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## PETA Leader Speaks Out

*Continued from page 50*

incorporate strategically placed vegetation, rock and fence barriers to keep Canada geese from congregating in areas of concern, and superintendents can apply for federal permits to humanely render eggs “unhatchable” should a pair of geese nest on the course.

Also, the goal should always be wildlife damage reduction, not elimination. Just as eco-friendly golf courses like Widow's Walk in Massachusetts and Desert Willow in California have to contend with a few brown spots on their greens to minimize water usage, so superintendents must learn to accept goose poop on the greens from time to time.

You can download the manual — it's called *Habitat Modification and Canada geese: Techniques for Mitigating Human/Goose Conflicts in Urban and Suburban Environments* — at [www.animalalliance.ca/article.phtml?article=canada\\_geese&dir=projects&title=Canada+Geese](http://www.animalalliance.ca/article.phtml?article=canada_geese&dir=projects&title=Canada+Geese).

There are some also new concepts that are not included, such as the recent development of an oral waterfowl contraception drug (also one for pigeons) called Ovocontrol by a company called Innolytics ([www.innolyticsllc.com/information](http://www.innolyticsllc.com/information)). But other than that, most of the information is current.

### **You recently played some desert courses. Your thoughts on the experience both as a golfer and as someone concerned about wildlife?**

I'm a wildlife biologist, but like many people, I'm chained to a PC most of the workweek, and on weekends I only venture outdoors a short distance from my home. When I take a week off from work, I usually plan adventures to national parks where I can really lose myself in a place I've never been before. I love taking long hikes in the wilderness, using my field guides to identify and learn the names and features of plants and animals that make the area unique, and of course, watching every bird, mammal, reptile, amphibian, fish and bug I can spot with my own eyes or my trusty binoculars. I



Conscientious golfers “cannot ignore” the fact that courses must respect the very wildlife it invites by nature, PETA representative Stephanie Boyles says.

spent my last vacation in Yellowstone and it was breathtaking. The landscape, the thermal features, the wildlife — it was unbelievable.

When I decided to spend this year's vacation in Scottsdale, Ariz., I thought I'd have to choose between playing spectacular golf courses and exploring the wilds of the Sonoran Desert. Needless to say, I was in for a very pleasant surprise. I mean, I didn't have to choose — I got to do both. Don't get me wrong: Watching wildlife and admiring the desert landscape from a golf car isn't the same as hiking up to Cathedral Rock, but I was still amazed at the diversity of plants and animals I was able to enjoy while playing a round of golf. We saw hummingbirds, cactus wrens, coyotes, thrashers, rabbits, ground squirrels, quail, flickers, foxes, javalinas, doves, deer, golden eagles, verdin, phainopepla, violet green swallows and roadrunners — to name a few.

On our first day, we were waiting to tee off on the back nine when a coyote trotted up to a shady area above a green next to us and nonchalantly laid his body down for a snooze. I was so excited and asked the folks playing with us if people ever complain about animals like coyotes living on or near golf courses communities. They

laughed. “Nonsense! For goodness sake, that's why we live here! Isn't that why you came to Arizona to play golf? To see the desert and all the wildlife?” I laughed and replied, “Oh, of course!” [laugh]

No question about it — I had a great time, but I'm no fool. I know one of the reasons those desert courses are so overwhelmingly attractive to wildlife is because we take water from natural, self-sustaining riparian ecosystems and use it to maintain artificial, 120-acre man-made “systems” carefully designed for people like me who enjoy chasing and hitting little white balls with sticks. The plants and animals in those natural systems struggle to survive and those fortunate enough to live close to these artificial “systems” thrive. As conscientious golfers, we cannot ignore this fact. We are morally obligated to petition the golf industry to be proactive and strike some sort of balance with what the industry takes from wildlife and the environment. If nothing else, we should support golf courses that have been certified by Audubon International as often as possible. The Audubon program isn't perfect, but it's the best we've got for now and we should patronize facilities that are investing time and resources to participate in the program. ■



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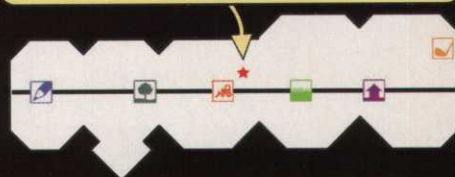
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# Down *on the* FarmLinks

## Pursell on a 'Passionate Pursuit of Perfection' to make PTI's 'Experience' even better

BY LARRY AYLWARD, EDITOR IN CHIEF

### It's good. It's darn good.

It is doesn't-get-much-better-than-this good. But it can be better. Much better.

