

Dietary & Management Strategies for Nutrient Reduction in Poultry

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Text version taken from Power Point presentation given at the Dairy and Animal Science Inservice Training in October, 2001. The CD can be ordered from the following site:
http://www.das.psu.edu/index.cfm?pagedefs=Nutrient/DairyInservice2001/_incPgDefsV6.cfm

Introduction

- Reasons for nutrient mgt./water quality:
 - Personal reasons
 - Company
 - Government regulations
- Options for litter/manure:
 - Feed, Fuel, Fertilizer
- Outline:
 - Dietary & management strategies for N
 - Dietary & management strategies for P

Layer Example

- 100,000 hens @ 3.28 lb ave. = 328,000 lb
 - 2.8 lb pullet, 3.7 lb layer,
 - 79 lb feed & 28 lb manure/hen/yr
- 1,000 lb/animal units = 328 AEU
- @ 2 AEU/acre, need a minimum 164 acres

Hen House Example

		lb/acre	Beyond
<u>Manure:</u> 2,776,860 lb (1388t)		<u>(8.5t/acre)</u>	<u>corn req</u>
Tot-N	53,650 lb	328	2.5X
P ₂ O ₅	79,120 lb	483	8.5X
K ₂ O	44,630 lb	272	6.5X

Dietary Strategies for N

- Formulate on amino acids (AA) not CP
- Optimize dietary AA with requirement
- Phase-feed for current weight/production
- Use ingredients “True AA Digestibility”
- Select ingredients with low nutr variability
- Utilize feed additives/enzymes
- Avoid/control anti-nutritional factors

Management Strategies for N

- Utilize manure/litter amendments for N and NH₃ control
- Reduce bird stress and maintain health
- Recycle fecal N via poultry/livestock feeding systems
- Export manure when total N exceeds capacity

Dietary Strategies for P

- Meet but do not exceed the P requirement
- Select ingredients with readily available P
 - a. Plant (phytic acid) vs Animal sources
 - b. Mineral sources
 - c. Impact of dietary calcium

Highly available P (HAP) cereals

- HAP corn vs conventional corn
- Cereals with natural phytase
- SBM with transgenic phytase

Dietary Strategies for P

- Meet but do not exceed the P requirement
- Select ingredients with readily available P
- Utilize effective Vitamin D levels and compounds
- Utilize additives/enzymes to enhance utilization

Management Strategies for P

- Minimize bird stress
- Utilize litter amendments to stabilize soluble P
- Sex-separate rearing
- Recycle fecal P to poultry/livestock feeding systems

Recycle Fecal P

- Lagoon minerals
Roland et al 1990
- Anaerobic digester
minerals
Patterson et al 1990)
- Incinerator ash
- Silage from manure/litter

Management Strategies for P

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Summary

- Numerous dietary & management strategies to reduce Nitrogen excretions
- Numerous dietary & management strategies to reduce Phosphorus excretions
- Legislative caution:
 1. Let the science proceed the regulations
 2. Don't let regulatory language restrict innovation and new technologies

PEACCE

Pennsylvania
Environmental
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Steps to PEACCE

- PA Environmental Awareness Course
- On-Farm Assessment and Environmental Review (OFAER)
- Conservation District Checklist
- Continuing Ed – Livestock and Poultry Environmental Stewardship Curriculum (LPES)

**Livestock & Poultry
Environmental Stewardship Curriculum**

Co-Leaders:

Rick Koelsch & Frank Humenik

Objectives

- Deliver a national core curriculum
- Encourage environmentally sustainable animal systems
- Target livestock & poultry producer
- Support certification and education programs