



### **From Our President** By Kirsten Gleb

Many of you may not be aware of this, but SPDR is the second oldest all-breed dog rescue in the country. We are a large and diverse organization dependent on the work of hundreds of dedicated volunteers doing jobs that range from shelter checking to fostering to data entry and everything in between. Our success rests with each and every person who volunteers their time to our organization. In this issue, one of our most active volunteers is in the spotlight. Sharon Davis has been our booth coordinator for several years now and doesn't show signs of slowing down! She's done a tremendous job getting our message out to the public at events ranging from major dog shows to walks in the park. She has brought together a wonderful group of additional volunteers dedicated to showcasing our mission and the dogs that we rescue. Like most of our volunteers, Sharon puts in hundreds of hours each year and does so without fanfare. This is the kind of dedication that makes SPDR so effective. My hat is off to her, and to all of our volunteers for making SPDR the success it is today!

*Kirsten*

## **Dog-On-It!** **Summer Lawn Problems**

Written by Steve Thompson, DVM - Director, Purdue University Veterinary Teaching Hospital Wellness Clinic, West Lafayette, IN  
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**T**he statement "dogs damage lawns" would not be an attention-grabbing headline because it's so commonplace.

So common in fact that a series of urban myths has arisen over what causes the damage--such as "female dog urine is more acidic and therefore more damaging than male," and a variety of strange things homeowners can do to avoid the problem, such as adding tomato juice to the animal's diet or baking soda to its water.

In order to address the matter in an informed and scientific manner, the Turf Resource Center, an international, non-profit group headquartered in suburban Chicago, invited veterinarian Steve Thompson to prepare the following in-depth article on the subject. His information is reprinted here with permission of the Center.



Dog urine and feces can often be a frustrating problem related to lawn care. Small amounts may produce a "green-up" or fertilizer effect, while larger amounts often result in lawn burn or dead patches. While most burn spots will recover with time and regrowth, dead areas can be large enough in some cases to require reseeding or sodding.

For homeowners who are also dog lovers, this can present a dilemma, particularly when one family member prefers the dog and another prefers a well-manicured lawn. An understanding of the interaction between dogs and the lawn can keep the yard (and family) at peace, rather than in pieces.

### **Understanding the Causes**

The fundamental problem with the presence of urine or feces on the lawn is related to the nitrogen content, concentration, and delivery of these waste products.

continued on page 2

# Dogs and Summer Lawns...

continued from page 1

## Content

The purpose of urine, when produced as a waste product in animals, is primarily to remove excess nitrogen from the body via the kidneys. Nitrogen waste products are the result of protein breakdown through normal bodily processes. Carnivores, including cats and dogs, have a significant protein requirement, and thus produce fairly high concentrations of nitrogen in their urine and feces (although volume/production varies due to size and metabolism).

Whereas feces slowly release the waste products over time, and can be manually removed from the lawn to further lessen damage, urine is a more serious problem for lawns because it is applied all at once as a liquid fertilizer.

## Concentration

It goes without saying that the size of the dog has a direct relation to the problem. While specific breed differences haven't been noted, larger dogs obviously produce more urine than smaller dogs, and so are dumping more nitrogen waste.

## Delivery

The manner in which a dog urinates also causes various "concentrations" of urine, which directly affect how much damage is done to the lawn. Young dogs of both sexes, as well as adult female dogs frequently squat to urinate, which delivers urine in one concentrated location.

"Marking" behavior by male dogs (and some female dogs) often poses less of a problem, because smaller amounts of urine are spread around various locations. Once dogs begin urine marking, they often utilize many and numerous scent posts resulting in numerous, small volume urinations rather than large volume puddles. Grass can handle small volume nitrogen bursts easier than fertilizer overload. Unfortunately, the young bush, shrub, vine or tree sprout that becomes a marking post may have nitrogen (fertilizer) overload with repeated marking and may die if continually "marked."

The same is true for leg lifting, which is often learned by male dogs around a year of age (castration or neutering does not seem to affect nature's timetable related to this behavior development), although a few male dogs will continue to squat when urinating.

Female dogs, being less likely to urine mark and more likely to squat, are the primary culprits of lawn damage since they will urinate anywhere on a lawn and usually all at once. This results in a single nitrogen dump confined to a small patch of grass.

The brown spot that results will often have a green ring around the outside. The nitrogen overload at the center causes the burn, but as the urine is diluted toward the periphery, it has a fertilizer effect.



This characteristic brown spot/green ring pattern has been called "female dog spot disease" by some horticulturists.

