



Which “Ole” Is It ‘M’ Or ‘V’?

Gary J. San Julian, Wildlife Specialist
and
Linda Wiles, Extension Educator



‘M’

OR

‘V’



Moles



http://naturescrusaders.files.wordpress.com/2008/10/star-nosed_mole.jpg



http://2.bp.blogspot.com/_gHNrT5Gy_sA/SenaBY99UEI/AAAAAAAAAog/CPTxH9f-iOs/s320/hairy-tailed+mole+2.jpg



<http://proshieldpest.com/mole.jpg>





https://www-s.aces.uiuc.edu/photolib/lib1523/midsize/prairie_.jpg

Meadow vole

Small Paws

Woodland vole

Small Paws



USDA-APHIS-WS



“Our little mole problem is getting worse.”



“The mole, or "little gentleman in velvet" is a worm catcher of astonishing rapidity and devours his own bodyweight in worms in a short time.

He needs 50% of his bodyweight in food per day and can quickly die of starvation.”



They have skin over their eyes, can see light and dark.

A 5 ounce mole will consume 45-50 lbs of worms and insects each year.

5 to 7 inches long

Moles can dig surface tunnels at approximately 18 feet/hour.

Moles travel through existing tunnels at about 80 feet/minute

Moles contain twice as much blood and twice as much hemoglobin as other mammals of similar size. This allows moles to breathe more easily in underground environments with low oxygen.

Mole Foods

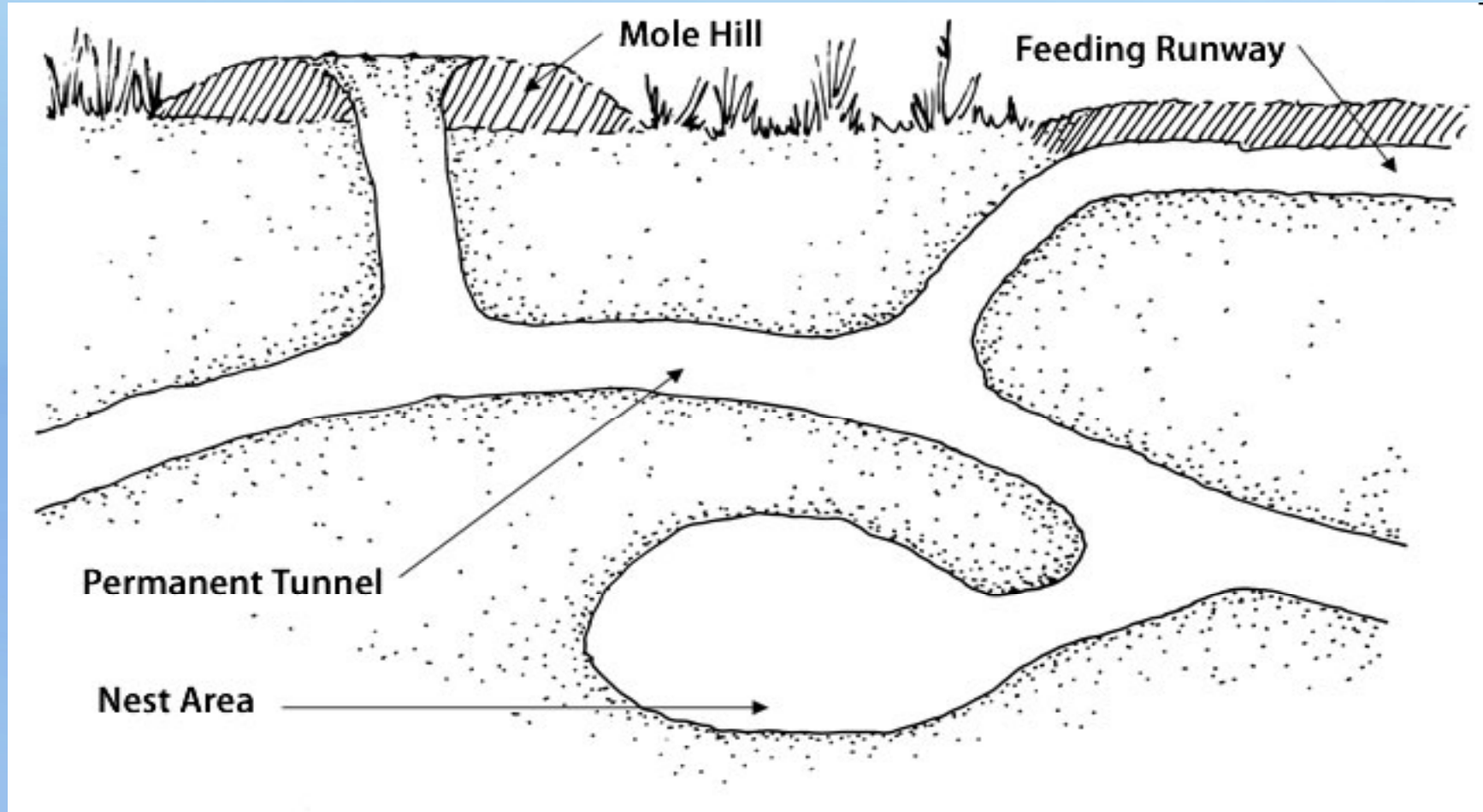


Moles eat worms, grubs and assorted insects, but they like eating earth worms.

