FORTISHELL®

FEED ADDITIVE

- **A supplement fed to layers beginning at 40+ weeks of age to the end of lay**
- **Provides key components that optimize egg shell quality and support persistence of lay**

PACKAGING AND CODES

Bags, net weight 50 pounds
Code: Nutra Blend A20271A0

Available from:
Nutra Blend, LLC,
Neosho, MO 64850
800-657-5657

Nutra Blend West,
Madera, CA 93637 / 559-661-6161
Hubbard, OR 97032 / 503-982-9545
Nutra Blend East,
North Troy, VT 05859
800-945-4474

PMI develops innovative combinations of animal feed additives that optimize performance in poultry, swine, dairy and beef cattle by supporting nutrient utilization and gut health. Working with feed nutritionists, manufacturers, veterinarians and producers, PMI products harness the interactions between feed additives to deliver value, efficacy and strong results. Through a comprehensive innovation approach, across component verticals, species, and geographies, PMI leverages the most advanced ingredients and technologies to develop products that perform.

Performance Minded™

PMI
4001 Lexington Ave N
Arden Hills, MN 55126
www.pmiadditves.com

Poor egg shell quality can be a significant hidden cost to the egg producer. Estimates are that more than 10% of eggs produced in the hen house are uncollectible or break before intended use. The economic losses for the breeders will be even more due to reduced hatchability and chick livability. (Dr. Lokesh Gupta, Avitech; The Poultry Site: 01 March 2008). Therefore, every effort must be directed towards improving shell quality and reducing egg breakage.

Multiple factors affect the functional quality of the egg shell, mostly prior to when the egg is laid, including strain, diseases, management, molting, water quality, stress, temperature, nutrition and age of bird. As the hen ages, the thickness of the shell usually declines. The absorption and mobilization of calcium decreases to less than 50% of normal after 40 weeks of age (Egg Quality Defects: Types, Causes and Occurrence: A Review. King'ori A. M. 2012. J. Anim. Prod. Adv., 2(8):350-357).

Nutritional programs are designed to optimize animal performance and production efficiency. Inclusion of functional ingredients, such as direct-fed microbials, plant extracts and essential oils, are often directed at supporting optimal gut integrity.

Strategies that combine these tools can be needed to ensure success. High gut integrity results in optimal gut structure providing a large surface area for digestion and nutrient absorption. High gut integrity also requires low energy expenditure for maintenance; more nutrients are available for production parameters.

FortiShell® Feed Additive (FortiShell® FA) was developed specifically for layers beginning at 40+ weeks of age to the end of lay, to provide key components that optimize egg shell quality and support persistence of lay.

RECOMMENDED INCLUSION LEVEL

Layers:

FortiShell® FA is to be used in layer feeds from 40+ weeks of lay until the end of lay.
Mix at the rate of 2 lbs. per ton of finished feed.

LAYER TRIAL WITH FORTISHELL® FEED ADDITIVE

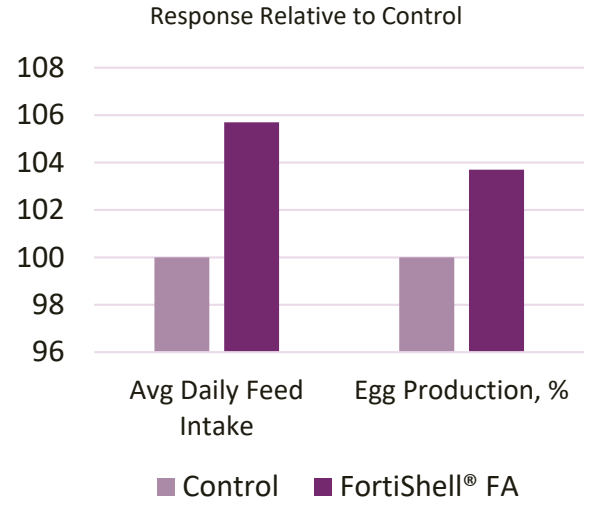
A PMI-sponsored study with Bovan White laying hens was conducted at the University of Nebraska. It began October, 2015, and was completed in mid-April 2016. Hens were started on test when they were 58 weeks of age to evaluate the impact of FortiShell® FA on egg production and quality factors over a period of 24 weeks. Each treatment consisted of 9 replicate cages with 6 hens per replicate.

The treatment diets examined during the study:

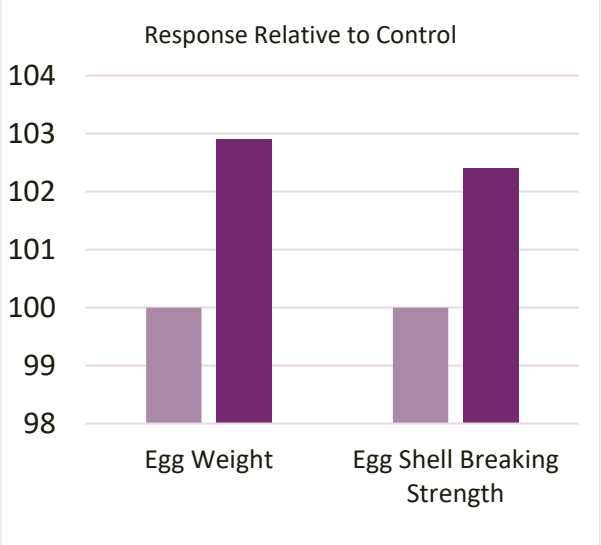
- Control – no additives
- FortiShell® FA – Control diet plus FortiShell® FA fed at 2 lb. per ton

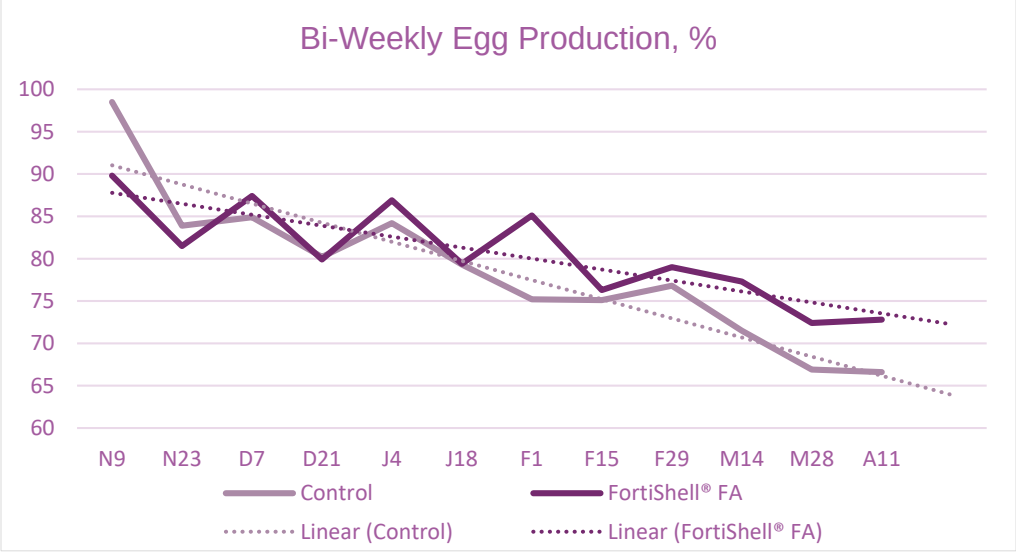
Feed consumption was measured weekly, while egg weights, shell percentage, egg production and shell breaking strength were determined bi-weekly.

Feed Intake and Egg Production ([a,b] P<0.01)



Egg Parameters ([a,b] P<0.01)





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