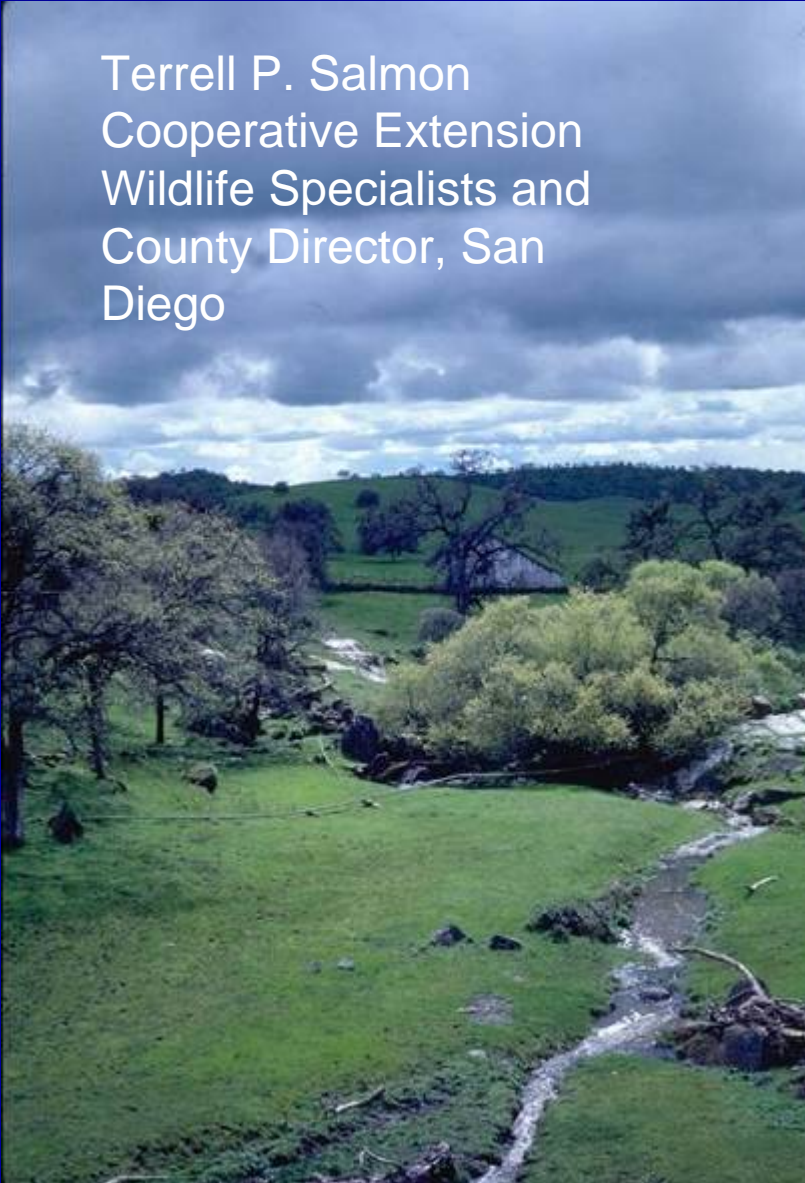


Pocket gophers and moles

Terrell P. Salmon
Cooperative Extension
Wildlife Specialists and
County Director, San
Diego



Paul Vossen
Cooperative Extension
Farm Advisor
Sonoma County



Ruining the lawn



Killing plants

***Gopher
feeding on
tree trunk***

\$150 Bounty

THE PRESS DEMOCRAT, SUNDAY, SEPTEMBER 17, 1966

\$150 BOUNTY

Gopher munches on under Gilroy lawn

By EVAN MITCHELL
McClatchy News Service

GILROY — Russell Hayden is sure. He's tired of the traps, the poison, the gas bombs and the exterminators.

He's tired of the "Castroville" crew and the boys that keep popping up on his lawn.

So, first, Hayden, who lives at 8215 Cooper Lane, is tired of the gopher who spends his days munching on the tender roots of the ever-green lawn. Not only that, Hayden is so mad that he's put a \$150 bounty on the fat, head of the elusive critter or critters.

"This has been crap," Hayden says referring to his failed attempts to root his unwanted vermin. "We've tried bait. We've tried traps. We've tried smoke bombs. We've tried a slight attack with a gun."

No luck. Another day, another gopher hole. "I guess you saw the front lawn," Hayden says with disgust. "It was real bad."

Hayden's ordeal began three months ago when the white-tail worm and brown patches began to appear on his lawn. One day, he was tired about every extermination technique

known.

First there were the traps. Hayden set them with commercial gopher bait, and there was grass and finally was found. The result? One well fed gopher.

He tried pouring water down the hole, pouring ammonia into them, dropping poison incense down them and showing "gopher games" into them. But if the gopher noticed the incense, he didn't mention it to Hayden. Finally, Hayden set up a bed on his back porch and waited for the gopher with a shotgun.

"I ended up falling asleep," Hayden said. "I thought, I'm going to shoot my foot off or something trying to catch him."

To add insult to injury, Hayden, who works in the hazardous materials division of the San Jose Fire Department, made the mistake of telling his friends at work about his gopher problems. If anyone was going to know about someone to get rid of a gopher, these people would. Not so had Hayden was doing. "Castroville II," the name for a crew in which a professional shows up a job more in an

attempt to exterminate a gopher, is on its way to the beach.

"They give you the names of all the contractors all right," Hayden says referring to colleagues. "But if you ask, they would be blown up my head."

Frustrated, he decided to call in the experts. That came the exterminators. "We had a guy who used the gas and another who didn't last you the house," Hayden said. "The gas worked but the gas didn't work and the gas was out the hole but the gas didn't work. They both had neither worked."

"One of the exterminators told us he could catch 100 gophers," Hayden says with a laugh. "Yeah, all except the one."

Apparently the gopher is not the only one it has been bothering in that battle. Hayden is fed to dig deep into his wallet, spending more than \$100 including \$50 for exterminators trying to try to the removal of the gopher, a removal someone.

"The gopher does not need a name," Hayden said with a grin. "The gopher will hopefully stay dead."

Soil erosion made worse by gopher tunnels



Erosion aided by gopher tunnels



**On a hillside water surfaces
through gopher tunnel**





**Are you
frustrated?**



Instead of trappin' those gophers, we figgered we'd bring 'em out and reason with 'em!

Gopher & Mole Control

- Differences – Life Cycles - Feeding
- Snake Oils
- Enhance Natural Predators
- Exclusion
- Poison Baits
- Gassing
- Blasting
- Flooding
- Traps
- Ignore Them



Differences between Moles & Gophers

Mole

- Round mound
- Pushed up earth
- Long surface ridges
- Eat earthworms & insects
- Not as territorial
- Holes kept closed or open
- Difficult to catch

Gopher

- Crescent mound
- Dumped earth
- Eat plants (roots)
- Very territorial
- Keep holes closed
- Easy to catch

Moles

- 6-8 inches long
- Pointed snout, short arms
- 3-5 young born in spring
- Holes < 2" in diameter
- Tunnels mostly 16-18" deep
- Surface ridges for feeding
- Active all year except in extreme cold
- Eat worms and insects
- Dislodge plants

Mole or Gopher?



Gophers

- 6-12 inches long
- 4 large incisor teeth
- Fur lined external cheek pouches
- Do not hibernate (2 litters/yr) 3-4 young
- Density 15-60 per acre
- Main tunnels > 2" in diameter
- Active mostly in spring and fall
- Eat roots, bulbs, tubers, & seeds
- Kill plants

Mole or Gopher?



