



Research Brief

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

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 ^a	70	-	70	-	8	-	50	-
Availa-ZMC ^b Iso	40	30	40	30	2.75	5.25	50	-
Availa-ZMC + Availa-Fe ^c Iso	40	30	40	30	2.75	5.25	10	40
Availa-Fe Iso	70	-	70	-	8	-	10	40

^a ITM: Inorganic trace minerals
^b Availa-ZMC: Availa-Zn zinc amino acid complex, Availa-Mn manganese amino acid complex, and Availa-Cu copper amino acid complex
^c Availa-Fe: Fe amino acid complex



Study Objectives

Evaluate the effects of using Availa®ZMC and/or Availa®Fe as partial replacements of inorganic trace minerals on laying hen performance and eggshell quality.



Study Duration

50 weeks



Animals

Lohmann Brown Lite pullets:

- 1200, d 1 to wk 5
- 1120, wk 5 to wk 14
- 800, wk 14 to wk 30

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 Rural University of Pernambuco, PE, Brazil

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.

Figure 1. Average Egg Production from wk 18 to 29, %

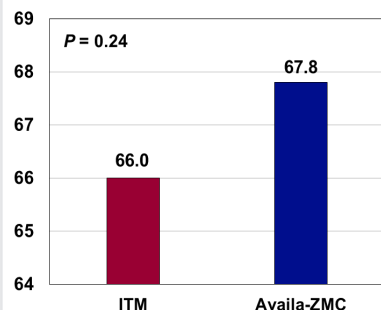


Figure 2. Average Egg Production from wk 30 to 50, %

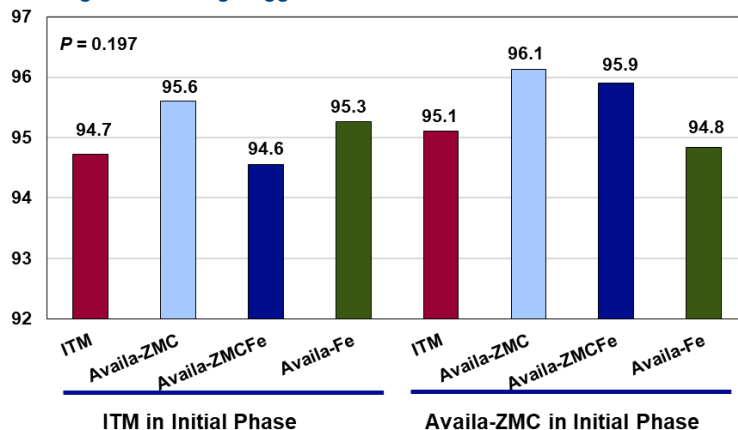


Figure 3. FCR per Egg Mass from wk 30 to 50

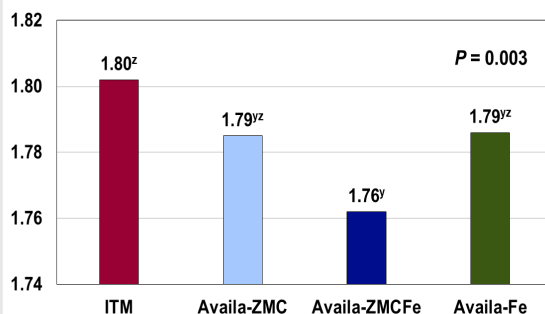
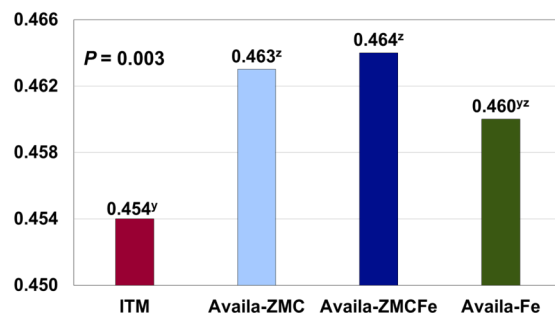


Figure 4. Eggshell Thickness from wk 30 to 50, g



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