

Title: Vegetative Environmental Buffer Builder and Economic Review: A Decision Support Tool for the Pork Industry – **NPB #15-171**

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Scientific Abstract:

Vegetative Environmental Buffers or VEBs – purposefully planted trees and shrubs usually arranged in linear patterns near and around production sites - are a low-cost livestock odor mitigation technology. VEBs have been shown to be biophysically effective in intercepting, filtering and diluting odor-laden air streams associated with animal production sites. To aid livestock and poultry producers design the most appropriate VEB system for their production site, we've created a web-based Vegetative Environmental Buffer design program called *VEB-econ*. *VEB-econ* allows users to locate facilities or future building sites within a high-resolution photo-mapping GIS (Google Earth). Users then utilize to-scale dimensional drawing tools to delineate property boundaries, roads, animal buildings and other structures, so as to parameterized idealized tree-row locations. Users specify number of desired tree rows, preferred tree-row protection zones, etc. Layered into the mapping tool is the NRCS SSURGO soil database linking tree species selection to soil-based tree suitability recommendations. Costs for VEB systems are highly variable and dependent upon site-specific VEB design. As such, *VEB-econ* estimates total annualized costs for tree establishment, long-term management, any opportunity costs and factors in the potential benefit of utilizing available NRCS EQIP cost-share programming for VEBs. Additionally, *VEB-econ* can be used to design field windbreaks and or shelterbelt systems for general conservation purposes. *VEB-Econ* is designed to be useful to producers, outreach professionals, farm/forest management consultants, tree nurseries and other key air quality stakeholders. Global Positioning System field location data points for all trees/ tree rows are downloadable for precision planting. *VEB-econ* can be found at:

<https://veb.nrem.iastate.edu/>

These research results were submitted in fulfillment of checkoff-funded research projects. This report is published directly as submitted by the project's principal investigator. This report has not been peer-reviewed.

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