Mole Homes and Highways



Mole Homes and Highways

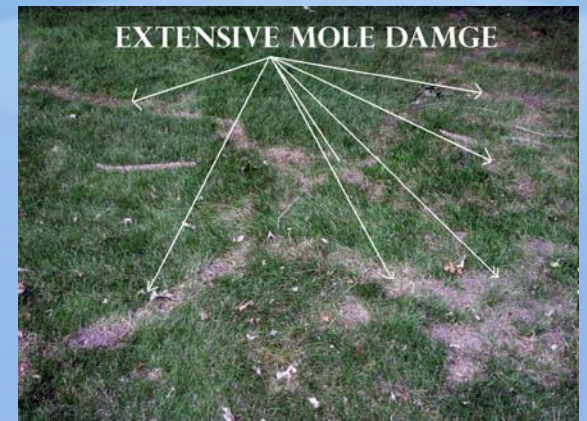


Moles Home and Highways



http://t0.gstatic.com/images?q=tbn:ANd9GcQkr1PqRFFH2AAqT-PSJE4Rg15yJgt8_pApTMW1HLO8EFYZn1j8

http://www.gopherslimited.com/Mole_tunnels.jpg



Mole Homes and Highways



http://www.google.com/imgres?imgurl=http://www.humeseeds.com/molehill.jpg&imgrefurl=http://www.humeseeds.com/mole1.htm&usq=__3rYyAOHiCPE6rgqk2KkiErLXAao=&h=300&w=400&sz=56&hl=en&start=2&zoom=1&tbnid=nwWTZSgw3_H6oM:&tbnh=93&tbnw=124&ei=pmuPTdGdDtCdGQfYxKS4DQ&prev=/images%3Fq%3DMole%2Bhill%26hl%3Den%26client%3Dfirefox-a%26hs%3DH5t%26sa%3DX%26rls%3Dorg.mozilla:en-US:official%26biw%3D1600%26bih%3D1079%26tbs%3Disch:1%26prmd%3Divns&itbs=1

Natural Mole Control



<http://johnrakestraw.files.wordpress.com/2010/10/coyote-eating.jpg>

Natural Mole Control



http://farm4.static.flickr.com/3406/3192336240_76437fce0c_o.jpg

Natural Mole Control



[http://www.cornwallbirdcontrol.co.uk/resources/_wsb_431x379_3657152047_6b667a3d01\\$5B1\\$5D.jpg](http://www.cornwallbirdcontrol.co.uk/resources/_wsb_431x379_3657152047_6b667a3d01$5B1$5D.jpg)

Natural Mole Control



Natural Mole Control ??????



http://i.dailymail.co.uk/i/pix/2009/02/15/article-1145910-03877D5D000005DC-180_468x286.jpg

Mole Home Remedies

- Put elderberry cuttings in the tunnels.
- Sprinkle chili powder and garlic powder liberally into the tunnels weekly.
- Put ground red pepper into the runs.
- Place dog or cat hair at the entrance of the tunnels.

Mole Home Remedies

Stuff a hot pepper in every mole hole you see in your yard, and these rodents will leave that area alone!

Plant daffodils, marigolds, garlic alliums, fritillaries.

Pickle juice, broken glass, bleach, rose branches, or human hairballs

Mole Home Remedies

“I had moles one summer and the way I got rid of them was putting mothballs all over the places where the holes were; I haven't had any since and it has been two summers”.

Illegal to use outdoors

Mole Home Remedies

Concentrate:

$\frac{3}{4}$ cup of castor oil

2 tbsp of Murphy's Oil Soap or dish soap

One gallon of water

Dilute: 2 tbsp concentrate in 1 gallon of water.

Spray on lawn, cover 300 sq. ft.

Reapply after rain or watering.

Mole Home Remedy

Castor oil works by coating the worms and insects and makes them taste bad.

If the insects and worms are eaten moles have digestion problems.

I always knew there was a better use of castor oil.

Favorite Mole Home Remedy

“Juicy Fruit Gum... you make a slit in the ground with a knife, then insert the sticks of gum down into the slit so they sit in the moles tunnel. Seems the little critters love the fruit smell/taste, but the gum causes major digestive disorders, resulting in, well, a killer belly ache (literally).”



Ingested Repellent



Castor oil

Ingested Repellent



Active Ingredients:
Castor Oil: 10.0%
Other Essential
Ingredients: 90.00%

Ingested Repellent



How our eco-friendly mole repellent worms work...

Our worms are made to taste like REAL food and have been injected with the active ingredient found in lab-tested and proven-effective Liquid Fence Mole Repellent. Once ingested, the ingredients will disrupt the moles' normal digestive functions.,

Safe for your plants and family

Non-gelling

Easy-to-use

Long lasting and effective

Worry-free mole protection

Odor/taste Repellent

Garlic Oil

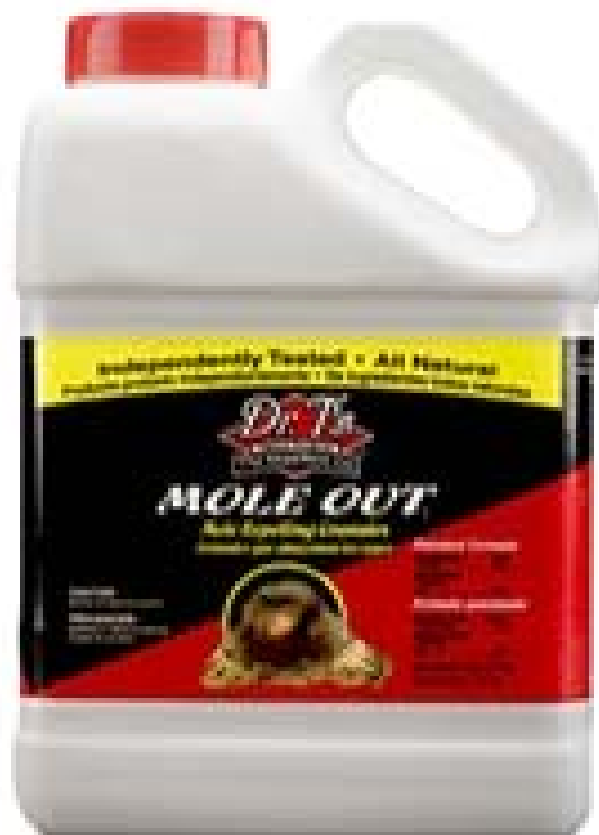


Odor/taste Repellent



Repellex ® castor oil-based liquid mole and gopher repellent with **cinnamon oil, garlic oil and white pepper** features advantages over many other similar repellents.

