Effect of Different Calcium Sources Given Free Choice on Calcium Consumption and Egg Production of Arabic Chickens in the Early Laying Period

Syafwan, Yatno, Budiansyah, K. Simanungkalit, L. A. BR. Sembiring & I. L. BR. Aritonang

Faculty of Animal Sciences, University of Jambi, 36122, **INDONESIA**

Outline

- Background and Objectives
- Materials and Methods
- Results
- Conclusions

Background

- Calcium (Ca): important compositions of eggshells and maintaining bone health (Olgun O, Aygun A. 2016). Affecting egg production, egg weight, feed consumption, bone density and strength and shell quality (Narváez-Solarte et al, 2006 and Ahmed et al, 2013). Eggshell is easy to break lead to economic losses for farmers and producers (Roberts , 2014)
- Egg weight, shell weight, plasma calcium concentration in hens were lower 30°C than at a 18°C. Furthermore, retention of a number of minerals including calcium is lower in chickens reared at high cyclical ambient temperatures (24-35°C) than at 24°C (Mujahid , 2011).
- How much Calcium requirements for Arabic Chicken reared in tropical climate? Can be NRC literature or the HyLine Brown management guidelines used?

High ambient temperature

Rearing system

Nutrient requirement? How to measure?

Choice feeding? an opportunity for chickens to select different foods to meet the nutritional needs of individual nutritional requirements during daily changes caused by the temporal sequence of egg formation (Molnar et al., 2018)

• Objectives

To calculate feed and calcium intake, calcium requirements and egg production for Arabic hen during the early egg laying period.

• Materials and Methods

Birds and Diets

- 135 Arabic female 30-wk-old chicks
- Assigned to control vs. self-selection
- Kept in shelter (semi scavenging system)
- Control diet
- Ca-selection: limestone and oyster
- Feed ad lib to 53 wk of age

Data

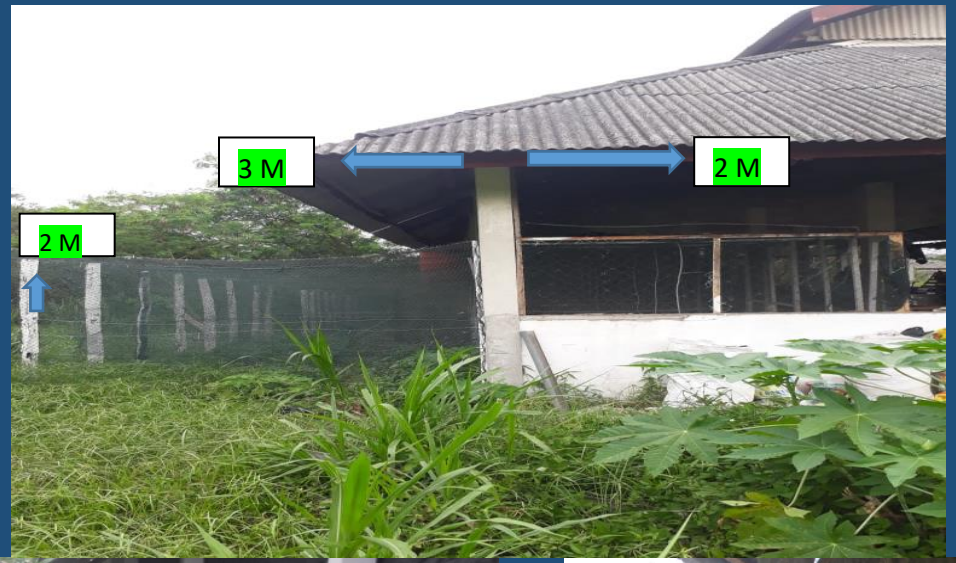
Weekly Recorded:

- Feed consumption
- Ca intake
- Ca concentration
- Egg production

CRD

Anova analysis by SAS

Semi Scavenging System



Picture where chickens were kept in pen, half sheltered & the other half unsheltered for scavenging area

Experimental diets (%)

T1

Ingredients	Control
Corn	45.95
SBM (CP: 43.3%)	29.12
Fish meal (CP: 43.5%)	6.00
NaCl	0.20
Vit-Min Mix	0.30
Dicalcium phosphate	0.62
Ca-Carbonate (Limestone)	7.59
DL-Methionine	0.16
Palm oil	10.06
Total	100.00
Nutrient composition (Calculate)	
DM (%)	79.02
CP (%)[1]	18.91
ME (Kkal/kg)[1]	3048.78
EE (%)	2.92
CF (%)	2.38
Lycine (%)	1.21
Methionine (%)	0.54
Met+Cys (%)	0.85
Ca (%)	4.20
Total P (%)	0.80
AP (%)	0.46
Na (%)	0.19