And David Pursell, the CEO of Pursell Technologies Inc. (PTI) and the maestro of the company's Experience at FarmLinks educational/entertainment program for golf course superintendents and green industry professionals, will be the first person to tell you that.

"Even though we've got a great thing going, we can always do better," Pursell says.

PTI has been conducting its program, formerly known as the PTI Tour at Pursell Farms, for superintendents and green industry professionals for several years now at its headquarters in Sylacauga, Ala. The program took a giant leap in 2003

when PTI opened the FarmLinks Golf Club, an 18-hole golf course located on the company's 3,500-acre property, that serves as a research and demonstration ground for the training program.

Around that time, PTI recruited three industry partners — The Toro Co., Syngenta Professional Products and Club Car — to help fund and operate the training program and to participate in golf course research. PTI also opened the Parker Lodge, a rustic and cozy inn that sleeps, feeds and entertains its guests, who arrive in two separate groups weekly.


The Experience at FarmLinks is unlike anything else in the golf course maintenance industry. It's not a hotel-in-the-suburbs-for-a-few-days-of-tedious-training program. A superintendent might never admit it to his general manager or club president, but the Experience at FarmLinks is kind of like taking a holiday. Let's just say the PTI folks know how to roll out the red carpet for superintendents and

### WELCOME TO PURSELL FARMS

*Great are the works of the Lord.  
He has made His wonders to be remembered.*

PSALMS 111:2,4





David Pursell says superintendents deserve to be treated like kings and queens at FarmLinks.

other guests to make them feel like kings and queens.

And that's precisely the point, stresses Pursell, noting that most superintendents aren't accustomed to that kind of treatment. It's Southern hospitality at its finest, but the spiritual Pursell says such treatment is in accord with the golden rule. "Do unto others as you would have them do to you," he cites.

The educational programs are enriching, but what helps set the program apart from others is the recess. In between the learning stuff, attendees can go have fun. They can play the golf course, a Mike Hurdzan-Dana Fry design carved from idyllic farmland, and go bass fishing in several lakes on the property, among other things. Ferris Bueller wouldn't think of taking a day off from this place.

The educational programs are out of the ordinary, which is refreshing. One

program, taught by PTI Executive Director of Business Development Jeff Higgins, takes place in the PTI-Max Theater, which features 15 leather recliner chairs and, yes, popcorn and candy in a small movie theater-type setting. Higgins, who speaks on fertilizer technology, lets his keen sense of humor get in the way of his talk just enough, which adds some lightness to a technical topic.

One of the best things about the educational programs is that guests can go one on one with representatives from PTI, Syngenta and Toro and discuss and see the realities of new technology at work on the golf course. One can sit and listen intently to Dana Lonn, director of Toro's center for advanced turf technology, wax about robotics and fuel cells and golf course maintenance of the future.

Lonn will also listen to superintendents' concerns in a group discussion and

address them as best he can. In fact, Lonn says getting such face time with superintendents is invaluable.

"Our product development process starts with meetings like that," he says.

Back to making the Experience at FarmLinks better and even more memorable. Pursell and Dave Heegard, PTI's vice president of sales and marketing, say there are a few wrinkles to be ironed out on the red carpet. When asked about taking the Experience at FarmLinks to another level, Pursell begins to talk about the marketing strategy of an upscale car manufacturer — Lexus.

Pursell happens to drive one, and the only thing he likes better than a Lexus' performance is its mission statement: "The passionate pursuit of perfection."

