

Litter Management

- US / Sino Comparison -

Casey W. Ritz, Ph.D.
Department of Poultry Science
The University of Georgia

In-house Litter Management

- China -

- Concrete floors
- New bedding after each flock
 - Rice hulls

Hubei Academy of Agricultural Sciences

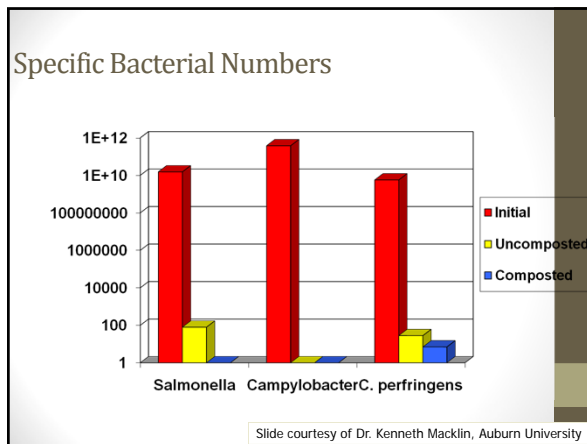
- 9 Institutes
 - Institute of Fertilizer and Environmental Protection
 - Institute of Animal Science and Veterinary Medicine



China Poultry

- 1st in world in layer production
- 3rd in the world for total annual poultry production
- 70% live market sales for broilers





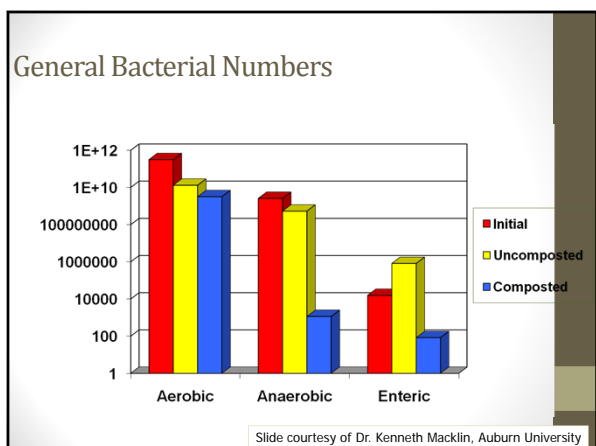
In-house Litter Management - United States -

- Important issues
 - Moisture control
 - Ammonia control
- Litter reuse brings added challenges
 - Windrowing update

Windrowing Economics

- Virginia DEQ study (Flory et al., 2008)
 - 2 house farm with history of necrotic enteritis

Parameter	Control (decahed)	Windrowed	Difference
Ave. weight	4.26	4.43	+ 0.17
Total weight	145,945	154,498	+ 8,553
Feed conversion	1.84	1.77	- 0.07
Liveability	92.56%	95.00%	+ 2.44%
% Condemned	0.21	0.14	- 0.07%
Grower pay			+ \$1,998



Windrowing Economics

- Grower perspective
 - Farms with disease challenge or poor performance can potentially see very positive results
 - May be difficult for high performing farms to see benefits
 - "More work and expense for little or no return"

Windrowing Economics

Positive

- Reduced pathogens
- Reduced disease challenge
- Reduced hardpan
- Reduced carcass contamination?
- Bird performance?
- Paw quality?
- Better beetle control?
- Environmental benefits?

Negative

- Equipment cost
- Labor/contractor
- More ventilation/fuel costs due to potential for higher ammonia
- Increase need for litter amendments to control ammonia

General Recommendations

- Minimum of 12-14 day layout time required
 - Allow for proper venting of ammonia and moisture after leveling (minimum 3-4 days).
- Shorter windrowing times not recommended
 - Not enough time for turning
 - No turning may require decaking before or after composting (depending on equipment)
- Turning of windrows
 - Leave litter in windrows a minimum of 3 days before turning
 - Helps release ammonia and moisture trapped in windrow
 - Turn at least once (more is better)

Opportunity to treat darkling beetles



Outside Litter Management - China -

- Lots of government funds to implement recycling projects

General Recommendations

- **Moisture is critical**
 - 25% is minimum
 - 35% has been recommended as optimum
 - Can leave cake in with average or dry litter conditions
 - Consider removing cake in cool pad area
 - Consider removing some cake if cake mass (width and depth) is excessive
- Windrow litter as soon as possible after birds are caught.
- Windrow height should be 2-3 ft.



09.21.2011 23:44





Soil and Manure Testing

- Need to know the fertility status of soil to optimize crop and forage production
- Need to know the fertilizer value of manure to amend soil to optimum production levels



You can't manage what you haven't measured!

Outside Litter Management - United States -

- Focal point for water quality efforts
- Key provisions
 - Nutrient generation
 - Nutrient utilization
 - Nutrient storage
 - Nutrient transference

Appropriate Manure Storage

- Covered stockpiles
- Permanent storage structures



Assess nutrients generated on farm

Total manure (lb)	60	140	82
Total nitrogen (lb)	0.34	2.40	0.41
Total phosphate (lb)	0.11	0.54	0.033
Total potash (lb)	0.24	0.79	0.27



Fertilizer produced daily by livestock

Broilers	2.25 lbs
Broiler Breeders	40 lbs
Layers	30 lbs
Pullets	20 lbs

Calibration of Manure Spreading Equipment



Approved Disposal of Dead Birds

- Burial Pit
- Composting
- Incineration
- Rendering
- Fermentation



NMP 2011

- Becoming more deregulated for dry manure operations
 - Onus on farmers and companies to keep up their efforts on NMP

Runoff and Drainage Management

- Prevention of soil erosion
- Surface and groundwater protection



NMP Training Efforts in 2011 & 2012

- Focus on grower awareness of NMP and implementation
- Service tech training of NMP basics

Record Keeping

- Annual litter production
- Soil & litter analysis
- Field application record
- Litter transfer record

