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Overview of Dietary Manipulation

Air Management Practices Assessment Tool (AMPAT)

Project Team:

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Application

- Used to reduce emissions from buildings and manure storage

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Basic Operation

- Feed nutrients greatly impacts manure nutrient content
- Reduction in manure nutrient content reduces the potential for emissions
- Nutrient input reduction
- Nutrient form modification

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Basic Operation

- An improvement of feed efficiency of 0.1 generally decrease nutrient excretion by 3.3 percent
 - The more efficient.... The lower the emission potential

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Phase/Split Sex Feeding

- Avoid providing excess nutrients
- Phase feeding throughout life cycle
 - Ammonia 45% reduction
 - Odors 55% reduction



Courtesy of NPB

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Lowering Crude Protein

- Reduce crude protein 3.5 to 4.5%
- Supply amino acids using supplements
 - Ammonia 40-60% reduction
 - Hydrogen Sulfide 30-40% reduction
 - Odors 30-40% reduction

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Adding Fermentable Carbs

- Soybean hulls, wheat bran or midds or sugar beet pulp
- Changes how nitrogen is excreted (more in feces rather than urine)
- 10% SB hulls and 3.4% fat
 - Ammonia 20% reduction
 - Hydrogen sulfide 32% reduction
 - Odor 11% reduction

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Feed Manufacturing

- Particle size – 650 to 750 microns
 - Reduced nitrogen excreted 20 to 24%
- Pelleting or Fat
 - Reduces dust
- Liquid feeding
 - Reduced odors 23 to 31%



Courtesy of NPB

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Other

- Feed wastage
 - Adds nutrients directly to manure
 - Increase bacterial activity
- Water
 - High sulfur can impact H₂S emission

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Dietary Manipulation - Pros

- Easily implemented when done in consultation with a nutritionist
- Many options impact multiple emitants
- Changes may cost very little

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Dietary Manipulation - Cons

- Additive and feedstuff availability and costs my fluctuate
- Nutritional needs change as the pig grows and may lead to more complex feed choices.

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Effectiveness

Component	Reduction	Notes
NH3	30-50%	
H2S	30-50%	
Odor	20-50%	
Particulate Matter	50 to 80%	
Volatile Organic Compounds (VOC)	-----	
Cost	\$	

Varies greatly with option selected.

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For Further Information:

- National Pork Board



- If you are an educator and wish to have copies of powerpoint files, contact Jay Harmon (jharmon@iastate.edu).

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