As might be expected, lawns are most susceptible to nitrogen burns when the lawn has already been receiving standard (commercial) fertilizers. Homeowners who make the extra effort to have a green lawn may be quite discouraged by their neighbor's dog damage or their own housepet's potty residue.

## The pH Myth

Speculation on the actual cause of the lawn burn has resulted in numerous theories on what else in the urine may be contributing to the damage. Dr. A.W. Allard, a Colorado veterinarian, examined numerous variations in dog urine and the effects on several common lawn grasses<sup>1</sup>.

Dr. Allard's results support the fact that volume of urine (nitrogen content) and concentration of

# Dogs and Summer Lawns...

continued from page 2

urine had the most deleterious effects on lawns. The pH of the urine did not have any variable effect nor did common additives designed to alter the urine pH.

## Problem Area Avoidance Techniques

The primary concern in addressing urine damage to lawns is minimizing the nitrogen concentration added to the lawn at any single time.

Where possible, fences can be used to keep your dogs from eliminating on certain areas of the lawn that you wish to keep green, and may be useful to protect landscaping in your front yard near sidewalks frequented by dogs on their daily walks.

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Unfortunately, no repellents are universally effective, although a variety of home remedies have been tried. Hot and bitter products are most likely to have aversive properties to dogs. However most repellents function better as taste repellents than as marking repellents. Some odor repellents may actually encourage a dog to overmark the

strange smell. Some of the better-known commercial repellents have these limitations as well.

A newly developed motion activated sprinkler, primarily designed to keep cats and rabbits out of gardens, may have benefits for some yards. The sprinkler may provide benefit in small yards or at corners of front yards where damage is most likely to occur; however, the presence of numerous squirrels, stray animals or children may result in over-watering and very high water bills if they continuously trigger this device.

In many cases, the problem dog is a housemate to the homeowner. While somewhat time consuming, walking the dog to a park or field away from the house is a simple remedy to this. The time can be well spent since exercise has physical and emotional benefits for both dogs and their owners. Homeowners are encouraged to choose an appropriate destination and not create problem lawns elsewhere that may affect the overall aesthetics of the neighborhood.

A more feasible approach may be to train the pet to eliminate in a designated area of the yard. This area would be a landscaped area specifically designed for the dog. It will need a substrate like pea gravel or mulch that the dog finds acceptable and may even include a marking post like a large boulder, bird bath, lawn ornament, or even faux hydrant.

Collecting the dog's urine in a cup and using it in this area for several days can provide some odor attractant value to this area. Feces can also be collected and transported to the new, designated area. Consistency for at least 2-3 weeks is important to establish this as a routine, trained behavior; several months may be necessary in some cases.

Initially, training can occur with the dog on a short leash and food rewards employed to encourage use of this area. Dogs should not be unsupervised in the yard while this initial training is occurring.

It is often easier to train a young puppy to a particular ground texture than an adult dog, but never impossible in any age dog. A variable reward system utilizing one standard treat if urinating anywhere outside and several treats or a special treat if in the designated area can be helpful in this process and avoid confusing the dog regarding the new housebreaking rules.

However bear in mind, excessive food rewards in the form of meat or protein products will contribute to increased nitrogen content in the urine. Dogs that are being obedience trained should not be trained with treats on the lawn during this housebreaking, otherwise pets and reward systems can really become confused.

continued on page 4

# Dogs and Summer Lawns...

continued from page 3

Many dog owners find it helpful to teach an elimination command during this time, such as *Potty*, or *Do Your Business*, etc. which may come in handy at certain times during inclement weather or busy schedules.

Last but not least, the homeowner may wish to reseed (or possibly replace) their lawn with a more urine-resistant strain of grass. Of the four grasses tested by Dr. Allard in Colorado, *Festuca sp. var. Kentucky 31* (fescue) and *Lolium perenne* (perennial ryegrass) were the most resistant to urine effects. In fact, the urine routinely produced a fertilizer effect on these grasses at diluted concentrations. However even these grasses experienced "burn" due to heavy concentration (i.e., delivery all in one area) when urine volumes as little as 30cc (one ounce) were delivered in a concentrated area.

Grass to avoid: *Poa pratensis* (Kentucky bluegrass) and *Cynodon sp. var. Fairway* (bermuda grass) were very sensitive to any urine and severe burns resulted, persisting greater than 30 days after initial exposure to even four ounces of diluted urine.

## Dietary Modification

A great many dietary modifications for dogs have been tried, often based on home remedies or anecdotal experience. A veterinarian should *always* be consulted prior to making any dietary modifications, whether they include additions or subtractions from standard nutrient guidelines.