Pocket gopher ID



Incisors always exposed



Opening of fur-lined
cheek pouch

Pocket on gopher cheek





Pocket gopher

Pocket gopher – crescent shaped mound



Open gopher hole = still digging



**Closed pocket gopher hole =
gopher inside**



Open gopher hole = vacant





Pocket gopher mounds

**15-60 per
acre**



**Pocket
gopher in
allium field**

Gophers eat roots & plants



Gopher Mounds & Surface Feeding





**Gopher
surface
feeding on
clover and
grass
roots**

Gopher feeding on alfalfa roots



Bermuda grass cache in gopher tunnel





Pocket gopher in olive orchard



**Gopher
feeding
on tree
roots**

**Gopher
feeding
on vine
roots**



Mole mounds



Mole mounds



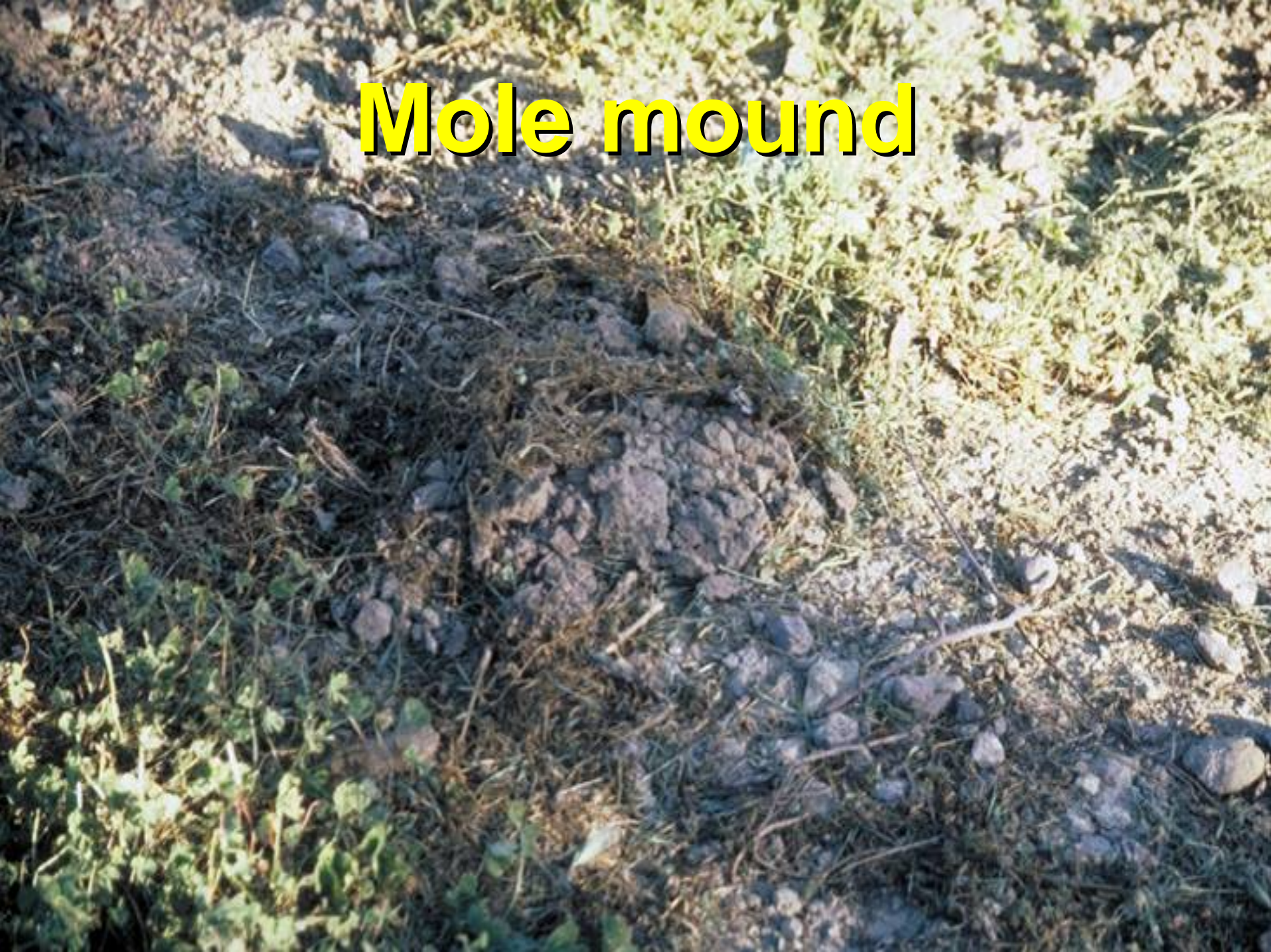
Mole hole



Moles in a lawn



Mole mound



Snake Oils

4 of 5 gophers develop a sweet tooth (UC trial with gophers in captivity)



Snake Oils



Battery powered vibrators

Critters quickly get used to them





Snake Oils



Lava
rocks
soaked
in garlic
juice

Biodynamic Gopher Control

Skin the Gopher

- Burn the pelt then Sprinkle the ashes over the field.
- Burn the body and place ashes into the gopher holes during spring solstice

Witchcraft ?



**Beware of the
“environmentally-friendly”
label - Does it work?**

AMIGO

ELECTRONIC REPELLER

MIRACO, Inc., P.O. Box 1100
Los Alamitos, Ca. 90720

Don't get fooled

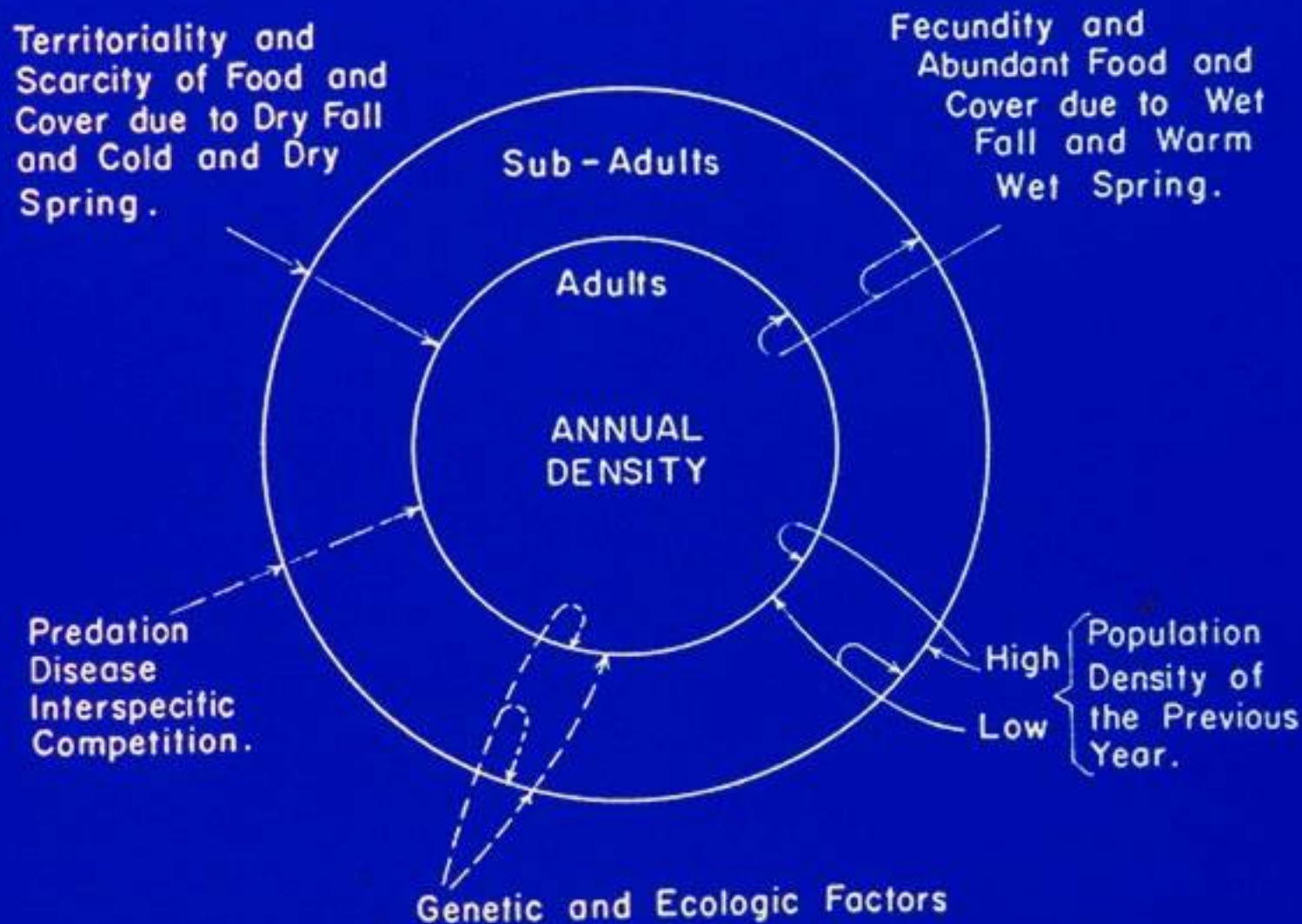
Only old mounds and no recent activity ?