T2

Limestone (separetely

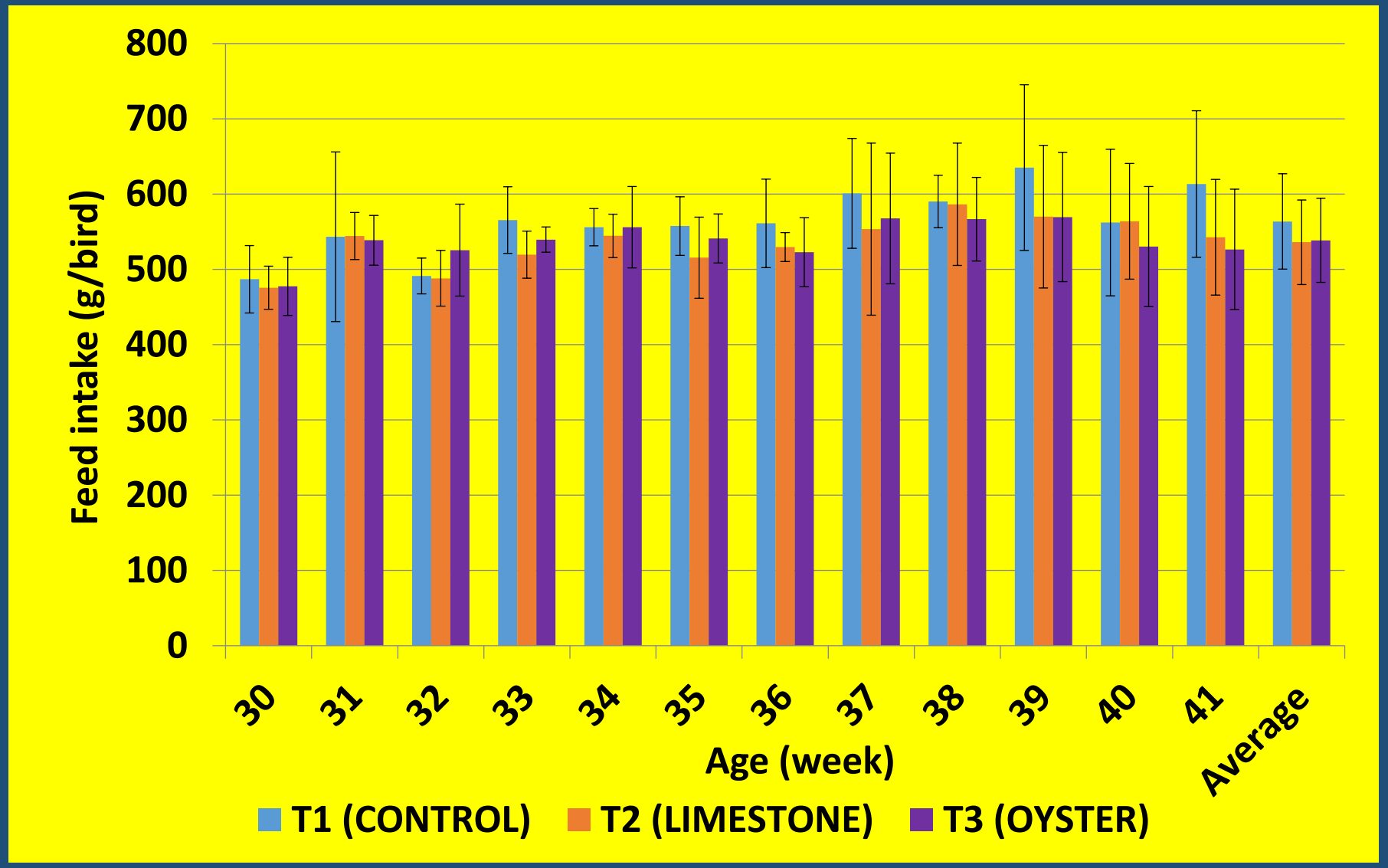
T3

Oyster (separetely

[1]Syafwan dan Noferdiman (2020)

