

# Grasses Ability to Mitigate Poultry Farm Emissions

The Delmarva Peninsula is home to one of this country's highest concentration of poultry farms. Poultry and egg production is the most valued commodity in Maryland, Delaware and second in Pennsylvania. Poultry farms generate significant amounts of ammonia (NH<sub>3</sub>), dust (particulate matter (pm) 2.5 microns in size and pm 10 (both regulated by the EPA)), and odors which are all expelled by the ventilation system. Approx. 587 million broilers are produced annually on Delmarva Peninsula (Delmarva Poultry Industry, Inc.). These emissions pose serious health and environmental challenges ultimately contributing to the air and water quality degradation of the Chesapeake Bay. Research has shown a reduction of dust (66% PSU) and odor (66% ARS) by planting buffers opposite fans. There is a limited quantity of plants currently recommended (only 13 different species MD and DE NRCS Standard #422). Grasses allow the accumulation of dust (spring through summer) and then go dormant. This study was initiated to test the survival and growth of grasses and their ability to tolerate the emissions and conditions. In Maryland, Delaware and Pennsylvania plantings, various species of warm and cool season grasses were randomly planted across the width of the tunnel and sidewall fans. Evaluations of switchgrass, coastal switchgrass, giant miscanthus, gama grass, indiangrass, salt meadow cordgrass and giant cane survived, grew and filtered poultry farm emissions. This study shows that grass buffers assist with the mitigation of ammonia, dust and odors emitted by poultry farms.

Key words: Air Quality, Poultry, Ammonia, Particulate Matter (pm), Odor, Biofuel