1st Option - No gophers – you got em !

2nd Option - Lots of underground life and feeding – just no new digging !!!

If you drive into a neighborhood and see no new housing construction – does that mean nobody lives in that neighborhood?

Small Animal Population Dynamics



Predators...



**Helps – BUT –
control is
limited**



Exclusion...





**Barrier needs to be
deep enough so
the pest will not go
under it**

AND
**above ground
enough so the pest
will not go over it**

Gopher Baskets



Installing gopher baskets



Gopher basket



Wire lined planter box



Store Pesticide Aisle



Strychnine

POCKET GOPHER BAIT

STRYCHNINE TREATED GRAIN (0.29%)

Active Ingredient: Strychnine .29%
Inert Ingredients: 99.71%
Total: 100.00%

KEEP OUT OF REACH OF CHILDREN

DANGER



POISON

STATEMENT OF PRACTICAL TREATMENT

IF SWALLOWED: CALL A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY: If less than ten (10) minutes have passed since the poison was taken, give 1 or 2 glasses of water and induce vomiting by touching back of throat with finger. Repeat until vomit fluid is clear. Have patient lie down in quiet, darkened room and keep him warm and quiet. Do not induce vomiting or give anything by mouth to an unconscious person. IF INHALED: Remove victim to fresh air. Apply artificial respiration if indicated. IF ON SKIN: Remove contaminated clothing and wash affected areas with soap and water. IF IN EYES: Flush eyes with plenty of water. Get medical attention if irritation persists.

NOTE TO PHYSICIAN

- Administer 100% OXYGEN by positive pressure to provide as much pulmonary gas exchange as possible, despite seizures.
- Administer ANTICONVULSANT DRUGS intravenously to control convulsions. CAUTION: It may be difficult or impossible to stop the seizure activity without stopping respiration. Be prepared to maintain pulmonary ventilation mechanically. Tracheotomy may be necessary if seizures are prolonged.

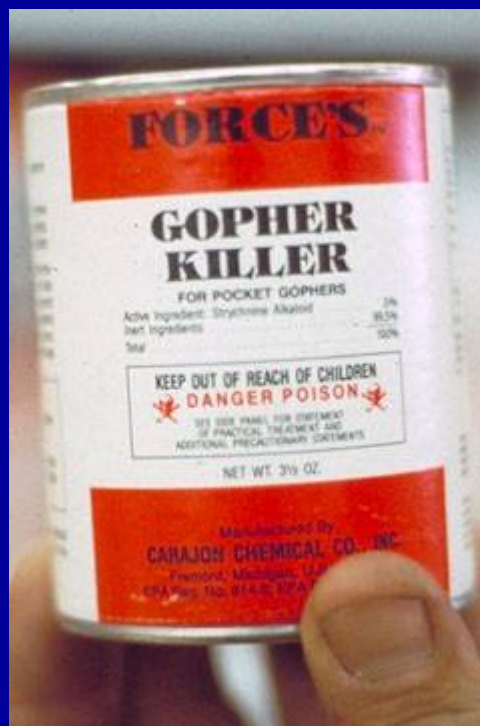
SEE SIDE PANEL FOR ADDITIONAL
PRECAUTIONARY STATEMENTS

Botanical from Nux Vomica plant

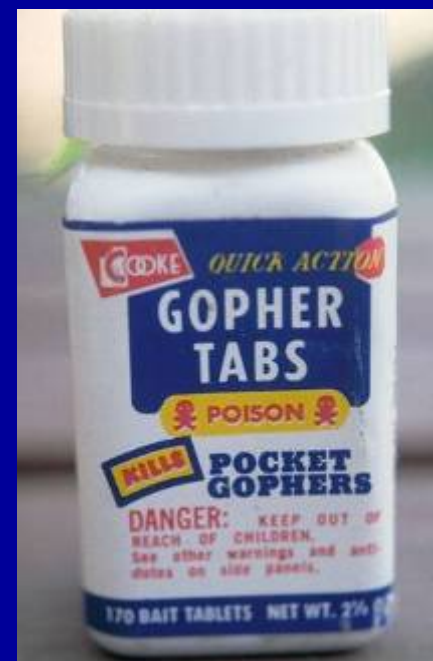
(Strychnos nux-vomica L.)