Odor Repellent

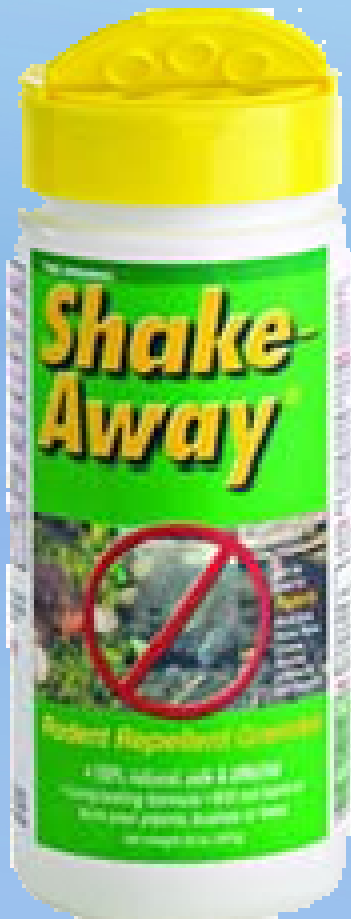


Dr. T's Mole Out is a granulated, non-toxic product used to repel burrowing animals from treated areas.

Active Ingredients:

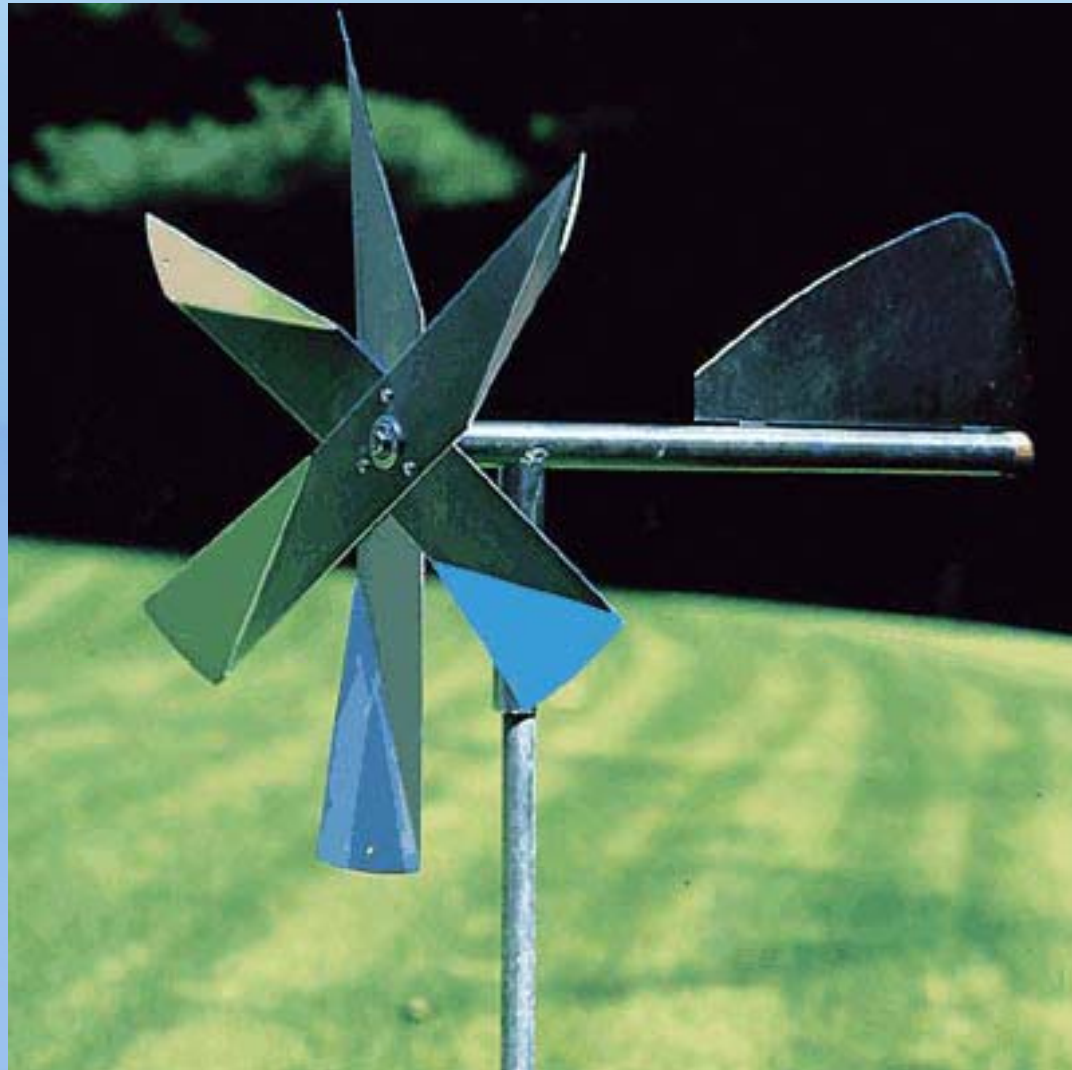
Rucinus Communis Oil ... 10%
Attapulgitte Hormite Clay ... 90%

Odor Repellent



Shake-Away Repellent Granules are an effective, safe, 100% organic, natural repellent product that protects your garden from pest critters. Shake Away's active ingredient is 1% garlic oil mixed with urea from a fox.

Noise and Vibration Repellent



Noise and Vibration Repellent



Sonic Vibrator
Chatter-Sound
Distress Call

“I purchased two of these, inserted new batteries, and placed them into the ground--with no obstructions within 100 feet or so--as instructed. Before, we had moderate mole activity (four or five fresh mounds per week). I have seen absolutely zero effect on mole activity.”



