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Improving egg production in laying chickens with honey during hot season

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Problem statement

- Heat stress (HS) is a common problem in poultry production, especially during hot season
- HS results in drastic reduction in egg production, size and quality (Grieve, 2003)
- Global warming adds to the problem of HS
- Plant materials such as honey, coconut water, guava juice and pulp, containing antioxidants can help ameliorate the effects of HS (Ramnath *et al.*, 2008; Zhang *et al.*, 2009; Ali *et al.*, 2010)

Problem statement

- Honey contains phytochemicals such as vitamin C, thiamine, riboflavin, pyridoxine, pantothenic acid, nicotinic acid, phenolic compounds, and enzymes glucose oxidase, catalase, and peroxidase
- Honey has been reported to be effective in broiler chickens (Abioja *et al.*, 2012)
- Its efficacy in layer chickens was reported recently (Osakwe and Igwe, 2015)
- Chronic administration may however lead to non-alcoholic fatty liver disease or in other unpleasant conditions harmful to health (Alagwu *et al.,* 2009; Avwioro *et al*. (2012)
- Therefore, the present study aimed at determining the effect of honey in improvement of egg production in laying chickens during hot season and extent to which it is to be used

Methods

Experimental animals and management

ISA Brown layer chickens (n=120; aged 28 weeks)

Treatment: 0ml (CONTROL)
10 ml (10H)
20ml honey (20H) per litre of water

Duration: 16 weeks during hot-dry season phased into 4
1: Week 1-4
2: Week 5-8
3: Week 9-12
4: Week 13-16

Data collection: Egg production (EP)
Egg weight (EW)
Survival rate (SR)

Statistical analysis

One-way analysis of variance (ANOVA)

Key Findings

Table 1: Summary of climatic conditions during the experiment

Variables	08.00h	16.00h	Average
Dry-bulb temperature (°C)	30.4	32.5	**31.5**
Wet-bulb temperature (°C)	27.8	28.8	**28.0**
Relative humidity (%)	82.3	76.7	**79.5**
THI	83.8	86.0	**84.9**

Table 2: Egg hen-day production of laying chickens in different phases

Phase	Egg production (%)
Week 1-4	57.0±0.91^{b}
Week 5-8	61.5±0.97^{a}
Week 9-12	56.5±0.91^{b}
Week 13-16	55.5±1.09^{b}

^{a,b}Means with different superscripts in the same column differ significantly (P<0.05)

Table 3: Survival rate in laying chickens offered varying dosage of honey during hot season

Phase	Honey (ml/L water)			
	0	10	20	sem
1 (week 1-4)	97.5	97.5	92.5	4.79
2 (week 5-8)	87.5	95.0	77.5	6.77
3 (week 9-12	80.0	87.5	67.5	9.35
4 (week 13-16)	75.0	77.5	67.5	10.34