Breaks down in weeks in moist soil

Gopher Baiting



Strychnine
on grain



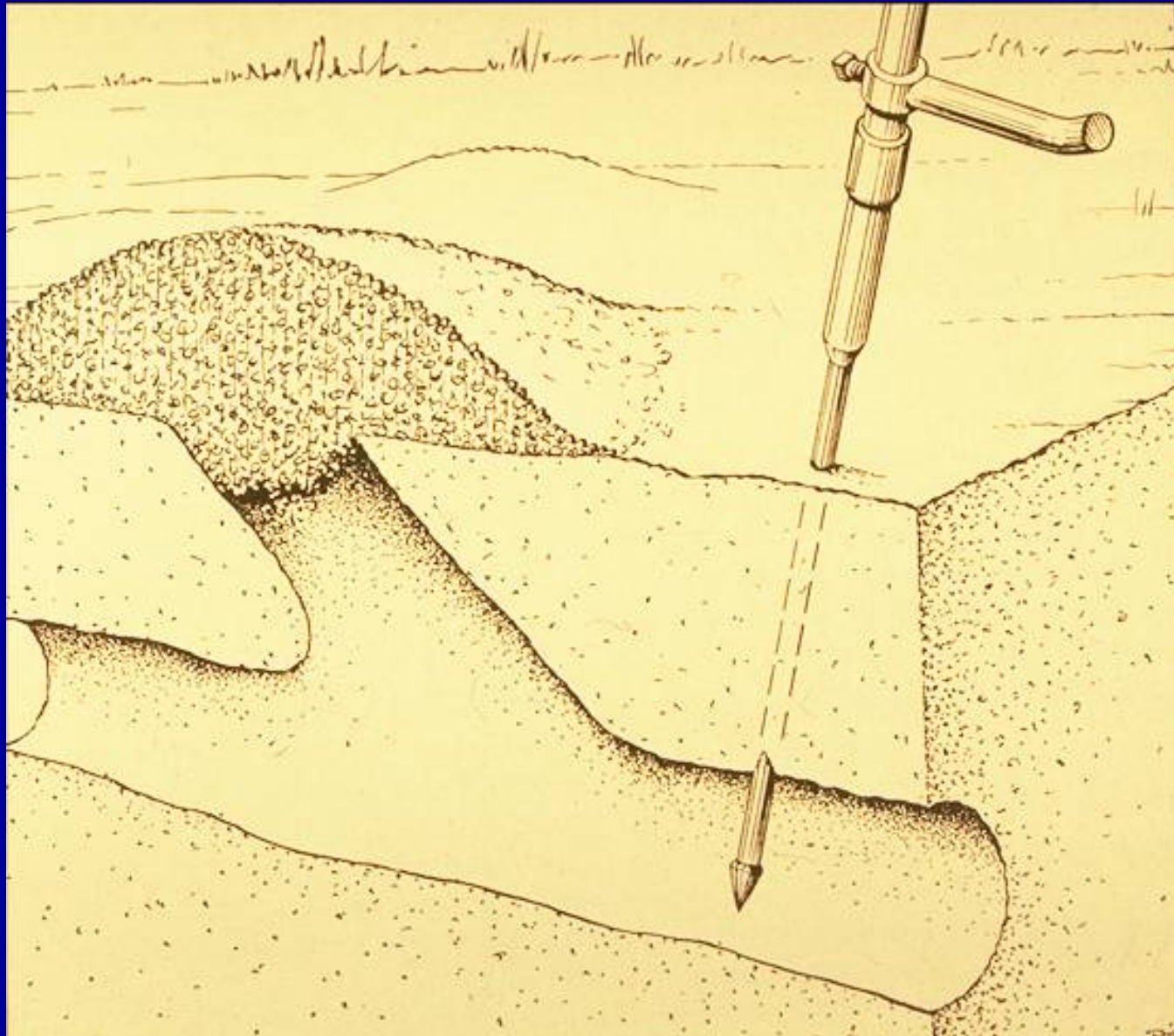
Baiting with Strychnine



1st - Probe area to find the tunnels

2nd – Pour bait into tunnels

Probe into main tunnel



Baiting with Strychnine




Manual strychnine bait applicators



Spoon it in & close hole

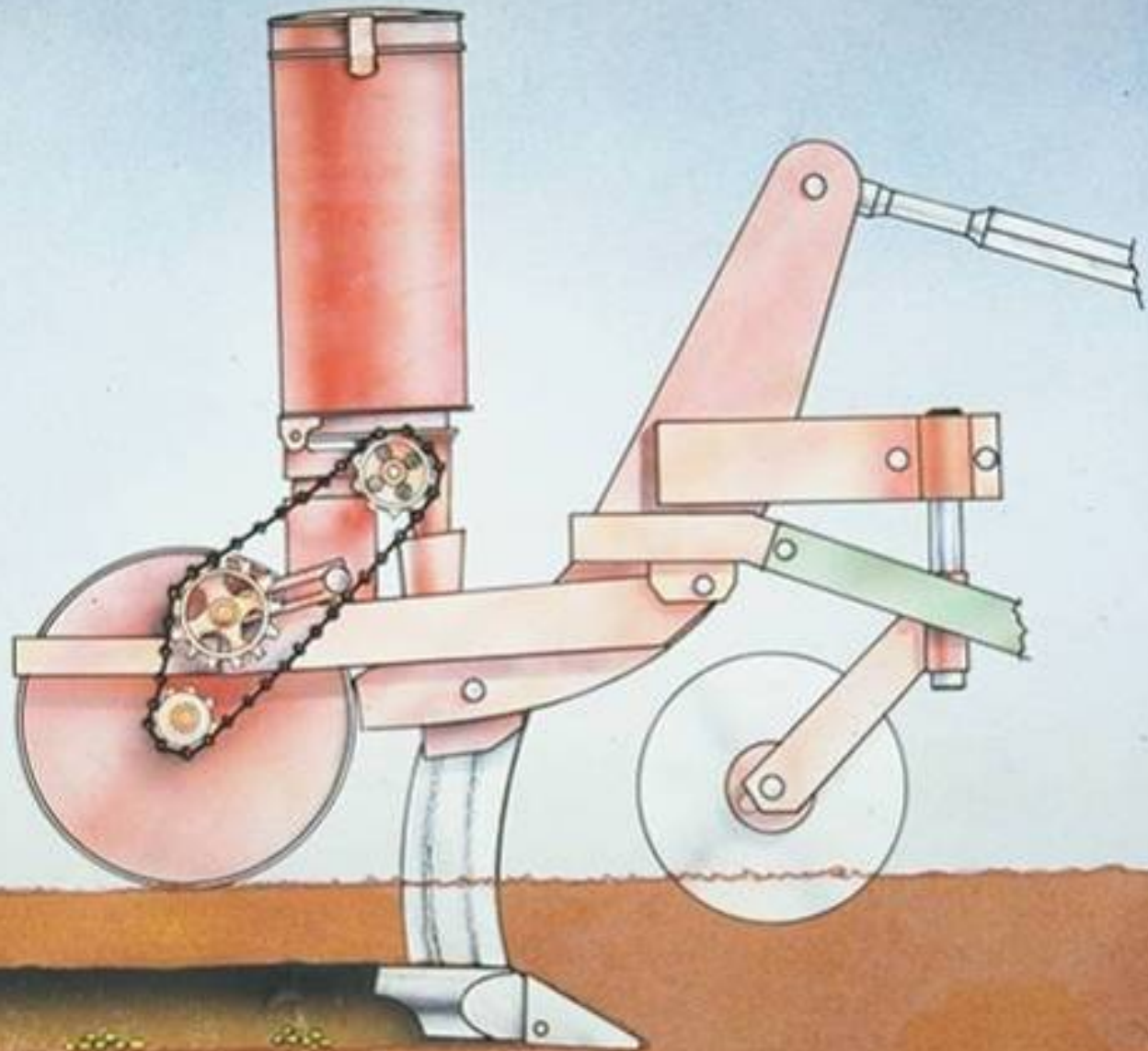


Mechanical Bait Applicator



Makes an artificial burrow and deposits strychnine bait periodically

Mechanical bait applicator



Tunnel from mechanical bait applicator



Anti-Coagulant Bait Blocks

Diphacinone or Chlorophacinone



RODENT BAIT BLOCK CHLOROPHACINONE TREATED GRAIN/PARAFFIN (0.005%)

ACTIVE INGREDIENT:	
Chlorophacinone	
2-[(p-chlorophenyl) phenyl- acetyl]-1,3-indandione	0.005%
INERT INGREDIENTS	
	99.995%
TOTAL	100.000%

KEEP OUT OF THE REACH OF CHILDREN
CAUTION
FIRST AID TREATMENT

If swallowed, call a physician or poison control center. Drink 1 or 2 glasses of water & induce vomiting by touching back of throat. Do not induce vomiting or give anything by mouth to an unconscious person.