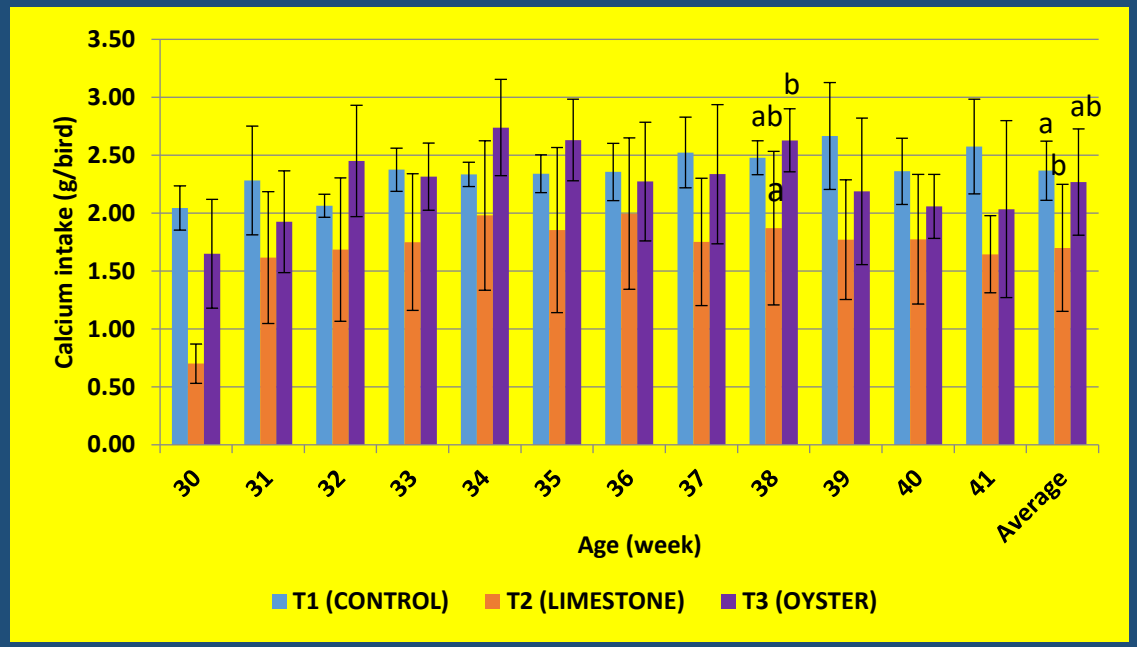
Results

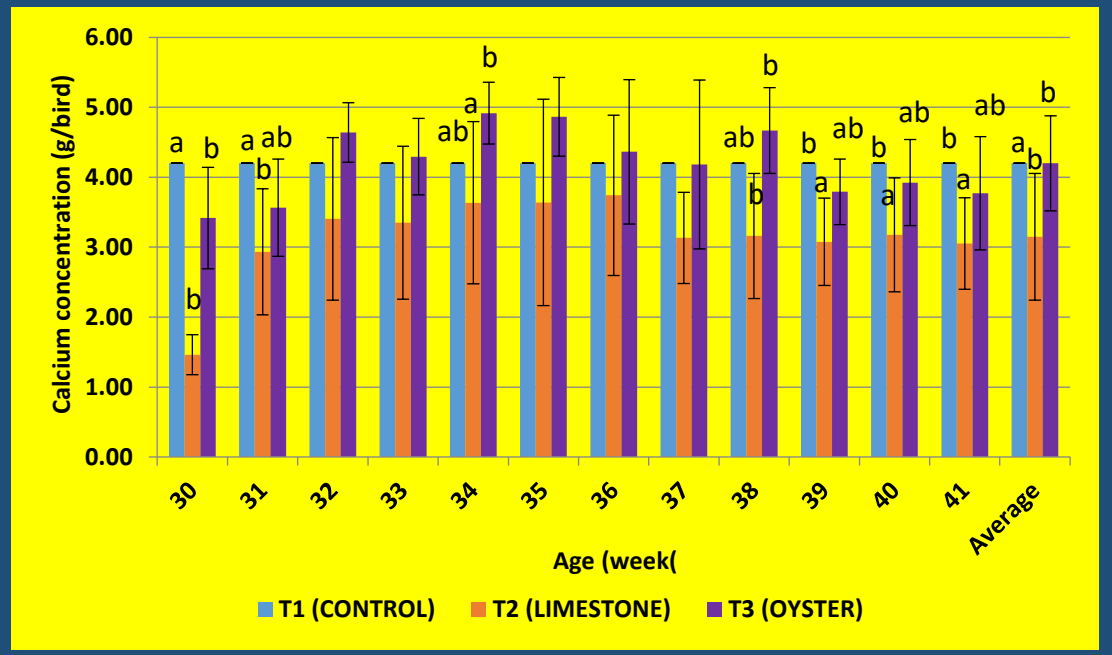
Feed Consumption



Results

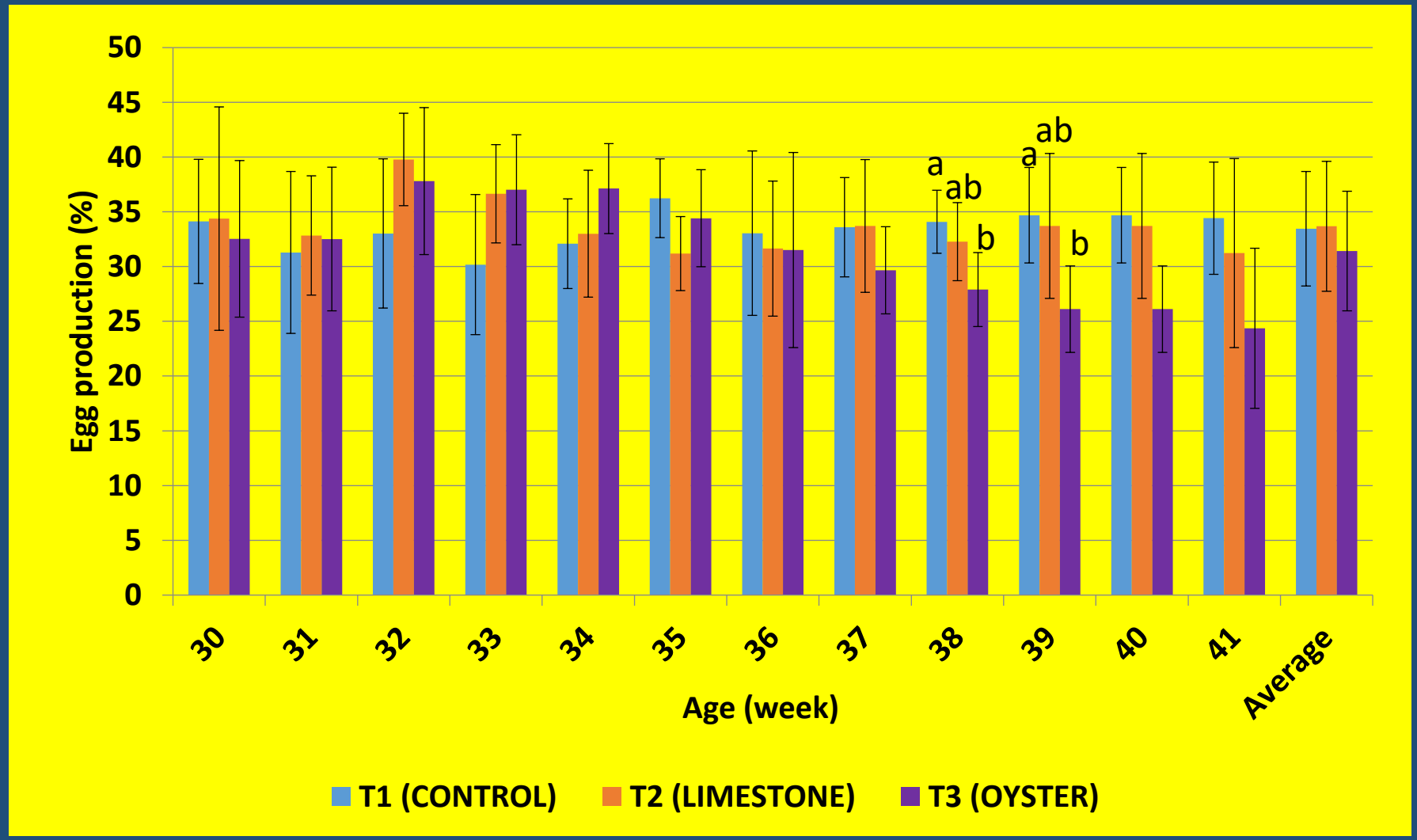
Calcium Intake and Calcium Concentration





Results

Egg Production



Conclusions

Arabic chickens are able to consume calcium according to their needs during the early laying period

Calcium requirements is lower (3.15%) than the current calcium recommendation in the control diet (4.2%), especially when limestone as source of Ca due to produce the same percentage of egg production.

Thank you