As stated earlier, the pH of the urine has little or no effect on the urine damage to the lawn. The addition of acidifying agents, including nutritional supplements like Ascorbic Acid (Vitamin C), D-I, Methionine (Methioform), or fruit juices will have no benefit for this problem and may predispose the dog to an increased incidence of certain bladder stones.

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Likewise, alkalinizing agents, including baking soda and potassium citrate can predispose the dog to other types of bladder stones or infections. The addition of any of these dietary supplements has enough potential to cause harm, with little to no known benefit for the lawn. As a result, these approaches are not recommended.

When owners have reported successes, as is sometimes the case on internet forums, it is more likely the result of increased liquid intake by the dog, which improved the situation because the urine concentration after treatment was diluted.

One particular home remedy, tomato juice, likely has its primary benefit through both increased salt and water intake. While salt will make the dog drink more and dilute the urine, increased salt intake can cause problems for dogs with existing kidney or heart conditions. Owners should not alter their dog's diet without consulting with their veterinarian.

Safer ways to accomplish more dilute urine include feeding canned food, moistening dry food with water prior to feeding, and adding salt or garlic salt to the regular food. Bear in mind, dogs with more dilute urine may have to urinate more frequently and require more frequent elimination opportunities.

Diluting the urine however can sometimes cause unfortunate side-effects, including irritable bladder or bladder infections. Dogs who have a bladder infection are sometimes identified because the owner notices that their dog's urine is no longer causing lawn burn. Bladder infection symptoms are usually accompanied by an urgency to urinate frequently, leaving small amounts or drops each time. These dogs should be examined by their veterinarian and a urinalysis performed to make sure there are no medical conditions causing this change.

Besides diluting the urine, the other option to consider is to reduce the amount of nitrogen waste being dumped in the

# Dogs and Summer Lawns...

continued from page 4

urine. As stated at the beginning of this article, protein generates nitrogen waste. The average family dog doesn't have the activity level that requires as high a protein level as most commercial maintenance dog foods provide. Although the typical dog food purchasing behavior often reflects a consumer perception that high protein equals better food, in fact moderate to low protein foods are often adequate for all but the most energetic, working and hunting dogs.

When examining a food label, protein content must be compared on a dry matter basis and unfortunately, it is not like comparing apples to apples. Dry foods vary in how much moisture they have, so the protein percent listed can't be immediately compared to all other foods. Canned foods will have a much lower protein percent listed than dry foods but also have a much higher water content.

The quality of the protein also has an impact since some proteins are highly digestible, meaning less is dumped in the feces and possibly the urine, than other proteins. In general, the premium and super premium pet foods, available from pet stores and veterinarians, will have higher quality protein and more digestible proteins than standard grocery store brands. The higher digestibility also translates into smaller fecal size.

It is best to discuss individual pet needs with a veterinarian or nutrition consultant in the practice to determine the best fit, based on feasibility, palatability and economics. In many cases, if a dog food is currently providing good, overall nutritional support for the pet, diluting the urine by simply adding water to the food may be the easiest place to start.

## Repair/Recovery of Damage Area

Watering the spot after urinations will accomplish the dilution with no ill effects on the dog. Dr. Allard's study looked at watering fescue at different intervals following urination. Water volumes three times that of the urine were used to assess their dilution effects. A fertilizer effect rather than burn was noted when the site was watered at any time up to 8 hours after the urination. When the delay in watering was extended to 12 or more hours, progressively worse burns were noted. It appears that routine watering of the grass in early mornings would not be sufficient to prevent all urine burns.

The use of gypsum or lime has been advocated but it is uncertain exactly what mechanism this would have in helping prevent urine damage. Improved soil quality over time may result in better drainage and less urine concentration at the grass and root level, but additional information is needed in this area.



Lawn burn, when mild, will often repair itself over time, especially in the case of the warm-season turf grasses that spread by stolons and rhizomes. Dark green spots and taller grasses may remain for several weeks. Sodding can be a quick way to patch severely damaged individual areas that would otherwise be invaded by weeds.

While a high fence and dog-less lifestyle can ensure that "female dog spot disease" is not a problem in your yard, homeowners and dog lovers have several practical options available to manage this problem. Communications should remain open whenever family conflicts arise with various priorities. Coordinating a comprehensive program with your county or state extension horticulturist or lawn care resource and your veterinarian can keep your four-legged friend on good terms and out of the dog house, so she, too, can enjoy romping in your well manicured yard.

<sup>1</sup>Allard, AW. Lawn burn and dog urine, *Canine Practice*, March/April 1981;8;(2);26-32.