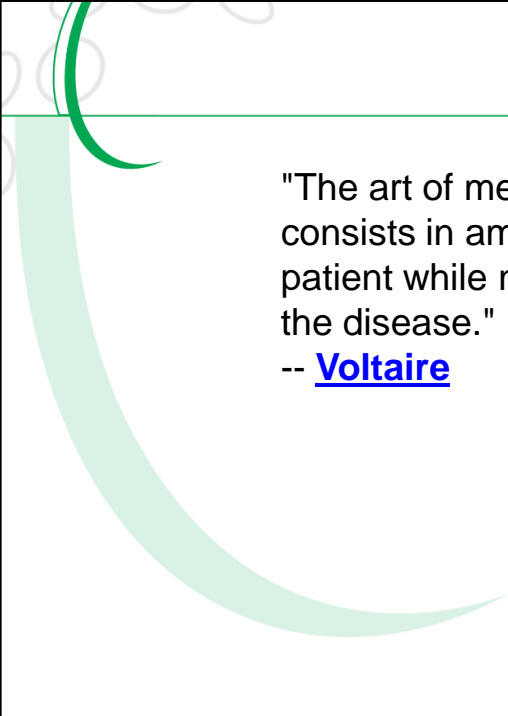


What do you call a veterinarian  
who agrees to talk at dinner to a  
group of feed mill managers about  
nutritional products???



**AN IDIOT**





"The art of medicine  
consists in amusing the  
patient while nature cures  
the disease."

-- Voltaire



## Feed Additives for the Mill Manager

OR  
Understanding why I never have enough microbin  
space



## Topics

- Amino Acids
- Coccidiostats
- Antibiotics
- Enzymes
  - Phytase
  - NSP's
- Prebiotics
- Probiotics (DFM's)
- Essential Oils
- Organic Minerals

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## Amino Acids

- Building block of protein
- In corn-soy diets limiting amino acids are methionine, threonine, lysine, valine, arginine, and tryptophan
- Use of synthetic aa's depends on cost effectiveness
- Limiting protein saves cost and nitrogen
- Examples – Alimet, Rhodimet

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# Soybean Meal Prices

ZMH13 - Soybean Meal (CBOT)



Source: www.nasdaq.com



**Table 12.** The estimated reduction in N excretion and the estimated cost of diets with varying protein levels but balanced for amino acids using synthetic amino acids

|                                   | Corn-SBM-<br>pmx. | +Lysine      | +Lysine<br>+threonine<br>+tryptophan |
|-----------------------------------|-------------------|--------------|--------------------------------------|
| <b>Ingredient composition (%)</b> |                   |              |                                      |
| Corn                              | 75.85             | 79.38        | 83.28                                |
| Soybean meal                      | 21.15             | 17.50        | 13.40                                |
| Premix                            | 3.00              | 3.00         | 3.00                                 |
| Lysine · HCl                      | -                 | 0.12         | 0.25                                 |
| Threonine                         | -                 | -            | 0.06                                 |
| Tryptophan                        | -                 | -            | 0.02                                 |
| <b>Calculated content (%)</b>     |                   |              |                                      |
| Total crude protein               | 16.5              | 15.2         | 13.7                                 |
| Digestible lysine                 | 0.70              | 0.70         | 0.70                                 |
| Digestible threonine              | 0.46              | 0.42         | 0.42                                 |
| Digestible tryptophan             | 0.14              | 0.12         | 0.12                                 |
| Digestible methionine             | 0.24              | 0.22         | 0.21                                 |
| Digestible Met+Cys                | 0.47              | 0.44         | 0.41                                 |
| <b>Ingredient cost (\$/ton)</b>   | <b>220.6</b>      | <b>218.7</b> | <b>239.1</b>                         |
| Reduction in N excretion (%)*     |                   | -11          | -24                                  |

de Lange (1997)

\* % reduction as compared to feeding the corn-SBM-premix diet without any added synthetic amino acids.



## Coccidiostats

- The global cost of the prevention of coccidia in chicken is estimated at USD 300 million a year (Diseases of Poultry 11 ed, 2003, Y .M. Saif).
- Ultimate control is immunologic, we are just trying to lessen clinical effects
- Divided into ionophores or chemicals
- Beware of Nicarbazine in breeders, Salinomycin in turkeys, and Lasalocid in horses.
- Names you will see are Avatec, Coban, Monteban, Robenz, Clinacox, Deccox, Amprol, and Maxiban
- Products should change 3 or 4 times a year

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## Antibiotics

- All the evils of the world now appear to be due to their use
- Most are not absorbed from the GI tract
- Act to stabilize the bugs in the gut
- Bacitracin, Stafac, Flavomycin, Lincocin, Tetracycline, Penicillin
- GFI 209 will be a game changer

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## Enzymes

- A protein which helps to speed up chemical reactions in the body(digestion)
- Phytase – releases phosphorus
- Xylanase – releases sugars
- Make nutrients more available to the animal
- Rovabio, Hostazym, Rhonozyme

