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HSCAS may have positive effect on egg production

Including hydrated sodium calcium aluminsilicate in the feed of brown and white egg-laying hens resulted in achieving peak egg production about one week sooner.

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IMPROVING commercial egg production rates and egg qualities are topics that concern most societies worldwide as eggs have been, and will continue to be, a quality nutritional resource for mankind (Jones, 2010).

This paper is about a hydrated sodium calcium aluminsilicate (HSCAS), which is an ore that contains 70 minerals unique to the deposit from which it is mined.

Nutritionists have a good understanding of the biochemical function of 10 essential trace minerals, but it is recognized that several other trace minerals or microminerals found in HSCAS are important (Tompkins and Bird, 1998) despite knowledge gaps about their functions.

HSCAS is "generally recognized as safe," according to the U.S. Code of Federal Regulations (21 CRF 582.2729). The improvement in the quality of animal feeds exhibited by HSCAS for shrimp, fish, poultry (Hooge, 2008), hogs, dairy, horses and pets and its application as a fertilizer makes it truly unique.

HSCAS (AZOMITE) was included in feeds for both Novogen White and Hy-Line Brown laying hens (McNaughton et al., 2015; AH Pharma, tests AZ-03 and AZ-05). For each group of white egg and brown egg-laying hens, 135 pullets were divided into three groups of 15 pens per group (three hens per pen) and then were fed test feeds for 16 weeks (white egg layers) or 24 weeks (brown egg layers).

A basal feed was prepared for the entire trial, and then HSCAS replaced an equal amount of corn. Soybean oil was added to test feeds to make the diet isocaloric, and the feed was remixed and fed to the different test groups (Table). In all data sets of the Table, means without a common superscript are different ($P < 0.05$), as determined by least significant differences.

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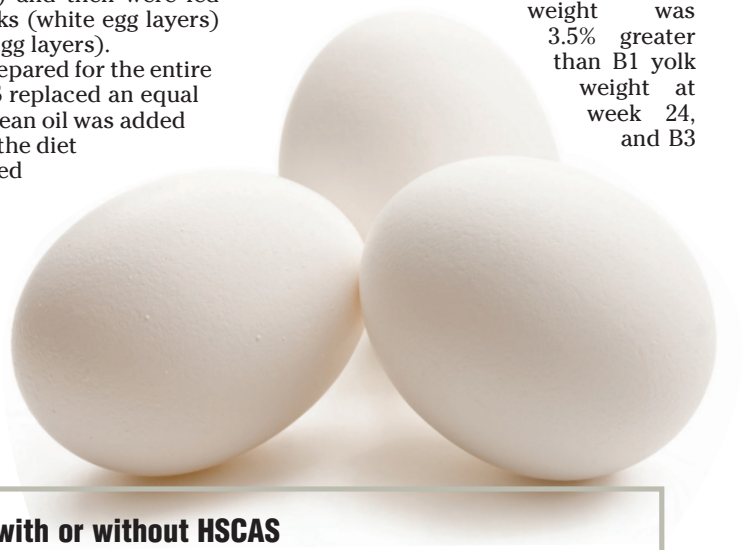
Results

Improvements in peak egg production were noted in both the white and brown flocks fed HSCAS, and peak egg production for both groups was achieved 7-10 days sooner than control birds without HSCAS. The average egg production percentage in both white egg and brown egg laying hens was improved 3% by HSCAS.

The egg weights of white and brown egg-laying hens were improved significantly by 4% and 7%, respectively, with the inclusion of 0.3% and 0.25% HSCAS. B3 egg weight decreased beyond the 12th week until it was no greater than B1 at 24 weeks, but B3 yolk weight was 3.5% greater than B1 yolk weight at week 24, and B3



