maintain while applying bait. For most
terrains, five miles per hour has been satisfactory--you may want
a hand throttle to maintain a steady speed. A variation of only
one mile per hour in speed will increase or decrease the
application rate by 20 percent. Throughout remainder of the
calibration, be sure to use the same vehicle speed.

Using a small amount of untreated oats (5 lbs), adjust the fan
speed while driving to get a swath of approximately 20 feet
(Figure 1). This should be done where there is no vegetation
(driveway, around farm buildings, etc) so you can observe the
oats on the ground. Once a uniform swath has been fixed, record
the fan setting for future use.

Now, by adjusting the gate opening, determine the number of
kernels being applied per square foot. Across the 20 foot swath,
randomly place the square foot frame 10-20 times and count the
kernels in each frame. Average these frame counts. Adjust the
gate opening and record gate settings for the following rates per
swath-acre.

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1.2 kernels per square foot =  3 lbs per acre
2.4 kernels per square foot =  6 lbs per acre
4.0 kernels per square foot = 10 lbs per acre
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After calibrating the cyclone seeder by this method, one final calibration is necessary to confirm your application rate. First, divide the number of square feet in an acre (43,560 square feet) by the swath width you have selected. For a 20 foot swath, this would amount to 2,178 feet. This is equal to one swath-acre (43,560 feet divided by 20 feet equals 2,178 feet). With the measuring tape, measure out this distance in an area which is to be treated with strychnine oats. Weigh 15 to 20 pounds of bait into the seeder. Apply the bait along the line you have measured. Weigh the bait remaining in the seeder. The difference will be the pounds of bait actually applied per swath-acre. If this differs from results obtained by counting the kernels per square foot, readjust your machine.

Ground squirrel control using the cyclone seeder is generally most effective where the density of ground cover vegetation is light to moderate. As density of ground cover increases the rate of bait application must be increased. Economic costs and environmental concerns limit the maximum amount of bait applied. Applications greater than 6 pounds per acre are not recommended. Broadcast application of bait need not be continuous over the treated area. Where ground cover is light to moderate unbaited intervals of 20 to 100 feet between baited swaths can be left (Figure 2). The following table gives various application rates and swath intervals depending on vegetation cover.

CYCLONE SEEDER APPLICATION RATES

Bait Application Rate	Swath Interval	Net Pound Bait Per Acre	Vegetation Cover
6 pounds per acre	None	6 pounds	Heavy
10 pounds per swath-acre	20 feet	5 pounds	Heavy
3 pounds per acre	None	3 pounds	Medium
6 pounds per swath-acre	20 feet	3 pounds	Medium
10 pounds per swath-acre	100 feet	1.7 pounds	Light
6 pounds per swath-acre	100 feet	1 pound	None

Application Precautions

Broadcast baiting takes advantage of the natural search and find foraging behavior displayed by ground squirrels. Care must be taken to apply bait when the squirrels are readily searching for and accepting grain. Bait application at other times will result in poor control. Application of treated or untreated bait to a small area to test bait acceptance is always advisable before any general bait application.

Do not broadcast strychnine grain baits over growing crops. Strychnine baits composed of rolled or crimped oats may plug the seeder's gate opening. Difficulty may be encountered obtaining the recommended 20 foot swath width when using these baits. Use of flaggers is recommended to maintain uniform swath intervals. Avoid application of strychnine grain baits where waterfowl or other concentrations of seed-eating birds are known to be frequent. Consider alternative control methods or use scare techniques to keep nontargets from the treated area.

Before using any pesticide product read and understand the pesticide label. When not in use store pesticides in locked storage. Always keep pesticides in the original, labeled container.

For more information contact the Montana Department of Agriculture, Capitol Station, Helena, Montana 59620.

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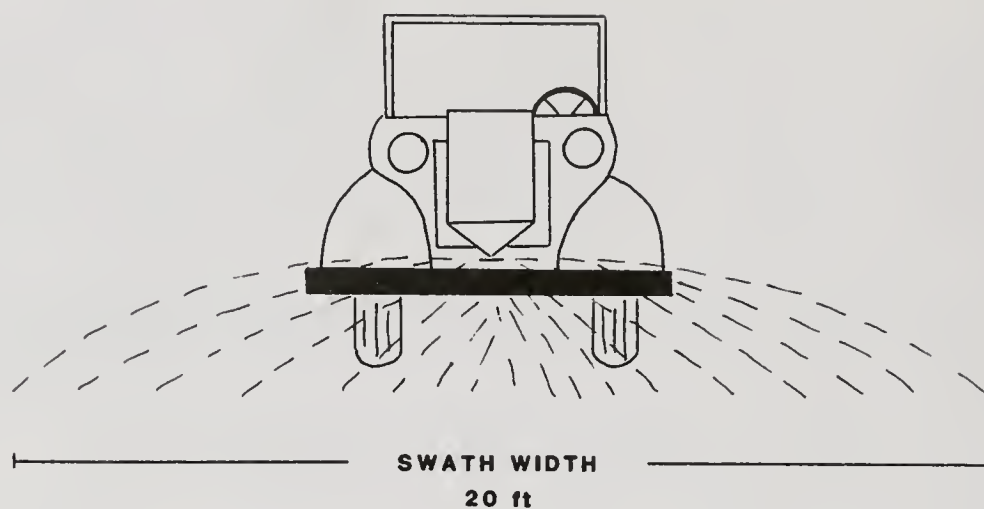>   Monty Sullins

Figure 1. Swath Width

SWATH WIDTH
20 ft

Figure 2. Cyclone Seeder Application with Untreated Intervals

UNTREATED
SWATH

INTERVAL

20 ft

TREATED
SWATH

20 ft