Buyer Beware

"Mole Online Remedy

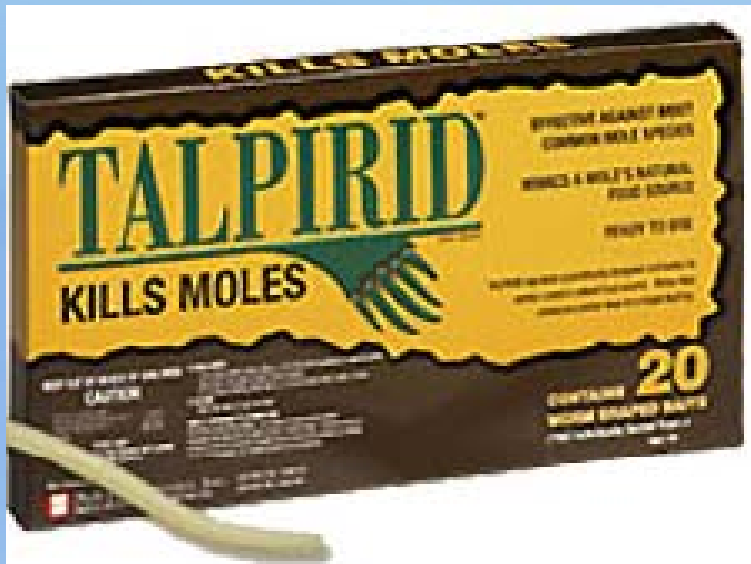
"How to Get *Grandpa's Ultimate Mole Attack Survival Guide* Shipped to You the Old Fashioned Way

If you want, I'd be tickled pink to put the manual on a CD and send it to you by regular 'ol airmail. But I'd appreciate it greatly if you'd add \$3 for the cost of making the CD and the postage. Make your \$10 check or money order (U.S. & Canada only) payable to *Owen Publications*. Then tuck it into an envelope, along with your name and address, and mail it to...

"Grandpa's Mole Control Guide"
c/o Owen Publications
Box 305
Battle Ground, WA 98604-0305

Soon as I get it I'll scoot over to the post office and drop your CD into the mail. And, if I happen to be [gone for a few days](#), please be patient. I'll get to it quick as I get back. By the way, same money-back gare-un-tee applies."

Mole Toxicants



SKU	460-715-01
Manufacturer	Bell Laboratories
Size/Unit	1 box / 20 worms
Active Ingredient	0.025% Bromethalin

Mole Toxicants



Active ingredients

sulfur,
potassium
nitrate and
charcoal

Block all entrances

Don't smother the
smoke bomb



Day 2/3: Check the assessment holes to see if they have been sealed. A mole traveling through its tunnel will seal the assessment hole.





Bait 3 to 5 feet on either side of the assessment hole.



Pinch the hole closed or cover it with a piece of sod or a small rock. Be careful not to collapse or disturb the runway.

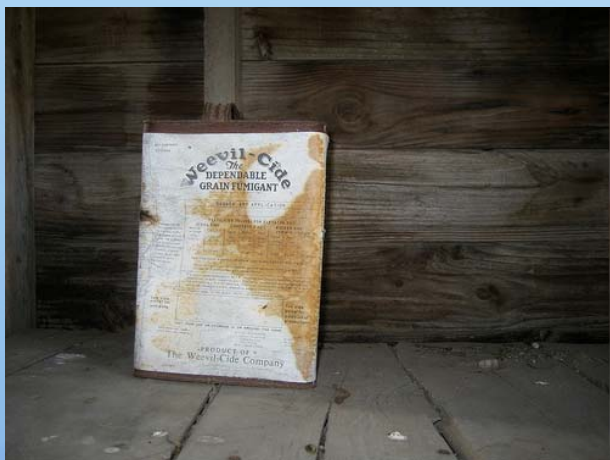
IMPORTANT: Be sure to re-open the assessment hole.

Day 3/4: Check to see if the assessment hole is sealed. If plugged, you know the mole has traveled through the runway and more than likely eaten the bait. A single worm bait will kill a mole in as little as 12 – 24 hours. Leave runways alone for 5 - 7 days.



One week later: Verify elimination of activity by repeating the pre-baiting assessment process: If continued activity is found, re-bait these location.

Certified Applicator Required



Veevil-cide

Restricted USE

<http://store.parsonsppestcontrol.com/images/products/detail/WQEEVILCIDE.jpg>

Registrant: DEGESCH AMERICA INC M
PAYNTER/MGR TRFC & REG AFF PO
BOX 116 153 TRIANGLE DRIVE
WEYERS CAVE VA 24486 Registration
Year: 2011 Signal Word: DANGER
Formulation: PELLETED/TABLETTED
Type: **RESTRICTED** Percent Active
Ingredient 55.0000 **Aluminum phosphide**
(66501)

Produces gas and is very dangerous

**Phostoxin
Tablets**



333 Tablets/Flask
21 Flasks/Case

Mole traps



Set in the spring when Moles are most active

Mole Traps



Mole Traps



Vole--Woodland



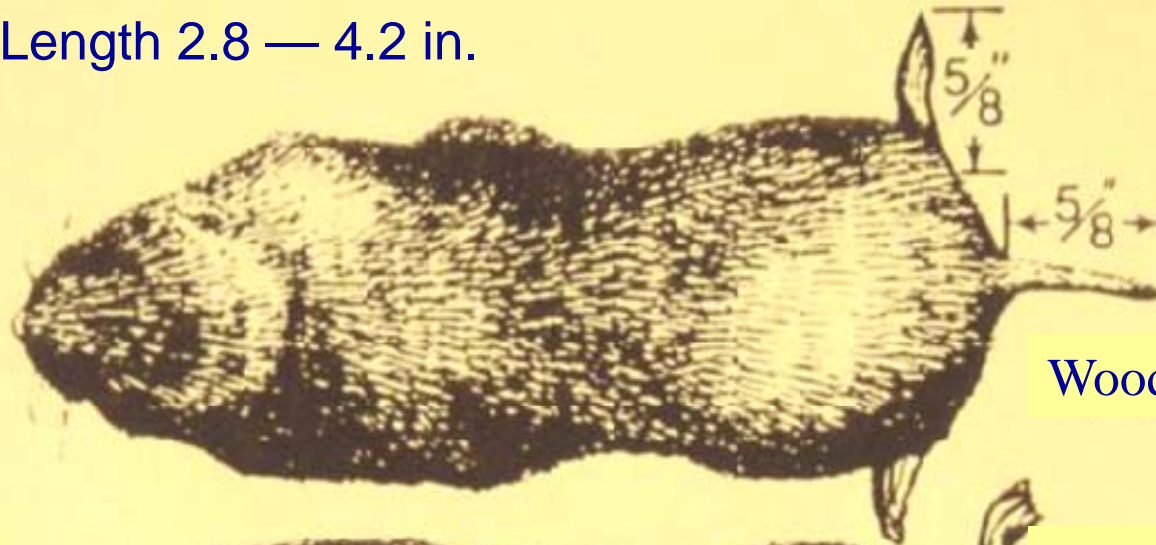
http://www.strangesgardencenter.com/activek_apps/sgc/assets/hardgoods/vole-pine.jpg

