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**CONTRACT/GRANT/AGREEMENT NO:** 2004-35112-14249 **PROPOSAL NO:** 2003-05230
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**GRANT AMT:** $440,205

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***VEGETATIVE ENVIRONMENTAL BUFFERS TO MITIGATE ODOR AND AEROSOL POLLUTANTS EMITTED FROM POULTRY PRODUCTION SITES***

**NON-TECHNICAL SUMMARY:** The US poultry industry is facing unprecedented environmental challenges. Scientific evidence strongly suggests that shelterbelts of trees and shrubs when arranged in specific designs near and within poultry facilities can provide effective and cost-effective mitigation of odor, particulates, and ammonia. The purpose of this study is to provide measurements of how good shelterbelts are in terms of trapping and reducing air pollutants coming from poultry farms. We will evaluate several tree species in shelterbelts for their abilities to reduce odor, particulates, and ammonia. Field and greenhouse studies will provide data to be used in modeling how odor and particulates flow and move in the air from poultry operations. Also, we will determine the shelterbelt costs and impacts of governmental assistance programs on costs.

**OBJECTIVES:** 1) Establish and refine standardized and integrated research protocols for the quantification of the bio-efficacy of using VEBs (living shelterbelts of trees and shrubs) to mitigate emissions of odor, PM10 and PM2.5 particulates, and ammonia from tunnel ventilated poultry production facilities. We will collect data from working commercial poultry farms and research farms in Delaware, Iowa, and Pennsylvania where VEBs have been placed to examine their ability to mitigate particulates, ammonia, and odor. 2) Use field data from research sites to simulate odor, particulate, and ammonia flow and dispersion with VEBs. 3) Evaluate tree/ammonia and tree/particulate interactions (bio-chemical and bio-physical) in controlled laboratory and field experiments using tree species suited for growing in the three states and

that are being used in VEBs associated with poultry (and livestock) production facilities. 4) Examine management requirements and costs of VEBs. This information is needed to help guide producer decisions and to make recommendations to poultry industry associations and for state and federal government assistance programming. This examination will occur with collaboration of state poultry associations and government agencies. 5) Integrate the research knowledge gained from realizing the first four goals in targeted outreach efforts. These outreach activities will begin in year one and continue throughout the life of the project and beyond as research and demonstration farms will be designed for long-term examination.

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