Establishment No.
EPA SLN No.
Calif. Reg. No.
Net Contents lbs.

SONOMA COUNTY AGRICULTURAL COMMISSIONER
2555 Mendocino Avenue, Rm. 101-P
Santa Rosa, California 95401

Anticoagulant Baiting Trial for Pocket Gopher Control



- Five groups of eight animals.
- Groups baited with twenty grams Chlorophacinone treated oats

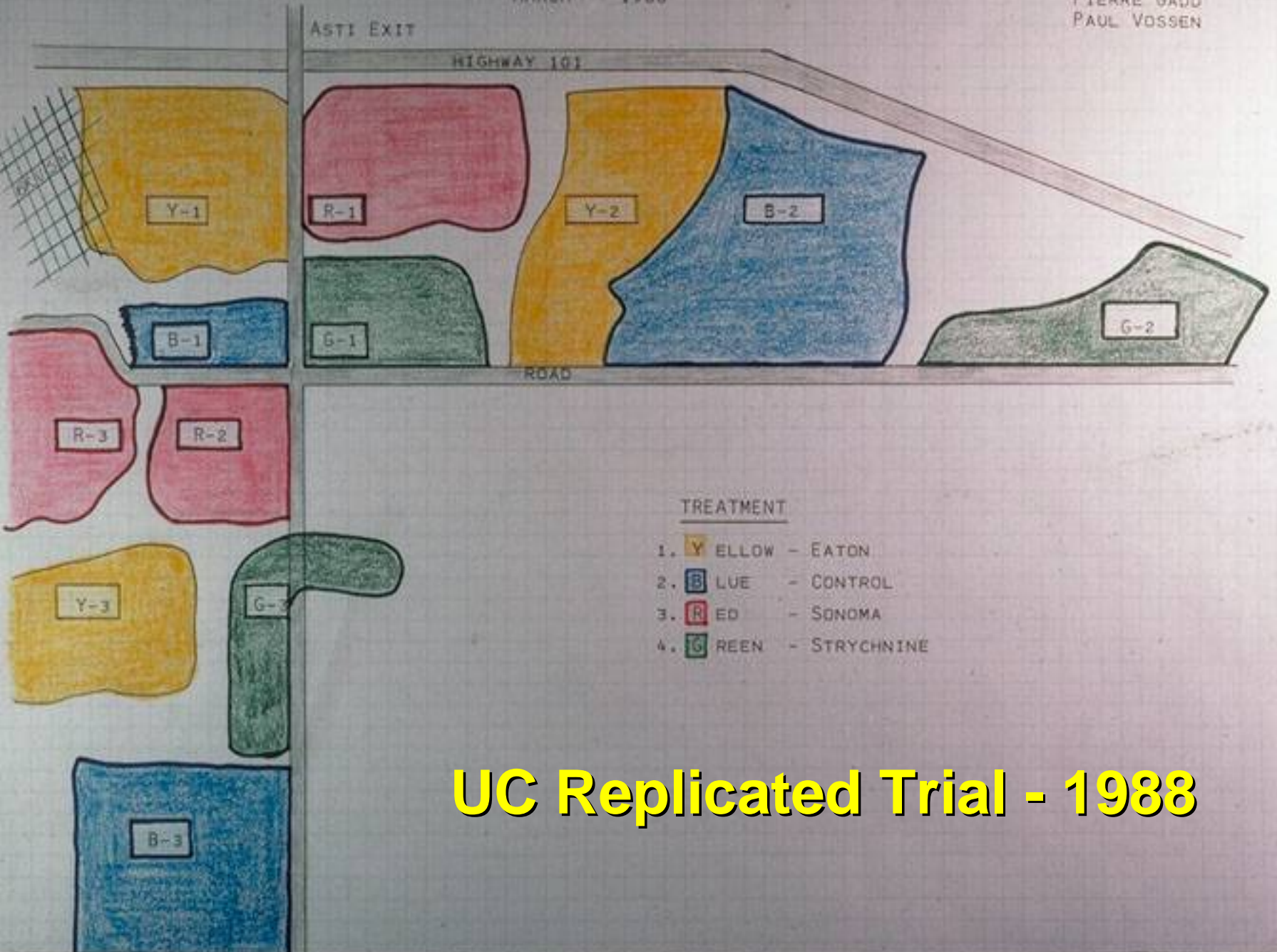


Anti-coagulant Baits

- **Chlorophacinone and diphacinone are multiple feed toxicants and must be fed on over several days in order to be effective**
- **Results indicate that an animal must consume at least 25% its' body weight in bait**

GOPHER CONTROL TRIAL
MARCH 1988

PIERRE GADD
PAUL VOSSSEN



UC Replicated Trial - 1988

AVERAGE NUMBER OF ACTIVE GOPHER SYSTEMS (OUT OF 15)

Weeks After Treatment

	1	3	5	9	14	39
Date	3/15	3/29	4/12	5/10	6/14	12/7
SON. BLK.	15.0 A	4.7 C	3.3 C	3.0 D	3.3 B	3.0 C
EATON BLK.	15.0 A	9.7 B	9.0 B	4.0 C	5.7 B	4.3 BC
STRYCHNINE	11.0 B	7.7 B	8.3 B	9.0 B	10.0 A	7.3 B
UNTREATED	15.0 A	14.7 A	13.7 A	13.3 A	12.7 A	12.7 A

Level of Significance 5%

Reduction in gopher activity (one treatment) after 3-39 weeks

- Untreated (control) = 10%
- Strychnine = 50%
- Bait blocks = 80%

UC Trial 1988



Eaton Bait Blocks

Anti-coagulant

Diphacinone	0.0025%
Diaphanone, Sodium Salt	0.0027%
Active ingredient	0.0052%
Weight (average)	114.5g



NOTICE: Buyer assumes all risks of use, storage or handling of this material not in strict accordance with directions given hereon. The efficiency of the product may be reduced under high moisture conditions.
EPA REG. NO. 56-57
EPA EST. NO. 56-DH-1



MFG. BY J. T. EATON & COMPANY, INC., TWINSBURG, OHIO 44087. EATON'S is a registered trademark and ANSWER is a trademark of J. T. EATON & COMPANY, INC.

EATON'S[®] ANSWER[™] FOR THE CONTROL OF POCKET GOPHERS



KEEP OUT OF REACH OF CHILDREN
CAUTION: SEE TOP PANEL FOR ADDITIONAL PRECAUTIONARY STATEMENTS

ACTIVE INGREDIENT:
Diflufenican (2-diphenylacetyl-1,3-indandione) 0.005%
INERT INGREDIENTS 99.995%
100.000%

EPA REG. NO. 56-57 EPA EST. NO. 56-DH-1

NET CONTENTS 40 LBS. (4 x 10 LBS. BOXES)

Eaton Bait Blocks



Gassing

- Car exhaust (CO)
- Aluminum phosphide
- Zinc phosphide
- Sodium Nitrate + Sulfur
- Potassium Nitrate + Sulfur

Dangerous – Does not work very well – Gophers close off tunnels when gas is perceived