Vole--Meadow

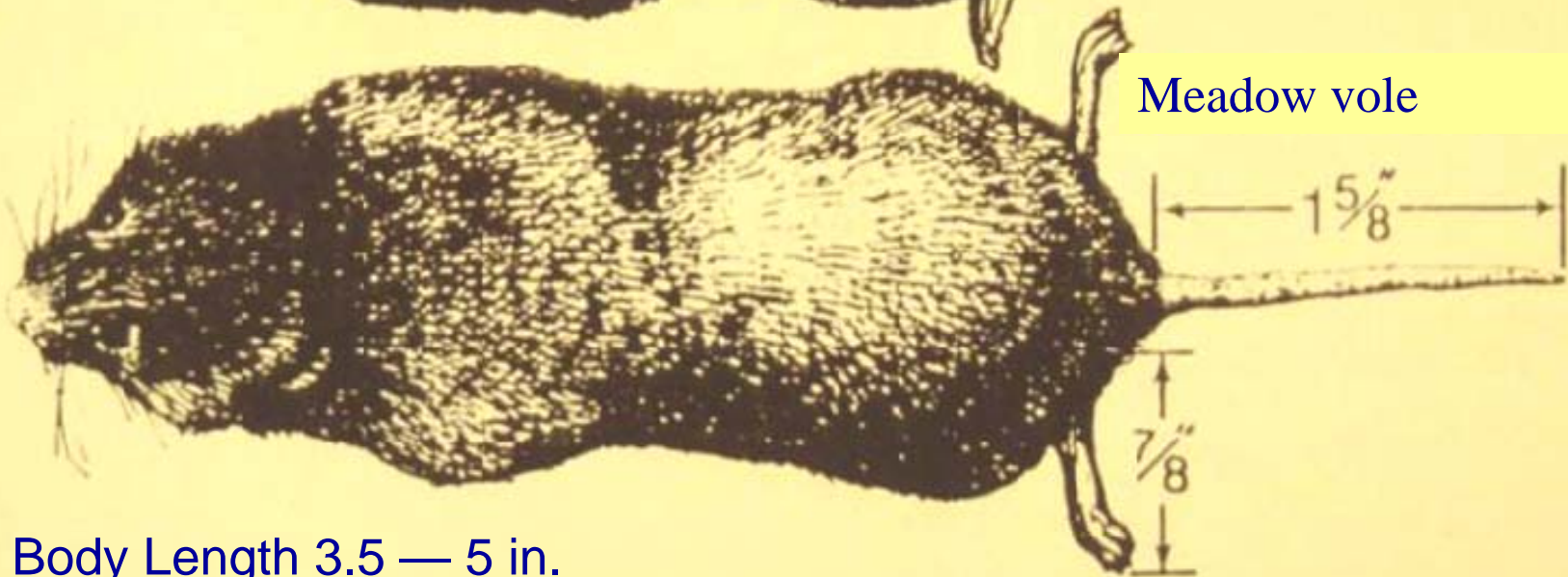


http://www.djroger.com/meadow_vole.jpg

Body Length 2.8 — 4.2 in.



Woodland vole



Meadow vole

Body Length 3.5 — 5 in.

