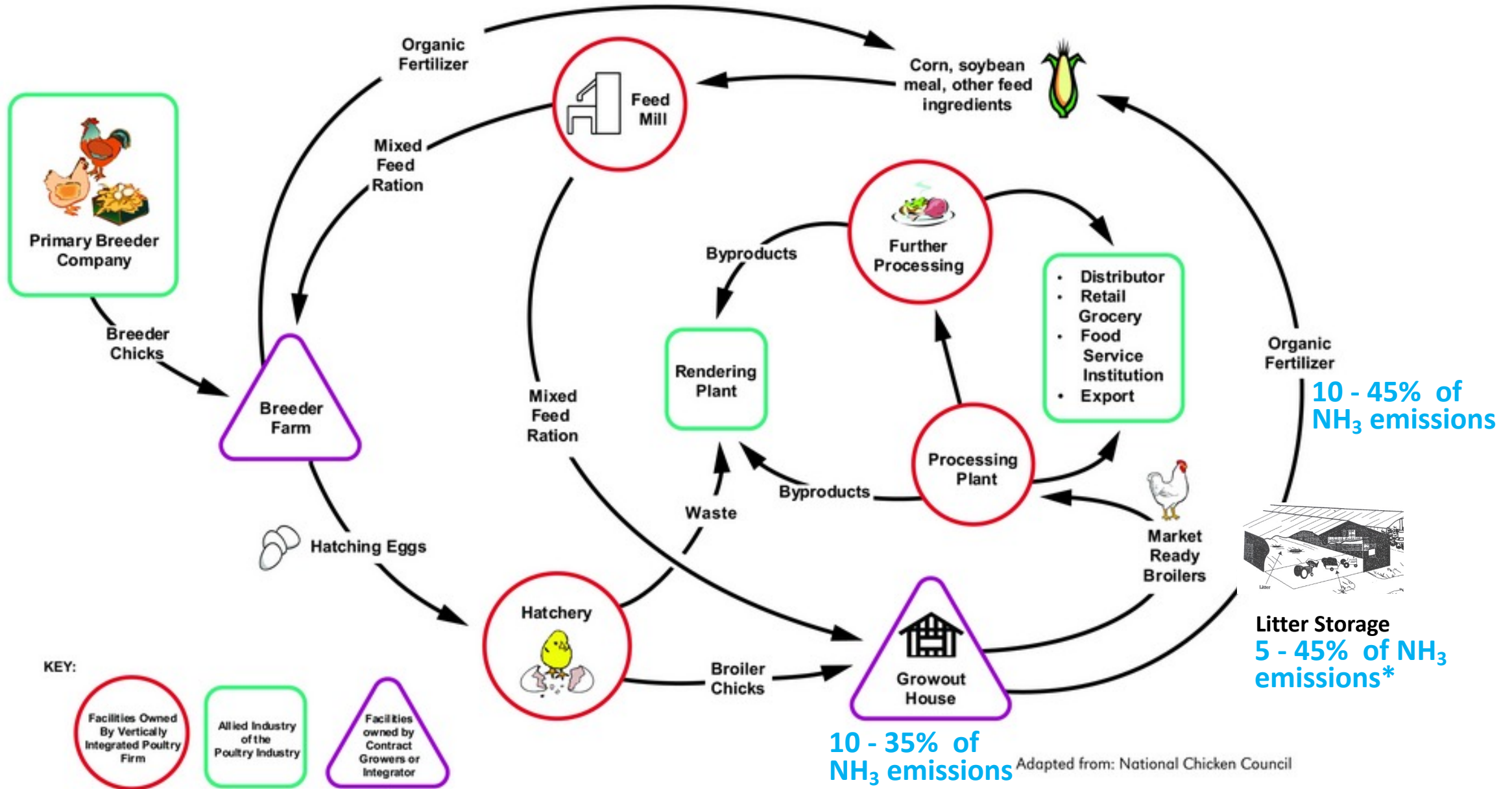


Improving Modeling and Mitigation Strategies for Poultry Ammonia across the Chesapeake Bay Watershed

<i>Waste amendments</i>
PLT
Al+Clear
Citric acid
<i>Feed amendments</i>
<i>In-house treatment</i>
<i>Exhaust treatment</i>
Vegetated Buffers
Biofilters
<i>Storage-treatment</i>
Composting
Shed storage
Amendments
<i>Innovative land application</i>

- What practices work, don't work, or perhaps could work with more development or guidance?

- What are obstacles, concerns, and also opportunities related to adoption of proposed mitigation strategies?



