Mitigating Dust and Odor Emissions from Open-Lot Livestock Facilities via Integrated Corral Management

A National Research Initiative Integrated Air Quality (28.0) Project
Culprits

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Integrated Corral Management

FEEDYARD A

PEN AE-13

Integrating Environmental Protection with the Daily, Profitmaking Enterprises of Open-Lot Livestock Facilities
Objectives

- Adapt a visibility-based surrogate for PM monitoring
- Develop a handheld database, DAQ, auditing and reporting system
- CEU and graduate curriculum modules
Manure Harvesting

- Optimize for fuel and fertilizer value
- Document improvements in AQ
Wireless Technology

- Integrates RFID, GPS and digital photography with HQ database using IEEE 802.11 (wi-fi)
- Current platform: LabVIEW 8.1
- Tracks employee location in real time; identifies feedyard position
- Automates dispatch, reporting
- Seeking IP protection; licensing arrangement pending
Sprinkler Performance Audit

- Uniformity
- Application Rate
- Effective Depth
Impacts - Knowledge

- We have trained representatives of 12 feedyards (~660,000 hd), power and ethanol companies on manure-harvesting principles integrating AQ control and manure quality for fertilizer and biofuel

- Average knowledge increase through training program was 30%
Two feedyard holding companies feeding nearly $10^6$ head will adopt our visibility-based monitoring methods.

Negotiating to license our PDA-based DAQ/database modules.