Vole--Woodland



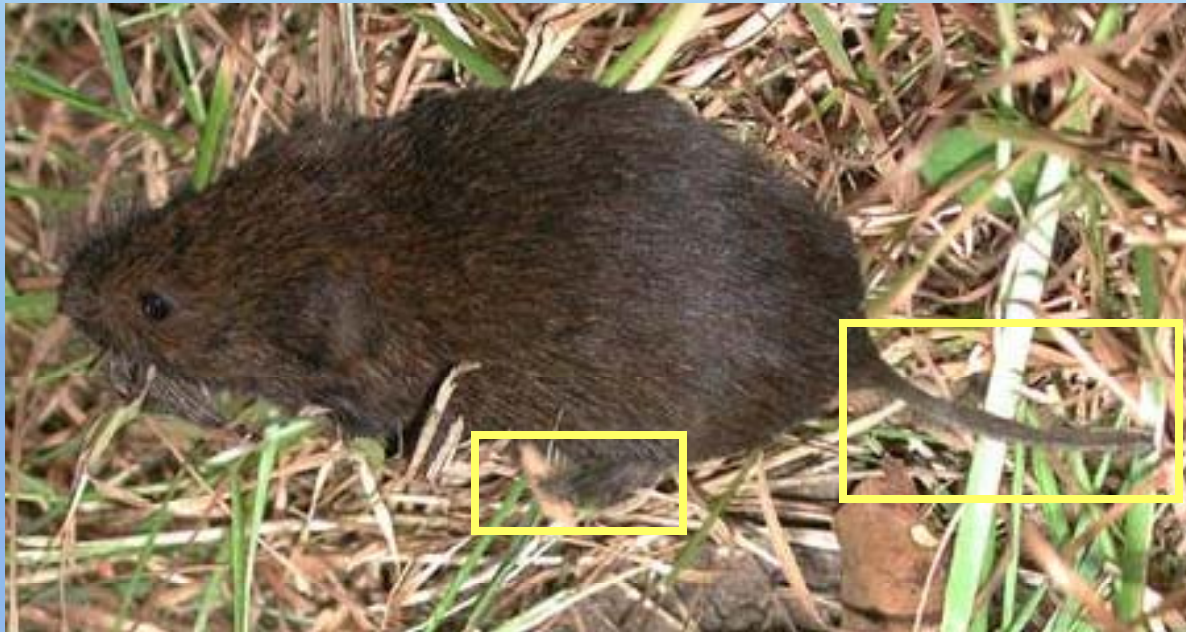
Pine Vole

Pitymys pinetorum

gene ott @ neoperceptions.com

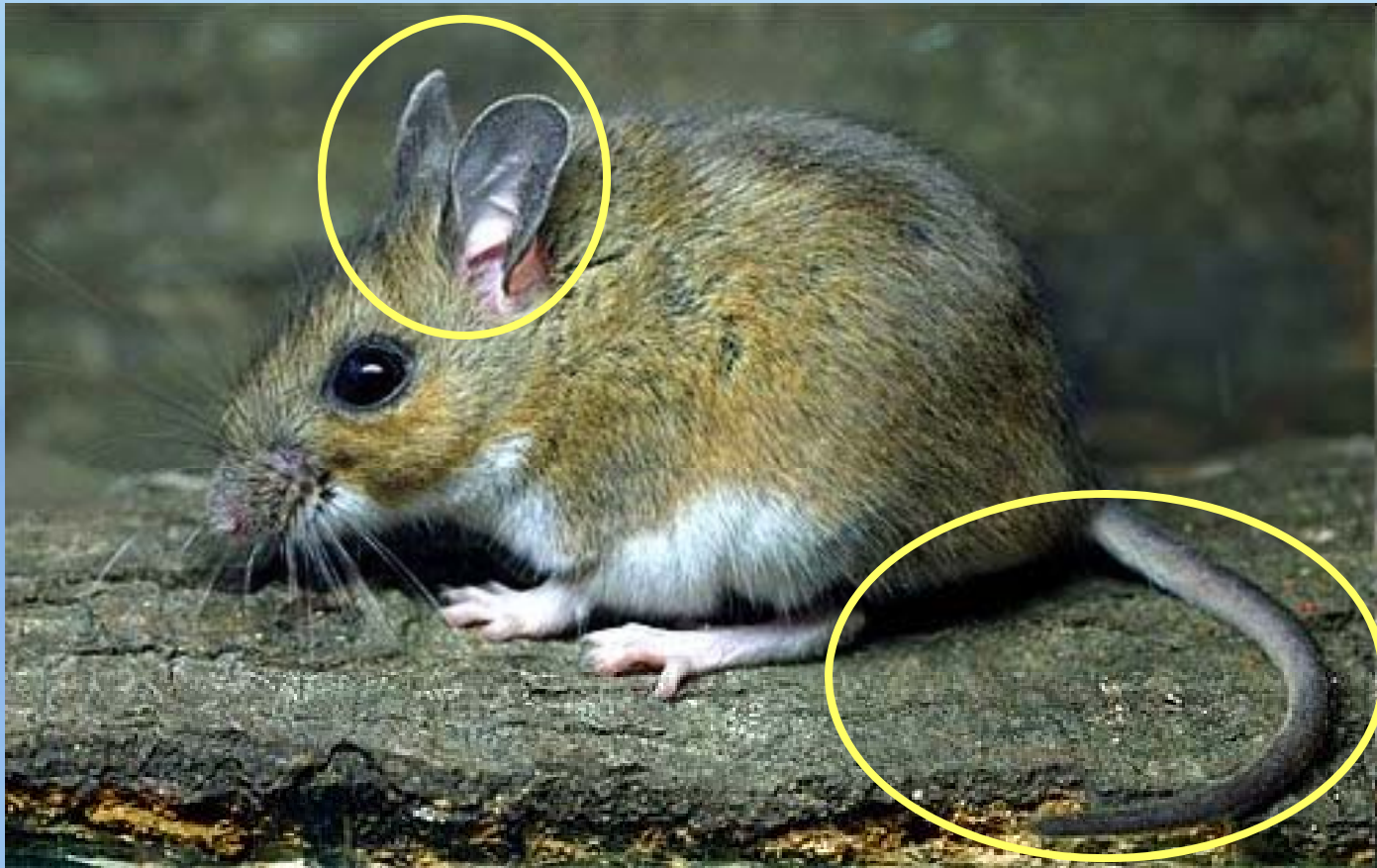
Tail about same length as hind foot

Vole-- Meadow



Tail longer than hind foot

White footed Mouse



Long tail and big ears

Shrew--Northern Short-tailed



<http://naturalhistory.uga.edu/~gmnh/gawildlife/images/Mammalia/bbrevicauda.jpg>

Pointed snout and small size



Vole—Plant damage



Vole—Plant damage



<http://www.insectimages.org/images/384x256/5368669.jpg>

Vole—Sharp Incisors



Voles—Prolific

2 to 11 pups per litter

Up to 12 litters per year

One female can produce close to 100 pups/year

However...they provide food for many
predators and most only survive a few months

Vole—Predators In Action



http://www.delivery.superstock.com/WI/223/4187/PreviewComp/SuperStock_4187-4205.jpg



http://ridgefieldnwr.files.wordpress.com/2011/01/img_95971.jpg?w=500&h=333



http://tmp.kiwix.org:4201/l/300px_Hawk_eating_prej.jpg



© LarryThorngren.com

Voles—Very Young



http://www.google.com/imgres?imgurl=http://blog.tomlinsonbomberger.com/wp-content/uploads/2011/02/voles-immature.jpg&imgrefurl=http://blog.tomlinsonbomberger.com/index.php/2011/03/18/unwanted-spring-visitors-moles-voles/&h=588&w=793&sz=231&tbnid=9ZlkZ1RTkZoVPM:&tbnh=106&tbnw=143&prev=/images%3Fq%3Dvoles&zoom=1&q=voles&usg=__JHRc1es1Pt6kd2YCJARwV7FxL7w=&sa=X&ei=uTqNTebaEY3pgAeFrbGmdQ&ved=0CEUQ9QEwAg

