

Odor Eaters

Indigenous Plants a Practical Solution for Poultry Pollution

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CENTREVILLE, Md. — The problem: the acrid smell of nitrogen, ammonia and particulate matter billowing from poultry house exhaust fans. In addition to the pervasive and unmistakable odor, what is exhausted from poultry houses carries minute particles of feathers and dander that clog lungs and kill vegetation.

The solution: tough, resilient, cheap plants that love to gobble up nitrogen, ignore drying wind sweeping across them night and day, and know how to slough off dust that settles so thickly on their foliage you could write your name on their leaves.

Once again, common sense and practicality prevail. Problem to solve? Tackle that problem with solutions that are at hand. In this case, warm season grasses and street trees.

Seven years ago, horticulturalist Shawn Belt was working at the National Arboretum in Washington, D.C. His colleague, Denny Townsend, was researching “urban street trees,” those ubiquitous, tough shrubs and trees that grow down alleys and out of rubble piles. Belt and Townsend put their heads together and decided there might be useful applications for these street fighters of the botanical world.

The good news about urban, indigenous plants: They grow fast, cost next-to-nothing to propagate, withstand the sometimes harsh, regional climate and absorb nitrogen

like sponges. Switch grass, osage orange trees and American elm had a champion!

Belt was familiar with the work of Paul Patterson and Bud Malone — using trees as windbreaks for the odorous emissions from livestock, swine and dairy barns. Applying the same idea to chicken houses, Belt began some test plots at poultry farms in Pennsylvania, Maryland and Delaware.

Kim and Tim Austin of Serenity Farm in Centreville, Md., were among the first adapters of Belt’s project.

“The Austins raise broilers, the NASCAR of chickens,” Belt observes. “I wondered, ‘Could my plants mitigate the odor and emissions from the Austins’ fast-growing, quick-turnover poultry houses?’”

The Austins are among the top 10 broiler producers in the region; they’ve been at poultry farming for more than four years, and they’re proud of their farm and the chickens they produce.

“This farm was Tim’s mid-life crisis,” Kim notes with a smile. “Some guys buy sports cars; my husband bought 30 acres and thousands of chickens. We work at this 365 days a year.”

Serenity Farm’s tidy 30 acres houses over 100,000 chickens, winter and summer. It takes 17 days to sanitize the houses, and another batch of broilers is under way. But, no matter how clean, from those tidy chicken houses can emit fumes that can cause coughing and watery eyes. The 9-foot, side-wall exhaust

fans move out the old air from among the chickens’ cages, and that stale air is



Photos courtesy of Shawn Belt

Kim Austin shows some of the grasses that mitigate odor and emissions at Serenity Farm.

laden with ammonia and nitrogen. In addition, suspended in the fowls’ foul air are particles of chicken dander and feathers.

Belt knew the Austin farm would be a tough test for his plants. He also knew that if these street-fighter plants were to succeed they would have to resist wind, heat, ammonia and a heavy coating of toxic dust. They would also have to grow quickly, ignoring not only the chickens’ toxic winds but the summer droughts and winter cold.

And they did.

The first buffers of spindly, foot-high coastal switch grass and Chi-

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Osage orange leaves covered in exhaust dust.

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Plants

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nese silver grass took hold in a blink. Within the first 12 months, the scrawny clumps grew from 12 inches to 8 or 9 feet high. The twigs of Austree willows Belt and the Austins planted behind the grasses as back-up took off, too. The willows are tall, with trunks the size of a man's arm.

These grasses and trees are doing a great job absorbing nitrogen and ammonia from the air and taking the pollutants down into their roots. The particulate matter, instead of flying into the eyes and lungs of the farmers, is being captured by the leaves and eventually sloughed off into the soil — where the dander and dust are absorbed. And, these tough guys love their work. They are beautiful, waving rows of grass and trees, against the gray shoulders of the chicken houses.

The plants are so hardy that Belt has been able to move them closer to the fans, thus cutting down the amount of land required for the buffers. Instead of 50 feet, the plants are growing and filtering the air as close as 20 feet from the giant fans.

"This has been a great quick-fix for our fan exhaust problem," says Kim Austin.