Those who know him will say Pursell could have written the line. He's all about being down to the last detail.

"I don't think you ever get there," Pursell says of perfection. "You can get above everybody else, but if you rest on your laurels, what happens is everybody is going to find a way to catch up to you or even leapfrog you."

So it's always about going back to the drawing board to make things better at FarmLinks. Pursell's latest vision is a new facility that features two pavilions — one highlighting the "hall of today" and featuring the products and services of FarmLinks major partners; and one highlighting the "hall of tomorrow" and featuring future products and services. Ground-breaking for the facility will occur this summer and it's scheduled to open in 2007.

Mark Langner, the director of agronomy and applied research at FarmLinks Golf Club, formed an advisory group comprised of 12 superintendents to scout the industry for innovative products to showcase at the pavilions.

Pursell and Heegard also want to make the experience even more fun. FarmLinks is as quiet as a cornfield after the sun sets. Guests can watch TV on a big screen in the lodge or play ping-pong, pool and

*Continued on page 56*



## Down on the FarmLinks

The Mike Hurdzan-Dana Fry design is carved from idyllic farmland.

*Continued from page 55*

Texas hold 'em. Or they can turn in early and sleep deeply on the coziest beds known to mankind. But Heegard says some superintendents are bored at night. So there's talk of opening a bowling alley or offering seminars on financial investing or related topics.

In his "passionate pursuit of excellence," Pursell says he's using Epcot Center, Disney World's theme park of international culture and technological innovation, as a model.

Pursell and Heegard have created a stand-alone business entity with the Experience at FarmLinks and recently appointed Erle Fairly as its president. Fairly will seek more partners to showcase their products, all the while pumping more

a year, we'll make sure 1,000 superintendents are exposed to your products."

FarmLinks represents a new way for suppliers to market their products "What we're trying to create is a brand new marketing tool," Heegard adds.

(Incidentally, the three major partners are expected to remain. Pursell welcomes other minor partners, but they can't be competitors of any of the four major partners.)

Joe DiPaola, Syngenta's golf market manager, likes what's going on at FarmLinks and says his company is committed to it. Syngenta recently appointed Matthew Brecht to represent the company and its products, technologies and services at FarmLinks. Brecht holds a doctorate and a master's degree in plant pathology from the University of Florida.

money into the theme.

Says Heegard: "We'll go to different companies with the idea of: We'd like you to consider using FarmLinks. And for X number of dollars

"In a lot of ways, we're still at the beginning of this," DiPaola says. "It's still very much about where this thing can go in the future. That will take some time."

Mike Read, Club Car's director of marketing, says FarmLinks is the place to allow Club Car to test its equipment in a "real" working environment. "FarmLinks is now a standard part of our research, development and product testing process," he adds.

Read says Club Car partly measures its return on its investment "in the quality of the experience for the superintendents and the other customers who see and evaluate our products there."

"Because the FarmLinks staff often has had weeks and months of experience with the products, customers get solid feedback that they can trust," Read adds.

When FarmLinks Golf Club was dedicated in June 2003, Pursell said, "We progressed from a wish, to a dream, to a vision, to reality... all over about a 10 year span."

He's wishing and dreaming again. And it's probably only a matter of time before Pursell's latest vision becomes reality. ■

## Mark Langner Lives in the Future at Research and Demonstration Golf Course

By Larry Aylward, Editor in Chief

If anybody can tell you what the future holds for golf course maintenance, it's Mark Langner, the director of agronomy and applied research at FarmLinks Golf Club, the research and demonstration golf course owned by Pursell Technologies Inc. (PTI) in Sylacauga, Ala.

Langner is living in the future at FarmLinks, which was built to test the latest formulations and gadgets of golf course management, from machinery to chemicals to irrigation practices.

FarmLinks also doubles as an outdoor classroom for the roughly 1,000 superintendents and other green industry professionals who visit the course annually as part of the Experience at FarmLinks, a two-day training program conducted by PTI that's held on the company's 3,500-acre grounds.