Egg production in white (W) and brown (B) hens, with or without HSCAS

Parameter	W1	W2	W3	B1	B2	B3
HSCAS, %	0	0.15	0.3	0	0.25	0.25; first 12 weeks
Peak production, %	93.02^{b}	95.48^{a}	97.94^{a}	91.0^{b}	95.0^{a}	95.0^{a}
Biweek production (6-16), %	91.11^{b}	93.02^{ab}	94.59^{a}	84.34^{b}	87.99^{a}	86.83^{ab}
Egg weight, g/egg, 12-16 weeks	59.32^{b}	60.76^{ab}	62.24^{a}	60.38^{b}	64.81^{a}	64.19^{ab}
Yolk weight, g, 16 weeks	18.68^{b}	19.25^{ab}	19.52^{a}	18.80^{b}	19.30^{ab}	19.50^{a}
Shell weight, g						
12 weeks	6.843^{a}	6.840^{a}	6.763^{a}	6.631^{b}	6.826^{a}	6.855^{a}
24 weeks	ND	ND	ND	7.898^{b}	8.287^{a}	7.80^{b}
Shell thickness, mm, 16 weeks	0.346^{a}	0.347^{a}	0.344^{a}	0.322^{b}	0.348^{a}	0.348^{a}
Feed/doz. eggs, kg/doz.	1.728^{b}	1.668^{ab}	1.644^{a}	1.796^{b}	1.746^{a}	1.729^{a}
Bodyweight, kg, day 0	1.332^{a}	1.313^{a}	1.310^{a}	1.26^{a}	1.261^{a}	1.262^{a}
Feed consumed, g/bird/day	130.94^{a}	129.1^{a}	128.38^{a}	123.38^{a}	125.37^{a}	123.39^{a}
Heavy metal, mg/kg/egg						
Cadmium	ND	ND	ND	0.0105^{a}	0.0105^{a}	ND
Lead	ND	ND	ND	0.0164^{a}	0.0141^{a}	ND
Mercury	ND	ND	ND	<0.010^{a}	<0.010^{a}	ND

ND = not determined.

yolk weight equaled B2 at 24 weeks. Yolk weights of W3 were greater than W1.

Neither Haugh units nor the specific gravity of white and brown eggs were changed by HSCAS.

HSCAS did not change the shell weight or shell thickness of white eggs. Shell thickness-to-weight ratios were constant in W1, W2 and W3. At the 24th week, B2 shells were 4.9% heavier than B1, but B3 and B1 shell weights were identical.

HSCAS improved the shell thickness of brown eggs at 16 weeks by 8% for both B2 and B3 compared to B1. The ratio of shell thickness to shell weights was equal in the test. This translates into fewer broken eggs as egg size increases (Venglovska, 2014).

Feed per dozen eggs was improved in W2, B2 and B3 flocks. Feed consumption by the two flocks was identical to controls. Bodyweights of W1, W2, W3 weighed the same at the end of the test.

Levels of cadmium, lead and mercury in composite samples of 10 eggs per group of brown eggs were measured (Eurofins Scientific, sample 464-2015-08200193), and no differences were detected.

In field trials during 93-101°F temperatures, one customer added 0.5% HSCAS to the feed of half of the Lohman hens (5,000 birds) in two-week intervals for three ages of hens: 8, 37 and 64 weeks. HSCAS reduced lameness four-fold at all ages, reduced broken egg percentage slightly in hens ages 37 and 64 weeks but boosted hen-day production 4% in 64-week-old hens.

Another two-week field test using 28 control houses and 19 houses fed 0.5% HSCAS revealed a significant improvement in eggshell specific gravity.

Conclusions

Including HSCAS in the feeds of Novogen White and Hy-Line Brown layers resulted in achieving peak egg production about one week sooner, and superior egg production continued until the end of the two studies.

Eggs from both strains treated with HSCAS were larger than the control feed groups, and the brown eggs had heavier and thicker shells.

Yolk weights were improved by the addition of HSCAS to feed.

Feed per dozen eggs was improved 5% in the Novogen and 3.7% in the Hy-Line hens by the inclusion of HSCAS.

The presence of HSCAS did not change the cadmium, lead or mercury content of the eggs compared to control hens' eggs.

HSCAS did not change the shell weight and thickness of the white eggs but improved those measures for the brown eggs. In the field study during hot weather, the specific gravity of white eggs was improved when the hens consumed HSCAS for just two weeks.

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