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## Enzymes

- Improve the nutritional value of ingredients, especially cereal grains (wheat, rye, barley)
- Reduce mucus (intestinal viscosity) in intestine
- Reduce fermentable substrates available to lower intestine
- Increase volatile fatty acid profile in ceca that favors beneficial bacteria

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## Prebiotics

- Indigestible carbohydrates that enable beneficial bacteria to thrive
  - A **non-living**, nondigestible food ingredient
  - Beneficially affects the host by selectively stimulating growth and/or activity of a limited number of bacteria in the gut
  - Potentially improves immune responses
- Examples
  - Mannan-oligosaccharide (MOS)
  - Fructo-oligosaccharide (FOS)
  - Lactulose
  - Galatcoligosaccharide (GOS)
  - Various yeast cell wall extracts

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## Direct Fed Microbials

- Divided into two major classes
- *Bacillus* spp.
  - *B. subtilis*, *B. licheniformis*
- Acid formers
  - *Lactobacillus*, *Enterococcus*, *Peptococcus*, *Bifidobacterium*
- Need to administered early in life
- Repeat administration whenever steady state is disrupted

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## Bacillus spp.

- Science is in its infancy
- Administered as spores
- Does not colonize – administer continuously
- Source of VFA's, antimicrobials, bacteriocins, enzymes, CE, mucin stimulants
- If it ain't broke can't fix it

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## "Natural Products"

- Issue is not under FDA control for either efficacy or potency
  - Generally recognized as safe (GRAS)
- GRAS  $\neq$  GRAE(effective)
- Don't do Internet Science

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## Essential Oils

- **Botanical extracts**
  - Extracts of plants that shift the microflora balance toward beneficial bacteria
  - Examples
    - Garlic
    - Rosemary
    - Oregano
    - Aniseed
    - Cassia (cinnamon)
    - Ginger
    - Horseradish
    - Juniper
    - Thyme
    - Yarrow Herb
    - Cayenne Pepper

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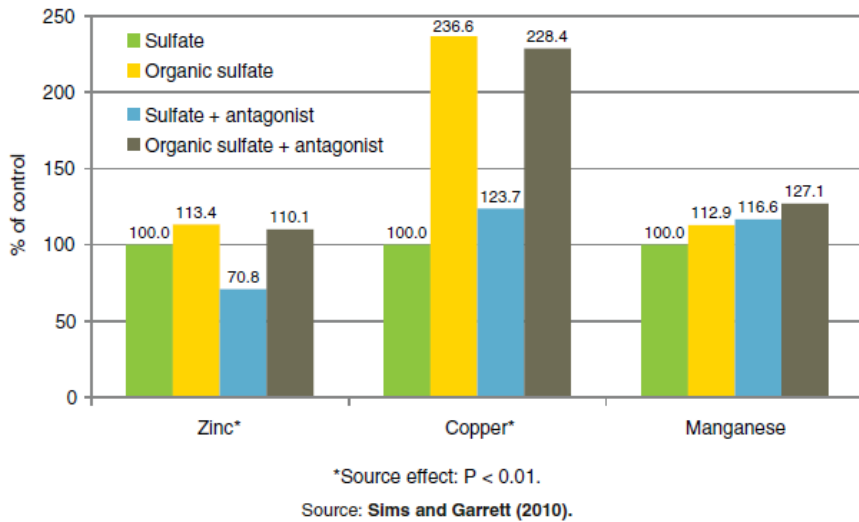
## Organic Minerals

- Trace minerals have to be bioavailable
  - To improve either use increased levels or use organic minerals
- Availa Zinc, Optimins, Mintrex

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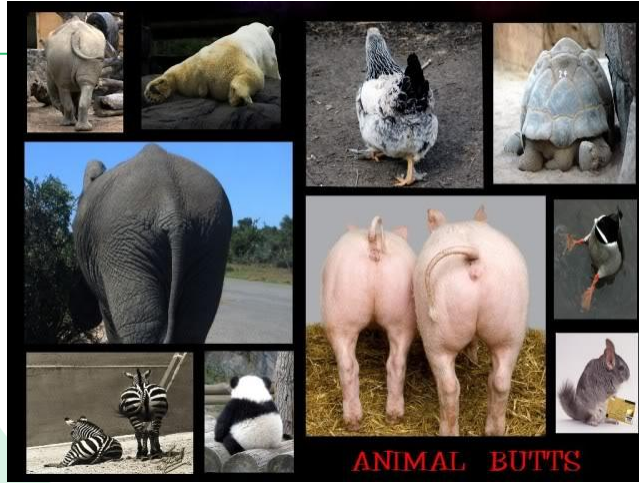


## 2. Effect of source and antagonist on mineral bioavailability in broilers



## Summary

- Microbin space is going to continue to be at a premium
- Start/continue to ask for combo products



**THE END**

<http://i600.photobucket.com/albums/tt81/ambubabe/ANIMALBUTTSWALLPAPER.jpg>