Gassing

Zinc phosphide

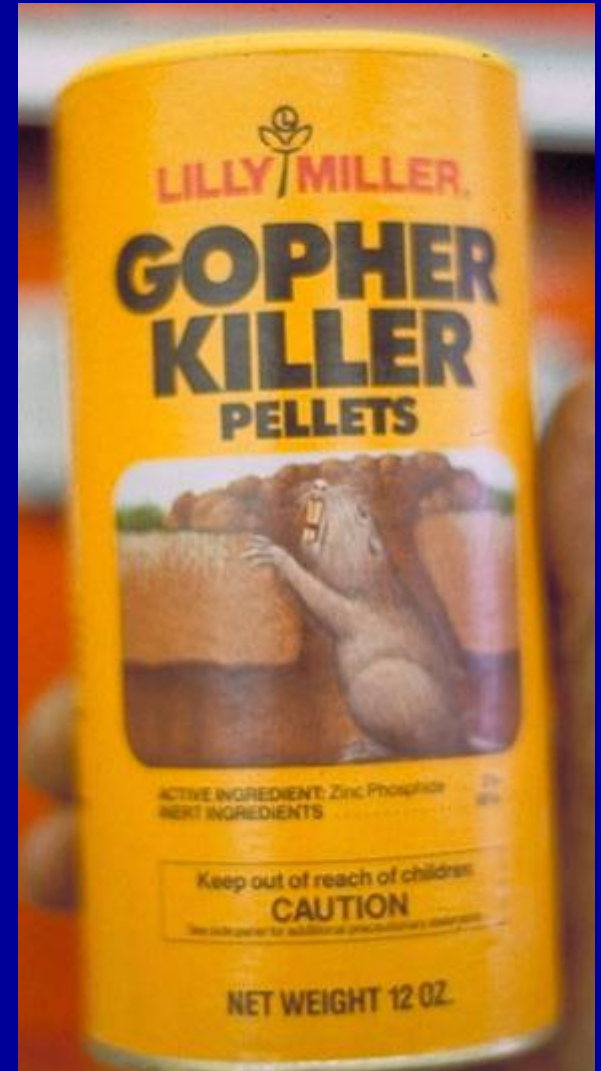


Poison Peanuts: Mole & Gopher Bait II 4 oz.

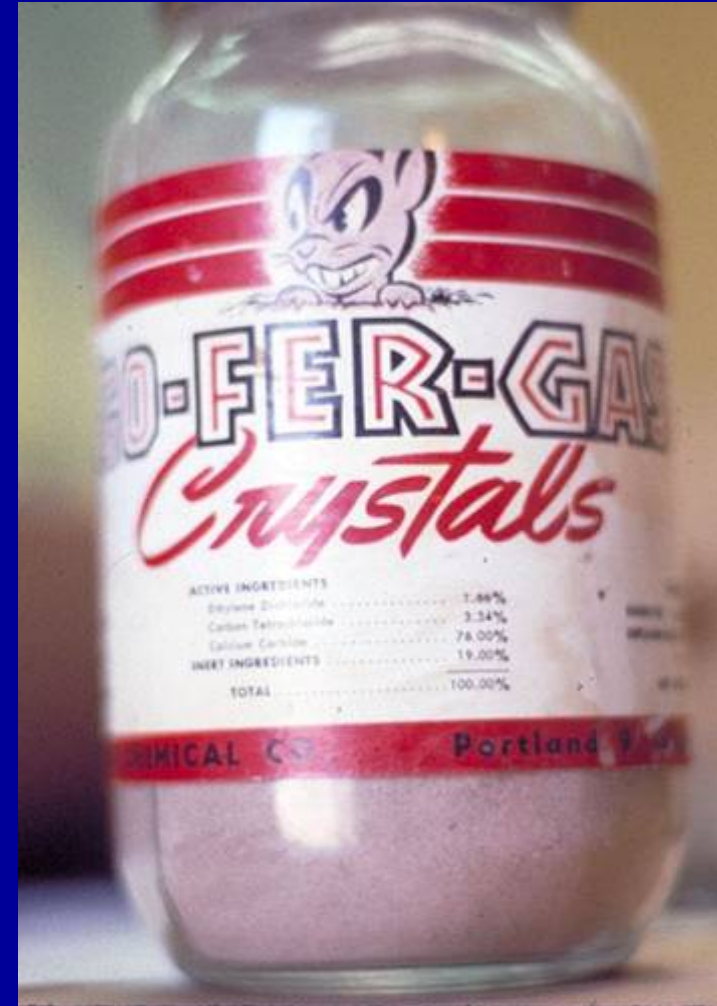
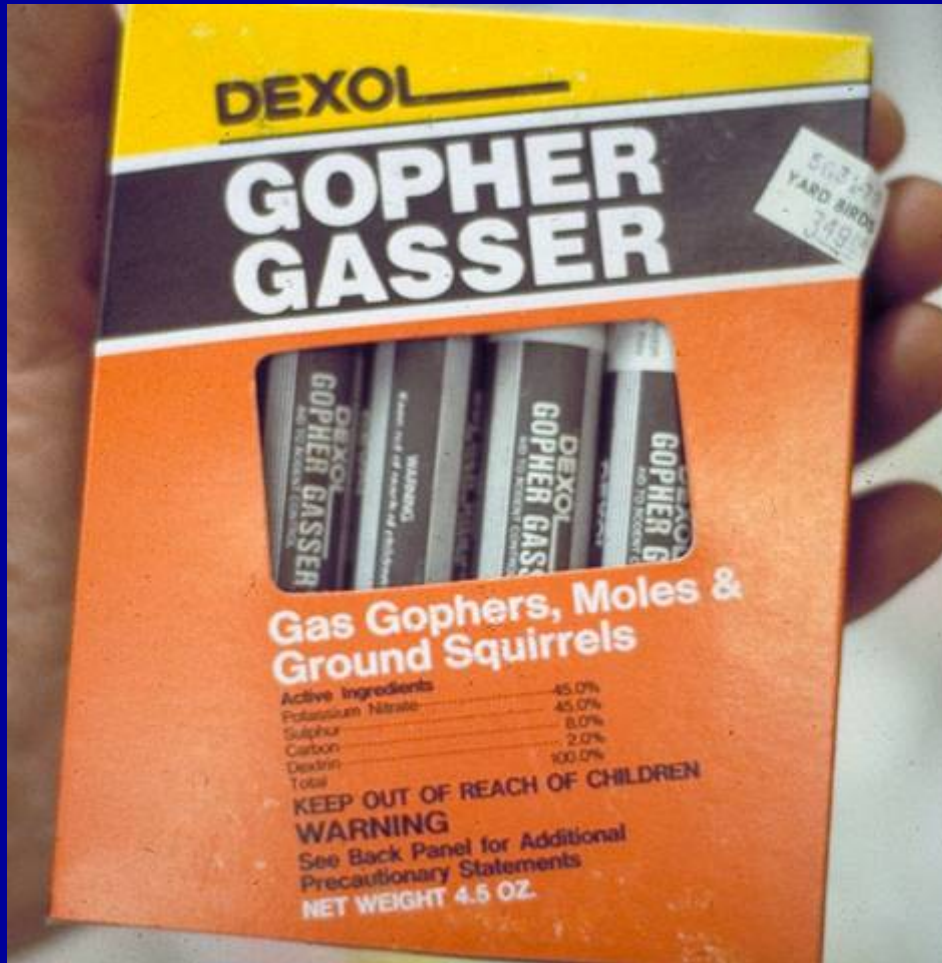
Sweeneys Original Poison Peanuts kill moles and gophers. Simply sprinkle Sweeneys onto the mound or in the tunnel. Contains pelleted Zinc Phosphide which can also be used with a [Gopher/Mole Tool](#) to apply without caving in the tunnel.