- Becker and Graves 2004. Ammonia emissions and animal agriculture. CSRESS Mid-Atlantic Regional Water Quality Project
- <https://ag.umass.edu/crops-dairy-livestock-equine/fact-sheets/conserving-ammonia-in-manure>



Review

Ammonia emissions in poultry houses and microbial nitrification as a promising reduction strategy



Ayman A. Swelum ^{a,b}, Mohamed T. El-Saadony ^c, Mohamed E. Abd El-Hack ^d, Mahmoud M. Abo Ghanima ^e, Mustafa Shukry ^f, Rashed A. Alhotan ^g, Elsayed O.S. Hussein ^g, Gamaleldin M. Suliman ^g, Hani Ba-Awadh ^g, Aiman A. Ammari ^g, Ayman E. Taha ^h, Khaled A. El-Tarabily ^{h,i,*}

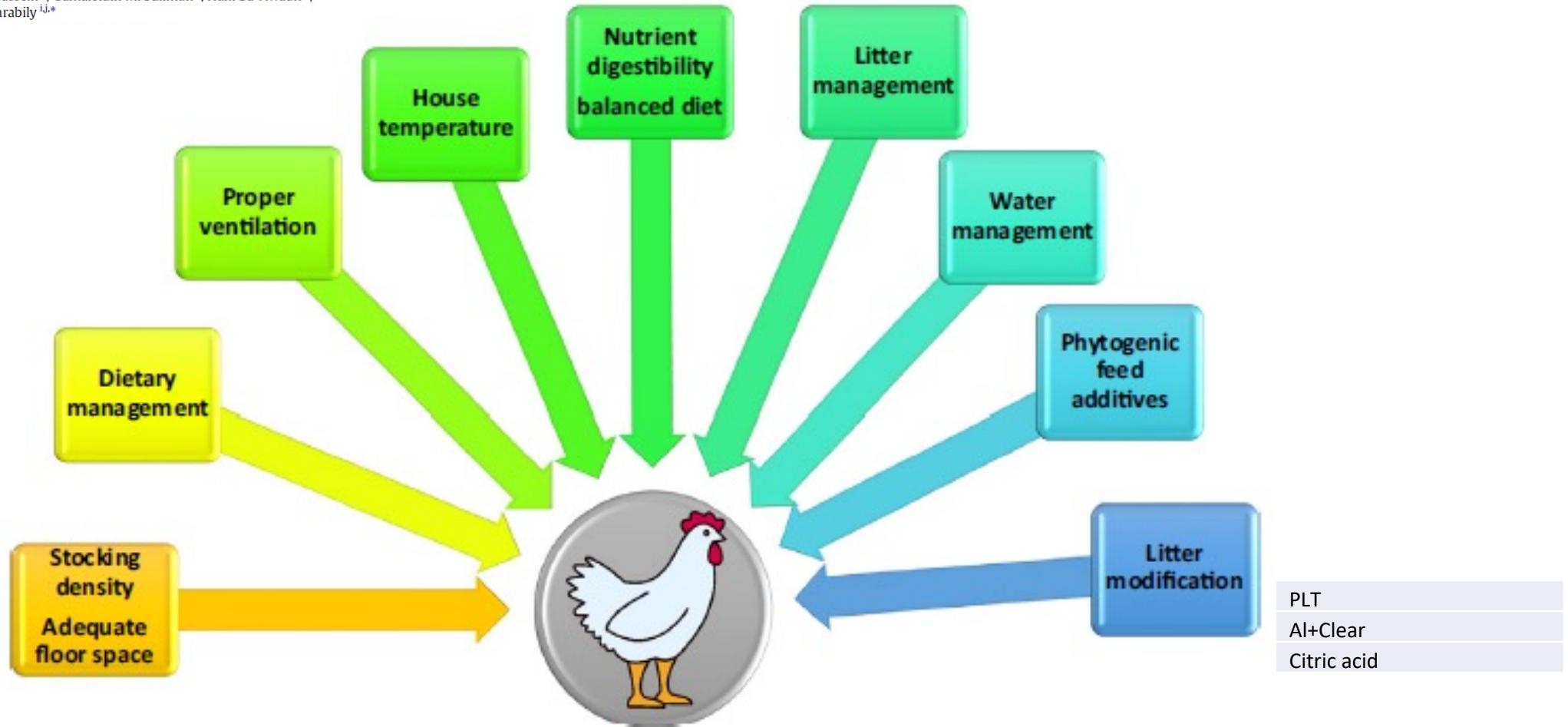
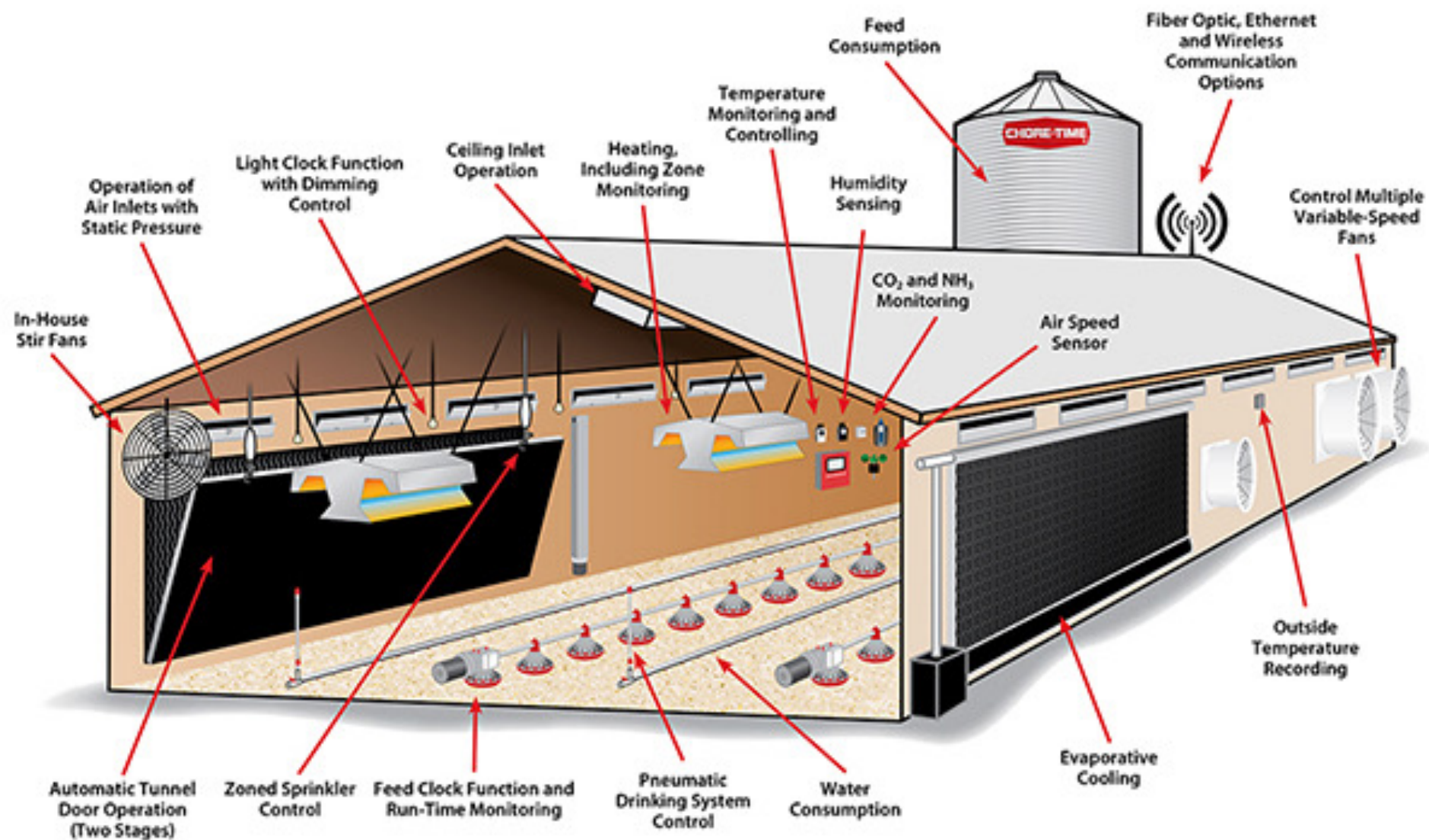
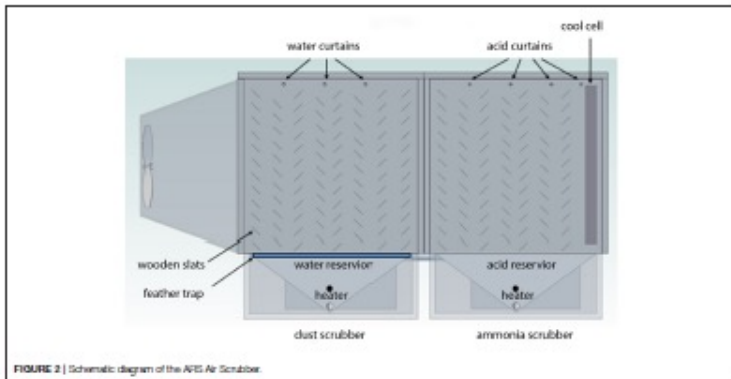


Fig. 3. Management tips of ammonia in poultry houses.