Key Findings

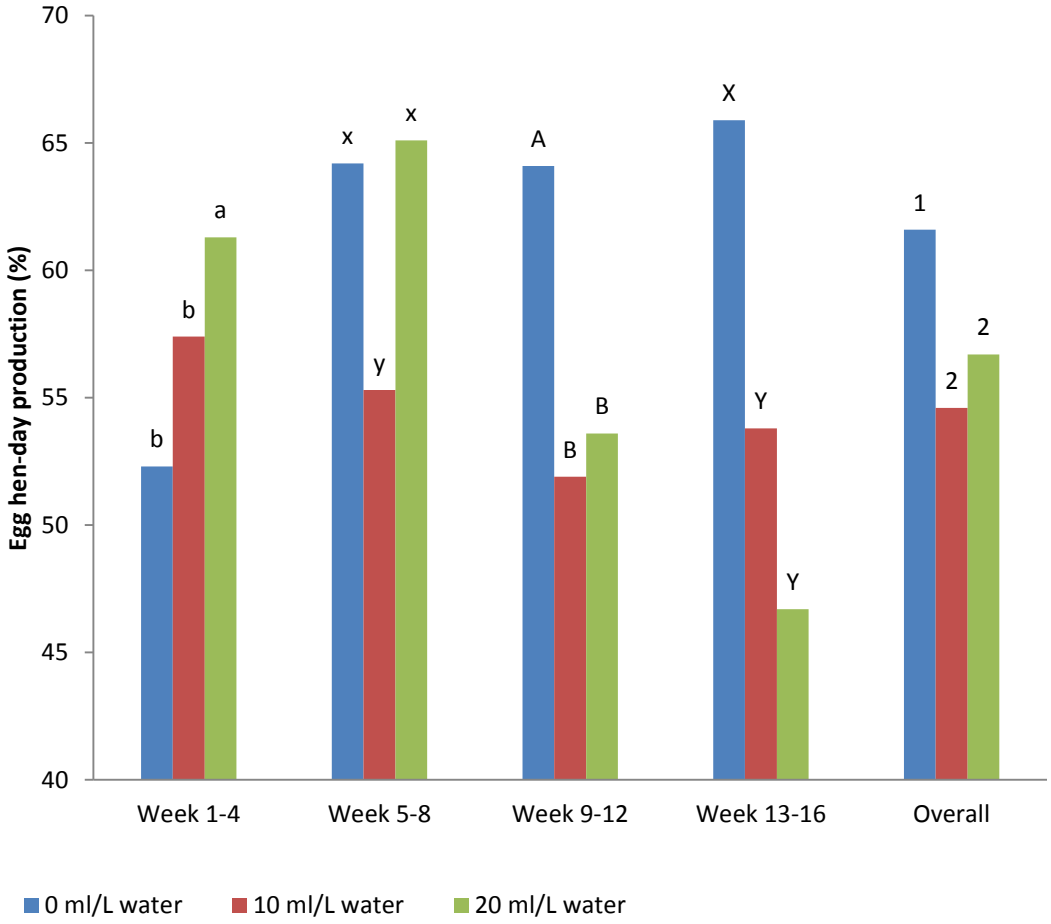

Figure 1: Egg hen-day production in laying chickens offered varying Dosage of honey in drinking water during hot season

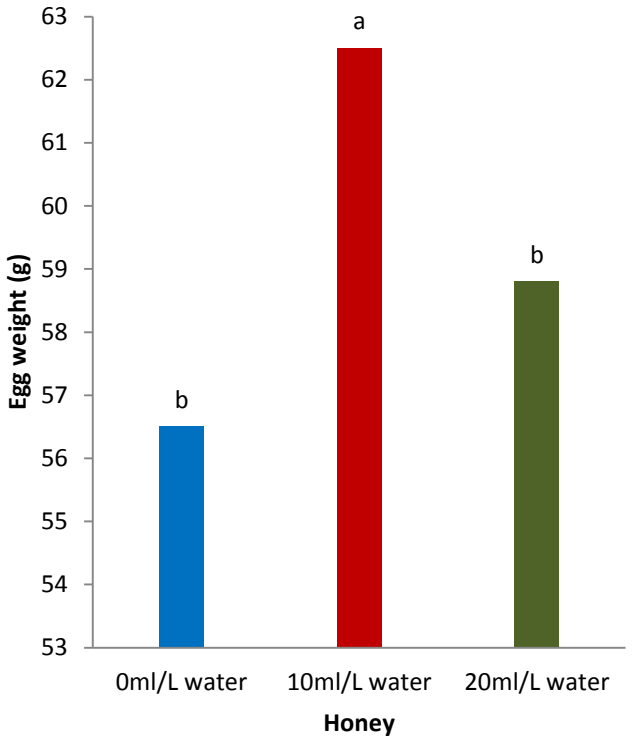

Figure 2: Egg weight during week 1 in laying chickens offered varying dosage of honey

Conclusions/Recommendations

Conclusion

Excessive usage of honey in laying chikens as anti-stress is detrimental to egg production

Recommendation

To ensure improvement in egg production in laying chickens during hot season, duration of honey supplementation should not exceed first 4 weeks

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