Gassing



Gassing



Gassing



Active Ingredients:

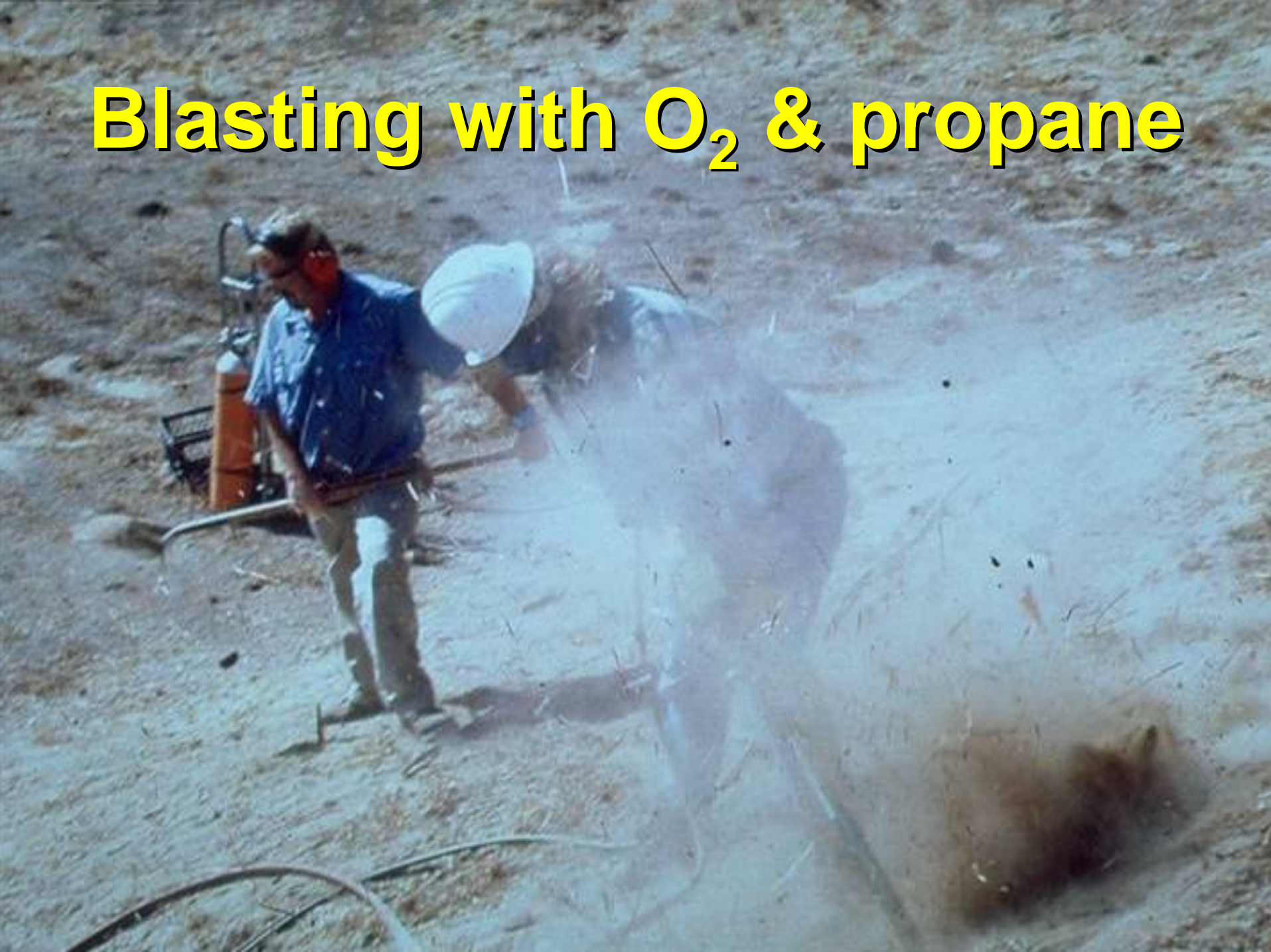
Sodium Nitrate.....	46.2%
Sulfur.....	34.8%
Charcoal.....	8.7%
Other Ingredients...	10.3%
Total.....	100%



Blasting with O₂ & propane



Blasting with O₂ & propane



Watch out in a
dry climate



“Rodinator” (O₂ + propane)



Flooding







TRAPS

Paul Vossen's
non patented
“mobile gopher
& mole getter
machine”

Pincer-style traps (Cinch)



**Small size for
gophers & moles**



**Large size for big
gophers only**

Find the main tunnel - it goes in both directions and its large



**Dig the hole
out so the
trap fits**



One trap in each direction in tunnel



Cover the hole to exclude light and dogs – not absolutely necessary



Gopher Caught in Cinch Trap



Mole Caught in Cinch Trap



Cinch trap in a lawn main tunnel





**Traps set into
main tunnel and
covered**

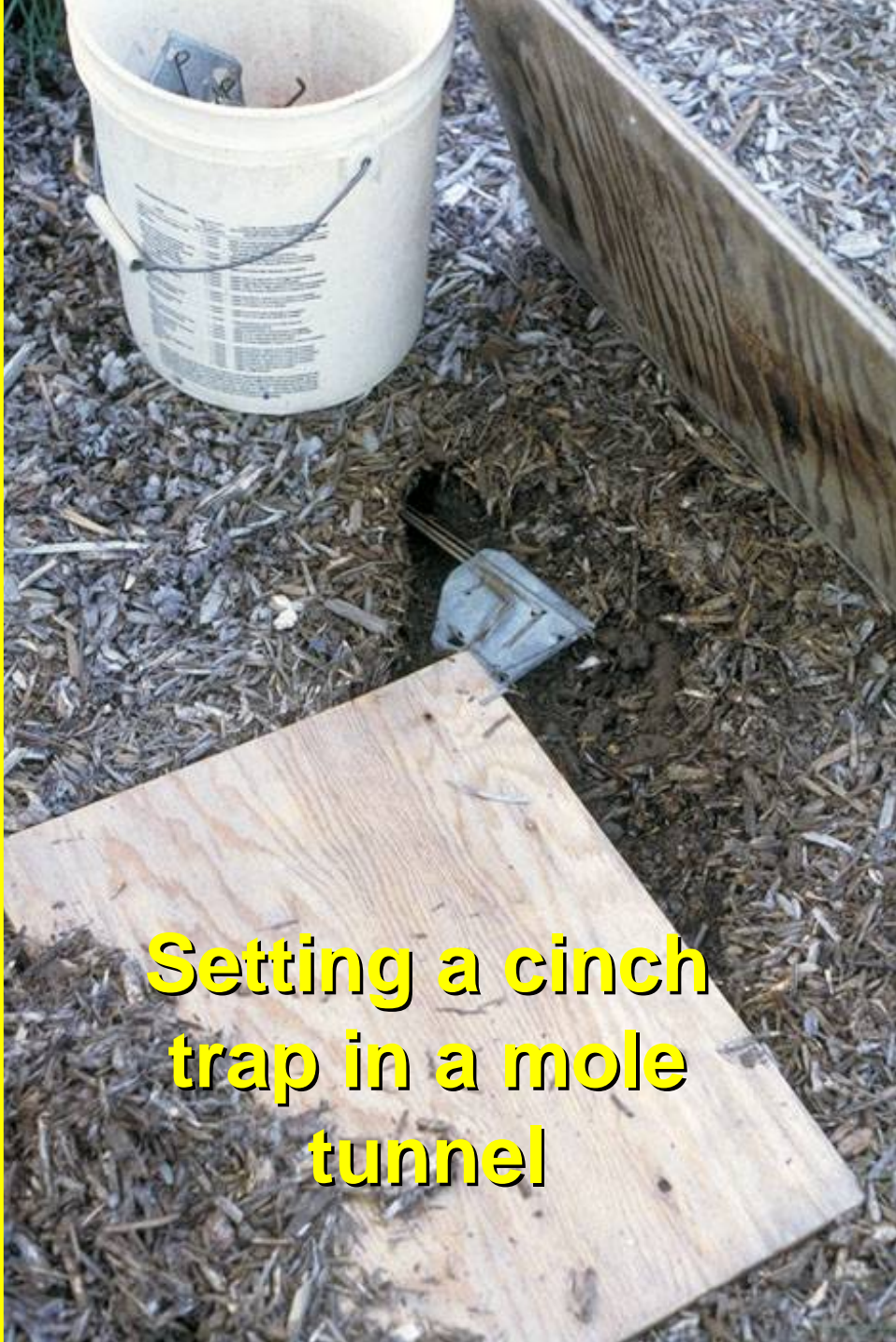
**Lawn takes 6-8
weeks to recover
visually**

