

## Effect of Dietary Zinc Source on Performance of Broiler Breeder Hens and their Progeny

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**Objective:** to determine the effects of dietary zinc source on reproductive performance and immune status of broiler breeder hens

**Design:** 600 pullets & 100 cockerels reared in floor pens, moved to cages 20wk

- 3 experimental diets, fed to day old pullet
  - Zinc sulfate (ZnSO<sub>4</sub>),
  - Availa<sup>®</sup>Zn (ZnAA) or
  - ZnAA + ZnSO<sub>4</sub> (80 ppm Zn from each)

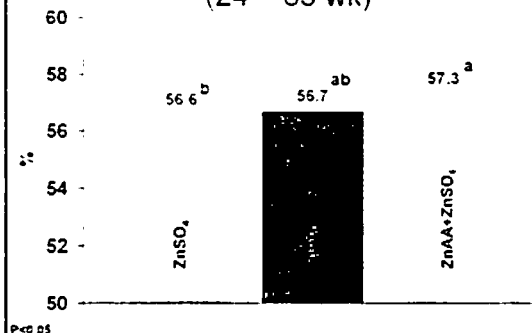
- 192 hens/treatment in lay



### Other measurements

- Hens artificially inseminated (50 µL dose)
- Eggs set weekly (25-35 wk), biweekly (37-45 wk) & every fourth wk (49-65 wk)
- Candle and residue analysis
- Egg shell quality – specific gravity and egg shell breaking strength
- Cellular immunity tested at 26, 44 and 62 weeks
- Humoral response tested by HI titers for NDV, serum collected every 6 wk (20-62 wk), birds given a standard vaccination schedule

### Hen-Day Egg Production (24 – 65 wk)

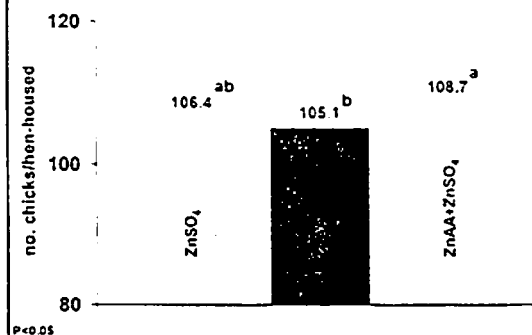


### Eggshell Quality (LOF)

Source of Variation	Specific Gravity	Cracked Eggs, %	Hatching Eggs, %
ZnSO <sub>4</sub>	1.0791 <sup>b</sup>	8.0 <sup>a</sup>	90.3 <sup>c</sup>
ZnAA	1.0797 <sup>a</sup>	7.3 <sup>b</sup>	91.3 <sup>b</sup>
ZnSO <sub>4</sub> + ZnAA	1.0802 <sup>a</sup>	6.6 <sup>c</sup>	92.1 <sup>a</sup>
SEM	0.0002	0.20	0.22

P < 0.05

### Cumulative Chick Production



## Summary

- Providing a mixture of ZnAA and ZnSO<sub>4</sub> enhanced eggshell quality and hen-day egg production.
- Greater ZnAA intake enhanced humoral and cellular immune responses.