Voles—Ready to Leave the Nest



<http://www.biosci.ohio-state.edu/~eeob/new/webgallery3/images/baby%20voles.jpg>

Voles--Finding the runways



Vole—Runway Details



http://t2.gstatic.com/images?q=tbn:ANd9GcQFiV4eZ8ORb32gqBYglFxi2RCWcaG_F4oHrod0VwV5EutaKn1e



http://www.volecontrol.com/Thumb/prairie_grass.jpg

http://www.volecontrol.com/Images/meadow_vole_in_lawn.jpg



<http://t1.gstatic.com/images?q=tbn:ANd9GcT6sDoSxVbcxL2zcne45NUhruZodfrOsBWFZmomu9q72OCwZhTi>





Vole—Runway Details



http://t2.gstatic.com/images?q=tbn:ANd9GcQFiV4eZ8ORb32gqBYglFxi2RCWcaG_F4oHrod0VwV5EutaKn1e



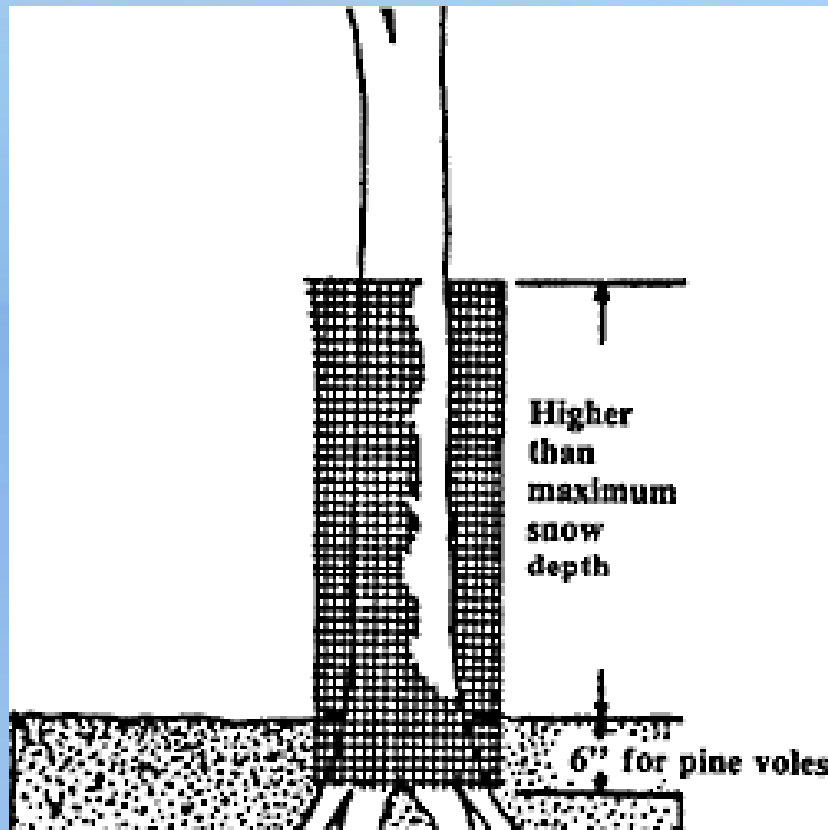
http://www.volecontrol.com/Thumb/prairie_grass.jpg

http://www.volecontrol.com/Images/meadow_vole_in_lawn.jpg



<http://t1.gstatic.com/images?q=tbn:ANd9GcT6sDoSxVbcxL2zcne45NUhruZodfrOsBWFZmomu9q72OCwZhTi>

Vole--Exclusion



Rabbit wire cage

Vole--Repellents



75% Castor Oil, 25% Soybean Oil

“This is the first time in many years of gardening that I've had voles. I wanted to try the Mole and Vole Repellent because I wanted to avoid killing the voles. “

Vole--Trapping



“Small infestations of voles can be eliminated using expanded trigger mousetraps.

Outside, traps can be placed at the beginning of the runways a couple of inches from the burrows beneath natural cover.

Traps can also be placed directly in the runways in the turf. Broadened areas of the runway, or locations where several runways converge, are good trap locations.

Using bait on the snap traps is not necessary because Voles run these runways in a habitual manner. For traps that are place beneath cover, smudges of peanut butter mixed with oatmeal provide an enticing treat to Voles.”

Vole--Trapping



Vole--Trapping



Vole—Trapping Success



<http://www.yourwildlifeapro.com/wildlife/management/virginia/voles-3.jpg>

- Fumigants don't work well due to tunnel structure.
- Frighten devices for rodents are not effective on voles.



Vole Toxicants

Registered Toxicants (some restricted use)

Zinc phosphide

Diphacinone

Warfarin

Chlorophacinone

Imidacloprid



Vole--Toxicants



If a pest is on the label or the location is on the label and the product is registered in the state it can be used

Vole—Bait Directions

Use Restrictions: This product may be used to control meadow voles (*Microtus pennsylvanicus*) and pine voles (*M. pinetus*) around (within 15 feet of) homes, and industrial, commercial, agricultural and public buildings. Do not expose bait on bare ground. Unless children, pets, birds and other wildlife are excluded from the treated areas, all applications for controlling voles must be made in **tamper-resistant bait stations**. All bait applications must be made by hand. Wear gloves when handling bait or animal carcasses. Do not broadcast bait.

Vole—Bait Directions

Application Directions: Open pack and load one ounce of bait (half of a pack) into each bait station. Situate bait stations near runways, burrow openings or plants that voles have been damaging. **If, and only if, children, pets, domestic animals and wildlife reliably are excluded from the treated area, bait may be applied in one-ounce amounts directly into vole runways or burrow openings.** Cover treated runways or holes with a shingle or board, or ground vegetation, **if present.**