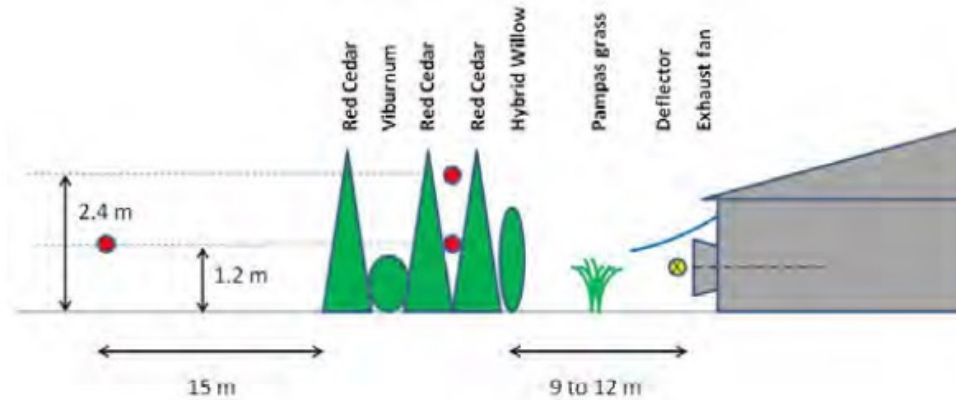


Development and Testing of the ARS Air Scrubber: A Device for Reducing Ammonia Emissions from Animal Rearing Facilities



VEGETATIVE ENVIRONMENTAL BUFFERS AND EXHAUST FAN DEFLECTORS FOR REDUCING DOWNWIND ODOR AND VOCs FROM TUNNEL-VENTILATED SWINE BARNs

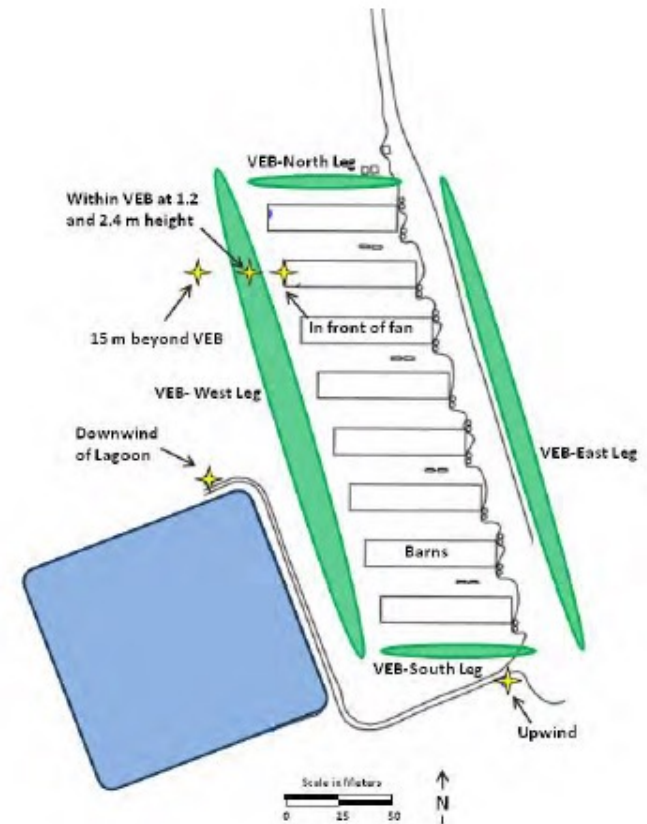
D. B. Parker, G. W. Malone, W. D. Walter



Legend:
 VOC Sampling Only
 VOC and Odor Sampling Location

Vegetative Buffers:

- Species
- Buffer Width/Density
- Distance, height
- Distribution, spatial patterning



Fan Operations:

- Flow rate
- Slat angle
- Scrubber design/operation

Vegetated Buffers
Biofilters

Review

The multidimensional causal factors of 'wet litter' in chicken-meat production



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^b University of New South Wales, School of Civil and Environmental Engineering, Sydney, NSW 2052, Australia
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^d Feedworks, Ramsey, VIC 3434, Australia
^e Poultry CRC, PO Box U242, University of New England, Armidale, NSW 2351, Australia

HIGHLIGHTS

- Wet litter in poultry sheds is a complex issue, with many interrelated causes.
- Micro-environment and housing factors contribute most acutely to wet litter.
- Disease and diet/nutrition contribute to wet litter but are less obvious.
- Research and extension are both required to reduce occurrence of wet litter.