Cinch traps set in lawn clean out holes



Cinch trap in a lawn clean out hole





Setting a cinch trap in a mole tunnel

Other types of mole traps

Victor **V** *KILLS!*
(MATA!)

Out O' Sight® mole trap
trampa para topos

TRAP
TRAMPA

Victor **V** *KILLS!*
(MATA!)

Out O' Sight® mole trap
trampa para topos

- kills moles fast
mata los topos de forma rápida
- professionals' trap of choice
la trampa preferida por los profesionales
- for use in all soil types
para uso en todo tipo de suelo




www.victorpest.com



Victor **V** *KILLS!*
(MATA!)


mole trap
trampa para topos

TRAP
TRAMPA



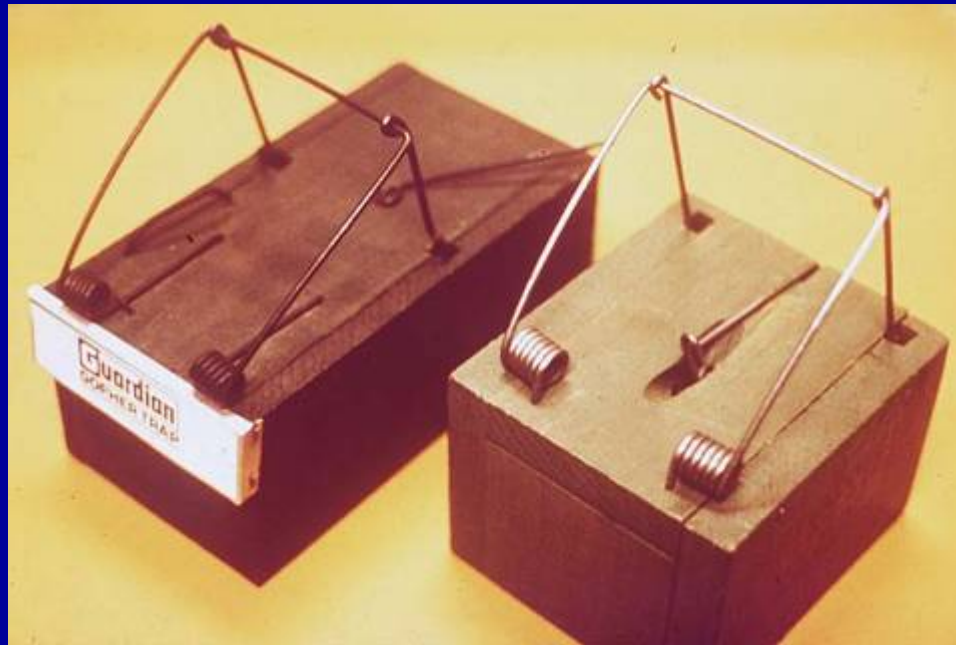
» **easy to set**
facil fijar

» **most effective mole solution**
más efectivo para eliminar topos



www.victorpest.com

Box traps (Guardian) for gophers



GOPHERS CAN'T RESIST
THE INCREDIBLE

BLACKHOLE GOPHER TRAP

U.S. PATENT # 4,100,000 FOR
THE LAST GOPHER TRAP YOU'LL EVER BUY



THE MACABEE GOPHER TRAP

FREE

DIRECTIONS FOR SETTING



Hold trap as shown. Left index finger holds trigger wire ① UP thru frame. [Trigger must swing up from under - NOT over jaws].

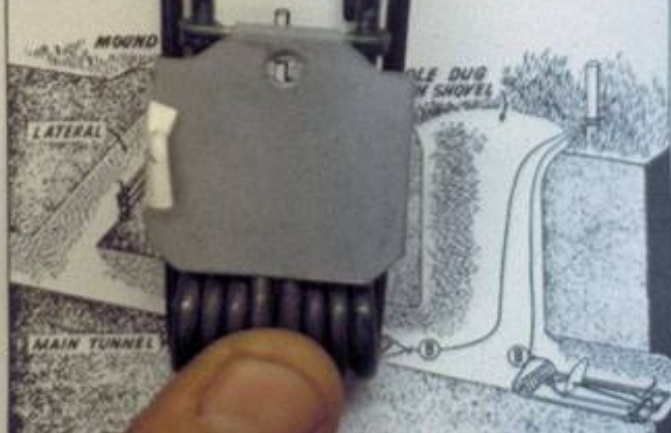


Note small "hook" on end of trigger wire ②. Press thumbs down; with left index finger, guide "hook" over end of frame.



Hold holding frame down and force straight end of trigger wire ③ thru small hole in plate.

Two methods of placing traps in gopher holes are shown. Method (A) is recommended.



Pincer-style traps (Macabee)



Victor
EASYSET[®]
GOPHER TRAPS



Easy to set,
sure to catch,
without poisons
or chemicals



Many Brands



**A trap set in each direction in the
main tunnel and one set in the
clean out tunnel**



Gopher main tunnel is the size of a tennis ball

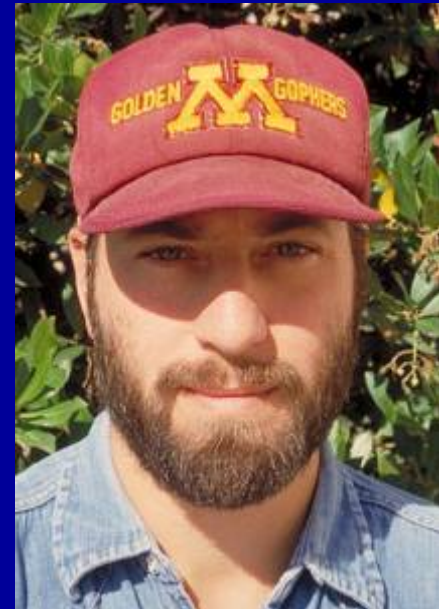


**Gopher clean out hole or mole hole
is smaller – about golf ball sized**



How to make trapping work

- Be smarter than the gopher or mole
- Be very persistent
- Check your garden every day
- Set a trap immediately when new activity is evident
- After trapping a gopher put a bait block in the tunnel and cover it up





**Happy
Hunting
OR
Just Enjoy
the Cute
Little
Warm
Fuzzies**