Langner frequently tests products and conducts studies on everything from fertilizers to fungicides. He's observing more new grass varieties that can be found on a seed farm, from bluegrass to paspalum to zoysia to bermuda to bent. And he's checking out the latest in mower technology to cut those myriad varieties.

It's on-the-job learning, all right. It's also a cool feeling to be on the cutting edge, which is razor sharp at FarmLinks.

"I like to take chances and risks," Langner says. "What better

way to do that than at a research and demonstration golf course?"

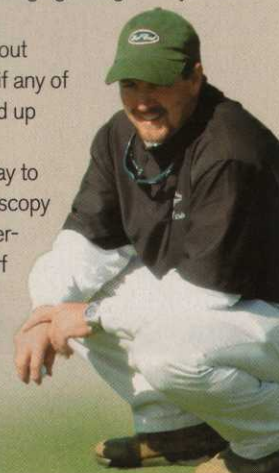
The same turf research that's usually done on test plots at universities and in chemical companies' backyards is done at FarmLinks. But there's one big difference: FarmLinks is a public golf course, which means the research is conducted in a real setting with real golfers that cause real divots.

"It's always something new and challenging," Langner says. "It's never dull."

But want to know the best thing about Langner's job? He won't get in trouble if any of the risks he takes in his outdoor lab end up going awry.

For instance, he can dry out a fairway to allow researchers to conduct a spectroscopy test and not have to worry about answering to members' complaints that the turf is stressed or turning brown.

"At the end of the day, our objective is to show other superintendents what can be beneficial or nonbeneficial to them," Langner says.





# TURFGRASS TRENDS

## ENVIRONMENTAL ISSUES

# Glyphosate Runoff on Fairways Falls Below EPA Limits

By Steven K. Starrett and Jamie Klein

**T**his USGA-funded study focused on observing the fate of glyphosate following Roundup applications in a turfgrass ecosystem. Kansas State University, in cooperation with Jim Colbert, the Professional Golf Association, the Golf Course Superintendents Association of America and various alumni, built a championship course (Colbert Hills Golf Course) in Manhattan, Kansas.

The course, opened in 2000, provided the study area for the research presented here. Water and soil samples were taken from the study watershed for three years (2001-2003) during the early operation period of Colbert Hills.

The objectives of the study were:

- To measure glyphosate runoff from zoysiagrass fairways on a course following the application of Roundup herbicide.

- To analyze glyphosate runoff concentrations and determine the resulting effect on the environment.

- To provide up-to-date data of research findings on pesticide fate and transport when applied to turfgrass.

With the introduction of glyphosate to the environment, a number of environmental considerations arise, probably the most important being the health implications to those who may come in contact with the chemical. The EPA RED (1993) facts sheet reported that glyphosate ranks high among pesticides causing illness or injury to workers who report numerous

incidents of eye and skin irritation from splashes during mixing and loading.

Glyphosate toxicity to wildlife is also an important issue to consider. Glyphosate has been found to be practically nontoxic to birds, honeybees, fish and aquatic invertebrates. The fate of glyphosate is influenced by its numerous interactions with the surrounding environment. The most notable interactions take place with water, soil, air and the treated vegetation. The fate of glyphosate through these different modes is highly dependent on its physical properties.

A total of 617 runoff samples were mostly taken by ISCO 3700-automated water samplers at the inlet and outlet of the sub-watershed detention pond and from three separate fairway drains on hole No. 9 (Figure 1).

Twenty-three water samples most likely to contain glyphosate were tested by the U.S. Geological Survey (USGS) lab for glyphosate, AMPA (amino methyl phosphonic acid) and glufosinate. Thirteen of the samples contained non-detectable concentrations of glyphosate. The limit of detection for the testing process used was 0.10 µg/L (micrograms per liter).