GRAPHICAL ABSTRACT

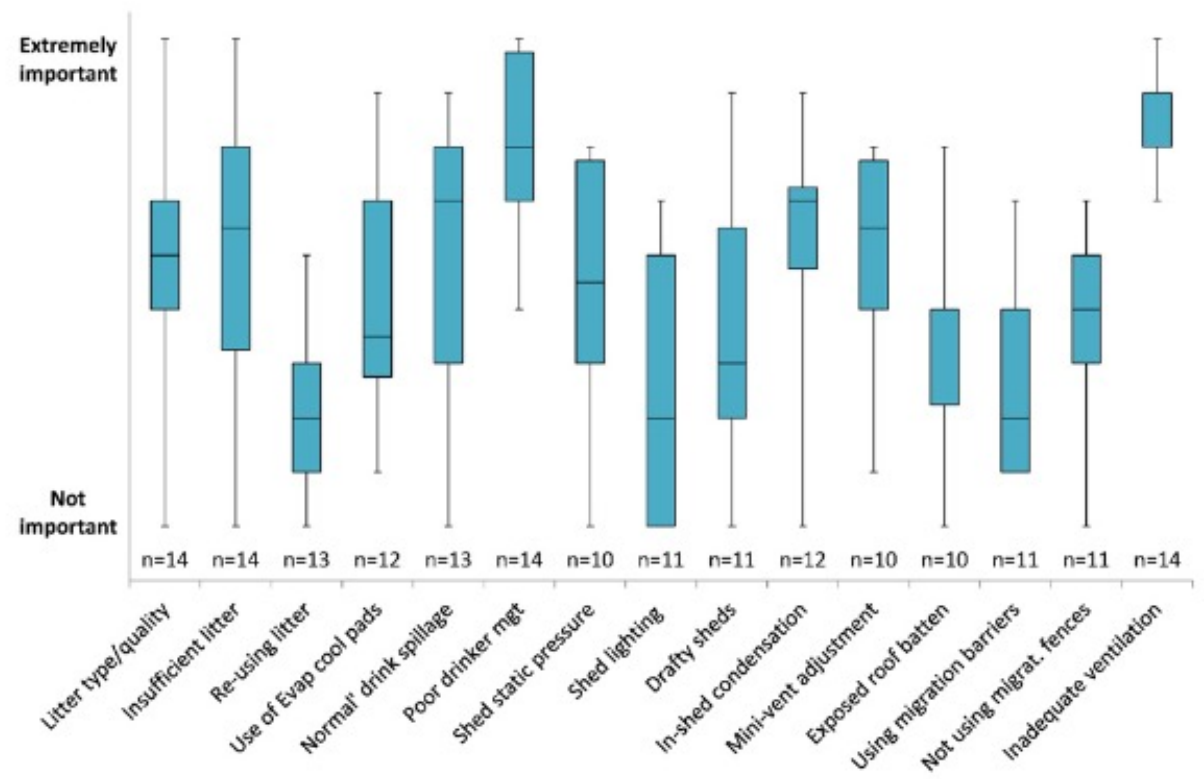
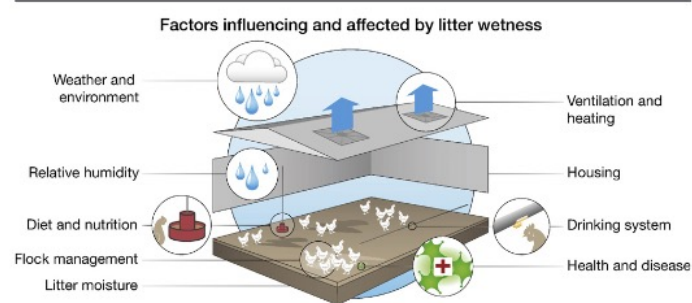


Fig 1. Relative importance of environmental or housing factors contributing to the problem of wet litter as ranked by the industry survey respondents.

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- What practices work, don't work, or perhaps could work with more development or guidance?
- What are obstacles, concerns, and also opportunities related to adoption of proposed mitigation strategies?
 - Variability in house management operations within and among poultry operations.
- How could the CBP partnership help address the obstacles? New Policies? Resources? Other support?