The switch grasses and Aussie willows are cheap to propagate, grow fast and need very little land.

"Just because we're a chicken farm doesn't mean we don't want to help the environment," she says.

She has agreed to plant some American elm trees to see how they'll fare, so far from the mean streets of the city.

"Tim and I are planting crape myrtle and forsythia, too. Maybe they'll help with the buffer zone, and they are pretty, too."

The experiment has been so suc-



Photo by Janice F. Booth

Austra willows grew from 12 inches to 8 feet in one year.

cessful that Belt has begun another, larger buffer project at Hillandale Farm in Gettysburg, Pa. Hillandale is an egg-laying facility which includes six chicken houses with a total of 1.2 million birds. For this huge setting, Belt has planted a large and varied collection of potentially useful buffer plants, including bayberry, American elm, hackberry, alders, oaks, red maple, black locust and osage orange. Patterson is involved with the fact-finding at this site.

In a recent progress report, Belt notes the statistics gathered by Patterson: "... a tree/shrub windbreak planted opposite tunnel fans reduced dust (particulate matter) by 67 percent at a distance of 20 feet downwind from a five row windbreak, and odor by 50 percent."

Those are impressive reductions in emissions.

If you're thinking of planting an emissions barrier and checking for

yourself how these street trees and grasses work, Belt's research suggests the following design plan for planting grasses around your chicken house exhaust fans:

- Two rows of grasses, minimum, should be planted.
- Plant the rows as close as possible to the fans, probably about 20 feet away.
- Space the grasses two feet apart.
- Stagger the plants if you're using several varieties, with the tallest grasses at the ends of the break.
- Extend the rows 20 feet beyond the ends of the fans, preferably arcing in toward the building.

A more detailed explanation can be downloaded from the USDA-NRCS website:

www.plant-materials.nrcs.usda.gov/pubs/mdpmctn7166.pdf

www.plant-materials.nrcs.usda.gov/pubs/mdpmcfs9498.pdf

Bill

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cals involved and replace contaminated water.

Drillers would post bonds to cover potential damages. With trucks ferrying water and gear to and from wells, the Division of Highways would have to sign off whenever a driller applies for a permit.

The proposal would also increase permit fees, which are \$400 or \$650 depending on the type of well. A driller would pay \$15,000 to apply for a permit, \$10,000 to modify it and \$5,000 to renew it annually. The revenues would help DEP hire new inspectors; it now has 12 people assigned to 59,000 gas wells statewide.

Two subcommittee members involved in the gas industry but who were not re-elected for the upcoming regular session led the opposition to the draft proposal during Monday's meeting.

One, Delegate Mike Ross cited crowded restaurants and motels

around such key drilling areas as Marshall and Wetzel counties as evidence of the economic benefits to the state. Pricey permit fees and overreaching regulations will stifle that, the Randolph County Democrat said.

"You ought to give the companies a chance, that are coming in here and making the investments," said Ross, who did not seek another term. "The companies are doing a lot to police themselves and to do a better job. No doubt there's been some damage to some of the roads, but you have to look at what it's added to the economy in the state."

The other, Sen. Frank Deem, R-Wood, lost in the May primary. While critical of the overall bill, he successfully amended it to remove the pooling provisions.

"Fracturing of these wells is the lifeblood of the oil and gas industry today," Deem said. "I'm very concerned that a bill of this magnitude will have a very detrimental impact on the development of oil and gas in this state, and therefore cost a lot of employment, a lot of jobs and a lot of money."

Western Md. Town Eyes Ban on Natural Gas Drilling

MOUNTAIN LAKE PARK, Md. (AP) — The western Maryland town of Mountain Lake Park is considering a ban on drilling for natural gas within its boundaries.

The town of 2,100 sits atop part of the Marcellus Shale, a geological structure that is yielding natural gas in other states through a process called hydraulic fracturing.

Mayor Leo Martin says he introduced the proposal Thursday to

protect the town. A public hearing is set for February.

The measure is modeled after one Pittsburgh has adopted amid reports that the drilling technique has contaminated water and reduced property values in parts of Pennsylvania.

Maryland regulators are considering applications from Tulsa, Okla.-based Samson Resources to drill four natural gas wells in western Maryland.

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