The majority of samples with detectable concentrations of glyphosate were taken from one of the three fairway drains. Those samples contained significantly greater concentrations than the inlet, outlet and pond samples. Nine of the 13 samples taken from the fairway drains

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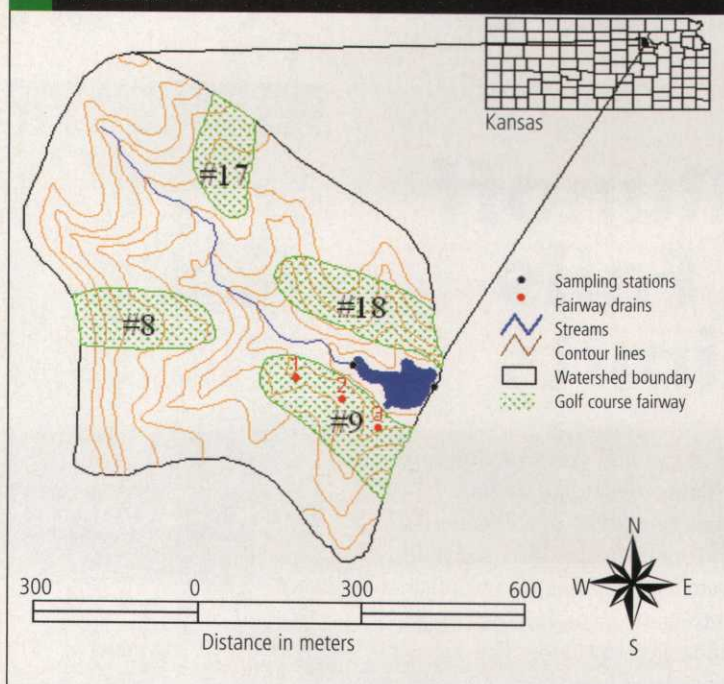
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FIGURE 1



*Location of fairway drains on No. 9 at Colbert Hills GC. They eventually connect and empty into the detention and irrigation pond.*



## QUICK TIP

Plant strength, pathogen presence and environmental conditions are all key determinants to the survival and recovery of intensively managed grass. Floratine's carbon-based products such as Astron, PK Fight, ProteSyn, and Floradox Pro are designed to provide the nutritional resources to help turf be stronger and withstand stress longer.

*Continued from page 57*

during the years of 2002 and 2003 (when Roundup was applied) contained glyphosate at a concentration greater than  $0.10 \mu\text{g/L}$ , while 10 of the 13 samples contained AMPA at a concentration greater than  $0.10 \mu\text{g/L}$ .

The sample with the highest concentration observed throughout the study period was taken from the No. 2 fairway drain 62 days after Roundup application. The glyphosate concentration of this sample was  $5.18 \mu\text{g/L}$ , which is significantly lower than the  $700 \mu\text{g/L}$  limit for the EPA-established maximum contaminant level (MCL).

Five samples taken from the inlet into the pond were tested by the USGS lab. The one sample that contained glyphosate at a concentration above the detection limit of  $0.10 \mu\text{g/L}$  was taken on April 29, 2002. This was earlier in the year than any of the fairway drain samples, which might explain why a detectable concentration was present in this sample.

The main reason the inlet samples contained undetectable concentrations of glyphosate was dilution. The drainage area for the inlet sampling location was 115 acres, with approximate-

ly 6 percent of that being zoysiagrass fairways that had been treated with Roundup.

Four samples that were taken directly from the detention and irrigation pond were tested for glyphosate. Two of the samples were taken in April 2003 and the other two were taken in August 2003. None of the four samples contained glyphosate at a concentration greater than  $0.10 \mu\text{g/L}$ .

There were two primary reasons why low concentrations should be expected within the pond. First, significant dilution occurred when runoff from the watershed mixed with the water present in the 3-acre pond. Further dilution also occurred because of the addition of purchased water that was pumped into the pond for irrigation purposes. Second, the reduced runoff velocity paired with readily available suspended solids promoted glyphosate adsorption to soil particles and settling.

One sample taken from the outlet of the detention pond was tested for glyphosate. While the concentration of glyphosate was below the detectable limit of  $0.10 \mu\text{g/L}$ , an AMPA concentration of  $0.26 \mu\text{g/L}$  was present. Low concentrations of glyphosate were expected from the outlet for the same reasons mentioned above for the pond samples. Because water from the pond is used for irrigation, it was not favorable for water to be lost through the outlet. Therefore outlet discharge events would likely occur only after significant or frequent precipitation events.