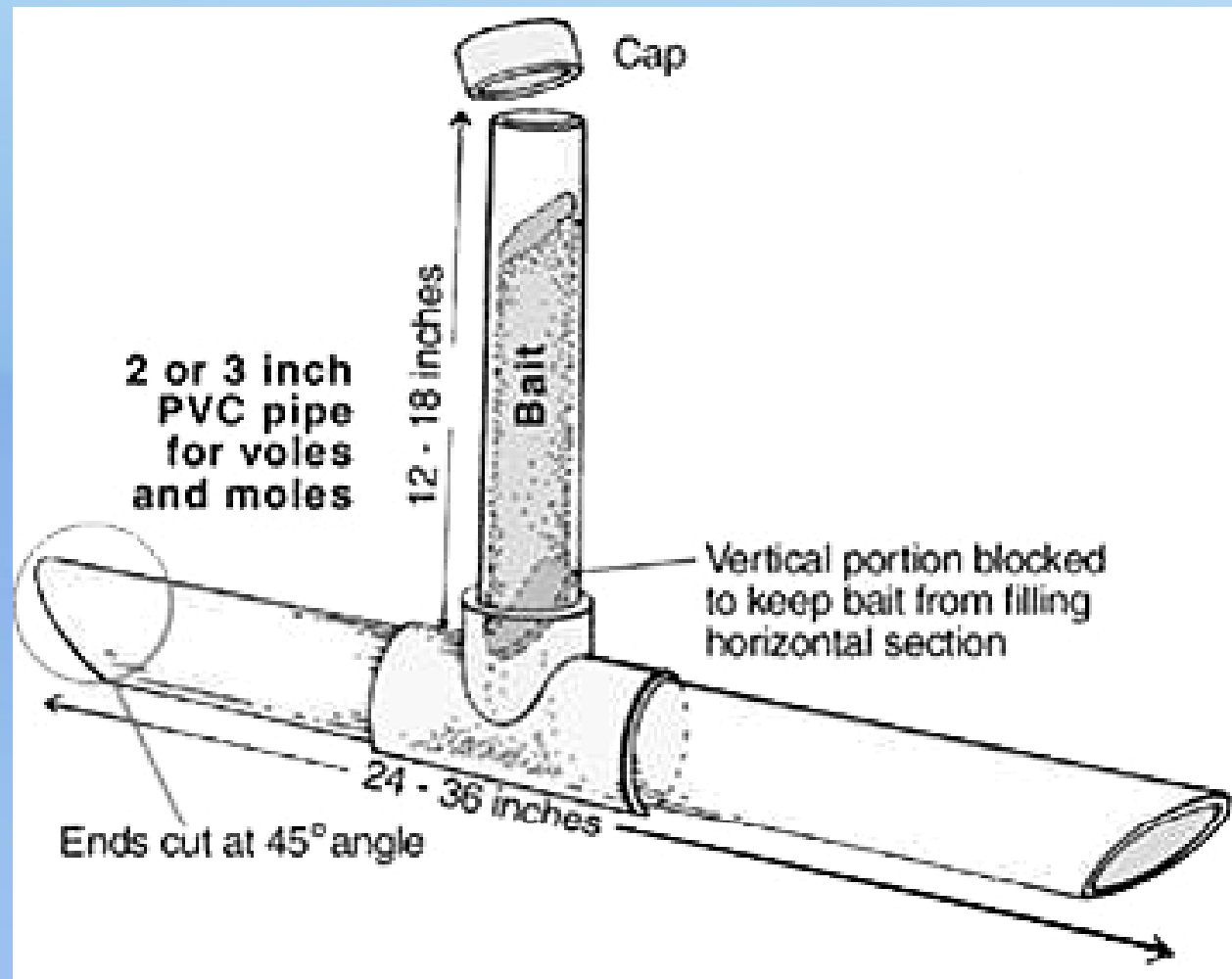


Vole—Bait Directions

Do not expose bait on bare ground. Unless children, pets, birds and other wildlife are excluded from the treated areas, all applications for controlling voles must be **made in tamper-resistant bait stations.**

All bait applications must be made by hand. Wear gloves when handling bait or animal carcasses. Do not broadcast bait.

Vole—Bait Station



Vole—Bait Station



http://www.volecontrol.com/Images/Bait_Station_6.jpg

Vole—Bait Directions

- **APPLICATION DIRECTIONS:** Spread level 1/2 ounce of bait into burrow openings, along runways, and only in areas where damage is occurring. In, and life may be reliably applied.
- runways, or holes present. Check bait and replenish if vole activity and interest in bait persist. Collect and properly dispose of any carcasses and leftover bait.

Read the
Label



Vole or Mole Chemical Controls

Search for Registered Products

Go to:

<http://state.ceris.purdue.edu/>

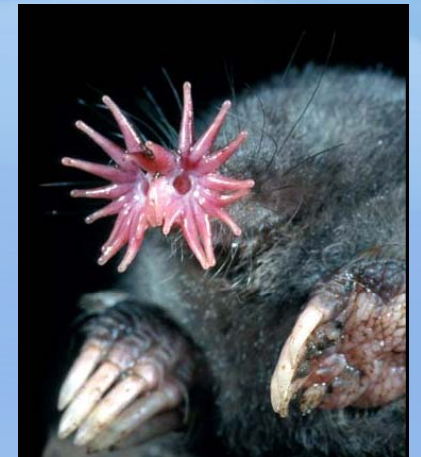
Which “Ole” Is It ‘M’ or ‘V’



‘M’ is for Meat Eater



‘V’ is for Vegetable eater





The Pennsylvania State University is committed to the policy that all persons shall have equal access to programs, facilities, admission, and employment without regard to personal characteristics not related to ability, performance, or qualifications as determined by University policy or by state or federal authorities. It is the policy of the University to maintain an academic and work environment free of discrimination, including harassment. The Pennsylvania State University prohibits discrimination and harassment against any person because of age, ancestry, color, disability or handicap, national origin, race, religious creed, sex, sexual orientation, gender identity, or veteran status. Discrimination or harassment against faculty, staff, or students will not be tolerated at The Pennsylvania State University. Direct all inquiries regarding the nondiscrimination policy to the Affirmative Action Director, The Pennsylvania State University, 328 Boucke Building, University Park, PA 16802-5901; Tel 814-865-4700/V, 814-863-1150/TTY.

Where trade names appear, no discrimination is intended, and no endorsement by Penn State Cooperative Extension is implied.

If you think you know
the College of Agricultural Sciences...

Think Again



PENNSTATE



College of Agricultural Sciences