



Performance of Laying Hens Fed Availa® ZMC and/or Availa® Fe as Partial Replacements of Inorganic Trace Minerals

Study Objective

Evaluate the effect of supplemental Availa® ZMC and/or Availa® Fe on productive performance and eggshell quality of laying hens as compared to inorganic trace minerals (ITM).

Study Duration

20 weeks

Animals

800 Lohmann Brown Lite laying hens, 30 wk old

Experimental Procedures

- Completely randomized design with 2 x 4 factorial arrangement (2 initial and 4 layer treatments), with 10 replicates and 10 hens/replicate, from 30 to 50 wk.
- Initial Phase treatments were fed to pullets from 0 to 30 wk:

| Treatment, ppm | Inorganic Sources | | | Availa ZMC | | |
|----------------|-------------------|-----|-------------------|------------|----|------|
| | ZnO | MnO | CuSO ₄ | Zn | Mn | Cu |
| ITM | 70 | 70 | 8 | - | - | - |
| Availa ZMC Iso | 40 | 40 | 2.75 | 30 | 30 | 5.25 |

Location

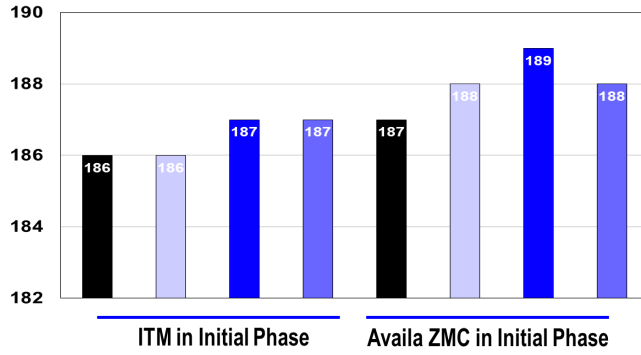
Federal University of Pernambuco State, Recife, PE, Brazil

Treatments from 30 to 50 weeks

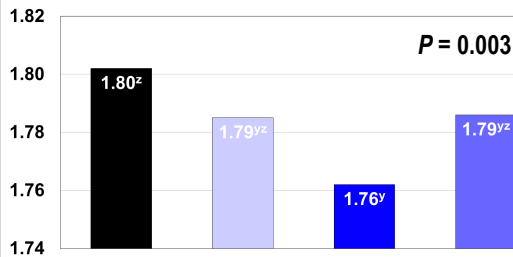
| | Zinc | | Manganese | | Copper | | Iron | |
|--------------|------|------------|-----------|------------|-------------------|------------|-------------------|------------|
| | ZnO | Availa® Zn | MnO | Availa® Mn | CuSO ₄ | Availa® Cu | FeSO ₄ | Availa® Fe |
| ITM | 70 | - | 70 | - | 8 | - | 50 | - |
| Availa® ZMC | 40 | 30 | 40 | 30 | 2.75 | 5.25 | 50 | - |
| Availa ZMCFe | 40 | 30 | 40 | 30 | 2.75 | 5.25 | 10 | 40 |
| Availa Fe | 70 | - | 70 | - | 8 | - | 10 | 40 |

■ ITM ■ Availa ZMC ■ Availa ZMCFe ■ Availa Fe

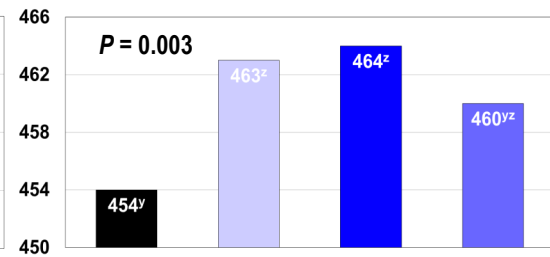
Total Number of Eggs Produced per Hen



FCR for Egg Mass



Eggshell Thickness, µm



ROI Calculation Based on Egg Production

| Initial | Production | Feed Intake (kg/Hen) | Additional Cost of Zinpro (US\$/Hen) | Total Eggs/hen | Egg # Diff./Hen | *Saleable Eggs/Hen |
|------------|--------------|----------------------|--------------------------------------|----------------|-----------------|--------------------|
| ITM | ITM | 29.4 | - | 186.38 | | 167.74 |
| Availa ZMC | Availa ZMCFe | 29.4 | 0.09 | 188.51 | 2.13 | 169.66 |

| Initial | Production | 20% Less Egg Losses with Zinpro | Total Saleable Eggs /hen | Extra Eggs/Hen with Zinpro | **Extra Income (US\$/Hen) | ROI |
|------------|--------------|---------------------------------|--------------------------|----------------------------|---------------------------|-----|
| ITM | ITM | - | 167.74 | | | |
| Availa ZMC | Availa ZMCFe | 3.77 | 173.43 | 5.69 | 0.227 | 2.5 |

*Egg losses for egg shell defects: 10%; **Egg price: US\$ 0.04/unit

Conclusion

The use of Availa ZMC and Availa Fe partially replacing ITM in laying hen diets improved performance and egg quality parameters with a 2.5:1 on ROI.