This was the case with the tested sample, which was taken 12 days after a 1.4-inch precipitation event. In these cases, it was likely that, due to the pond being full, the amount of water entering approximately equaled the amount exiting, which left less time for dilution, adsorption and settling of glyphosate.

Glyphosate concentrations in runoff samples from the 115-acre study watershed following annual applications of Roundup were much lower than associated health standards. The factors present during the study period effectively maintained glyphosate concentrations to acceptable levels at fairway drains and to undetectable levels within the detention pond. ■

*Steven K. Starrett, Ph.D., is in the department of civil engineering at Kansas State University. Jamie Klein is a former graduate student in the KSU department of civil engineering.*



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# Protecting Turfgrass from Typhula Blight

By Young-Ki Jo and Geunhwa Jung

**H**opefully, you didn't forget the preventative application for snow mold caused by *Typhula* fungi this winter. If you did, keep it in mind for next winter, especially if you anticipate cold temperatures and heavy snowfall.

*Typhula* blight strikes fast. You can be fine in autumn and then overwhelmingly get lost at seeing grayish-brown dead circles on putting greens or fairways during snowmelt. Fungi causing *Typhula* blight have been growing in the turfgrass thatch and rootzone as soil temperatures drop to 50 degrees Fahrenheit (F). You even don't know the fungi are there during autumn when cool-season grasses grow well until the harsh winter front hits, and snow covers the grasses.

Winter hardiness of turfgrass can be maximized through a combination of maintaining mowing heights, fertilizing and slowly reducing irrigation during autumn, but fungicides are often required to prevent *Typhula* blight from killing closely mown turfgrass in the Northern states (Stier, 2005). The pre-emptive approach is a smart idea for those who simply cannot take a month or more to recuperate turfgrass damaged by *Typhula* blight in the next spring. Fungicide treatment is most effective if applied before onset of symptoms or before the fungi begin actively growing. It reduces initial fungus inoculum potential and alleviates the disease severity.

*Typhula incarnata* and *T. ishikariensis* are two major causal fungal pathogens of *Typhula* blight on most turfgrasses cultivated in the United States (Smiley et al, 2005). The fungus survives as tuber-like hardened mycelium, called sclerotia, throughout the summer. In late autumn sclerotia geminate and mycelium begins growing from them. Club-shaped sexual fruiting structures (sporocarps) are formed from sclerotia

**FIGURE 1**



*Sporocarps fruiting structures of Typhula incarnata observed at our snow mold field plots established at Gateway Golf Course in Land O' Lakes, Wis., on Oct. 28, 2005. T. incarnata produces pinkish, club-shaped sporocarps that are 0.5-1 inches in height.*

under certain environmental cues, including light, temperature, soil moisture and soil microorganisms.

Both *T. incarnata* and *T. ishikariensis* are often present together and cause snow mold damage at the same time, although *T. ishikariensis* tends to be more dominant in the northern regions of Wisconsin, Minnesota and Michigan. *Typhula* blight becomes severe, with more than 60 days of snow cover, which provides the fungi with favorable conditions of high moisture and temperature above freezing (34-36 degrees F). Winter-stressed plants are slowly taken over by *Typhula* fungi, and eventually infected areas turn into patches of white to gray dead turf as snow recedes in early spring.

*Typhula* blight season in Wisconsin and Minnesota varies depending on the latitude and winter weather conditions, but turf damage becomes apparent in March and April. Early fungicide applications are started in mid-October when the activity of the fungi is at its peak. Usually, more than one chemistry with multiple applications are recommended in areas where snow cover is longer

*Continued on page 62*



## QUICK TIP

Polygraph software was developed to enable superintendents to design their own polygon-based fertility program, all totally customized to a facility's particular conditions and goals. With the Polygraph, you can create and implement fertilization schedules that are completely predictable and dependable for selected nutrient amounts and timing. Contact your Simplot or Harrell's rep for a free Polygraph analysis.