

# Utilizing warm season grasses as a vegetative buffer

## USDA-NRCS and MSU Extension demonstrate the functionality of tall warm season grasses as vegetative buffers when planted next to livestock facilities.

Posted on **December 9, 2013** by **Gerald May**, Michigan State University Extension, John Leif, Rose Lake PMC Manager and Riley Collins, MSU Extension Student Intern

Livestock odors are an ongoing concern for both the livestock producer and the farm's rural neighbors. In 2008 Larry Jacobson from the University of Minnesota Dept. of Biosystems and Agriculture Engineering, reported that over 50 percent of ammonia, hydrogen sulfide and odor from mechanically ventilated swine barns were concentrated in the air exhausted via the building's pit fans. Odor control strategies that focus on the ventilated air from pit fans may significantly reduce odor and other air emissions from the farm as a whole.

Odor control technologies are available but to be widely accepted and implemented on farms, odor reducing practices should meet three criteria:

1. The technology should be research-based with the effectiveness of the practice well documented.
2. Once installed the odor technology should require minimal daily maintenance.
3. The installation and daily maintenance should be cost-effective and have a nominal effect on the cost of production.

Vegetative environmental buffers (VEBs) are strategic plantings of trees, bushes and grasses intended to reduce odors and other air emissions from livestock facilities. In their 2007 review of the current research on VEBs Tyndall and Colletti determined VEBs serve five primary functions including:

1. Mixing and dispersion of odorous air.
2. Physically capturing of dust and odorous particles on the leaf surfaces.
3. Acting as a biological sink and absorbing the constituents of the captured odorous particles.
4. As air speed within the VEB slows down dust particles will settle to the land surface.
5. VEBs improve the overall esthetic view of the farmstead.

Because they are relatively inexpensive to plant and almost maintenance free once established, vegetative buffers utilizing trees and bushes are being used by livestock farmers as landscape enhancements and for their potential odor mitigation. This past summer Michigan State University Extension partnered with the Natural Resources and Conservation Service's (USDA-NRCS) Rose Lake Plant Materials Center and H & H Farms of Vicksburg, Mich. to demonstrate the use of tall warm season grasses as vegetative buffers to filter dust and odors contained in the ventilated air from swine barn pit fans.

The practice of using tall warm season grasses as vegetative buffers near livestock facilities, if proven successful in reducing air emissions, offers unique opportunities. Grasses can be grown close to buildings without concern that roots may damage underground services or the manure pit integrity. Though they must regrow each spring, grasses will reach their mature height relatively fast when compared to slower growing trees or bushes.

The intent of the first year of the demonstration was to determine if warm season grasses could be established and continue to thrive near the discharge of swine barn pit fans given the constant exposure to dust, ammonia, hydrogen sulfide and other air emissions.

Four species of grass were incorporated in the demonstration plots; Giant Miscanthus, Indiangrass, Switch Grass and Coastal Panic Grass. Weeds were controlled at the planting sites and the vegetative buffers were watered weekly throughout the summer.

Two of the species survived the transplanting, Giant Miscanthus and Switch Grass, and had substantial growth in 2013. The other two species, Indiangrass and Coastal Panic Grass, either died or had very little vegetative growth.

Future plans for these vegetative buffers include observing next year's regrowth of Giant Miscanthus and Switch Grass (2014), reestablishing the Indiangrass and Coastal Panic Grass (2014), and monitoring the warm season grasses as an odor control practice (2015).

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