

# Ensuring more saleable eggs with oregano essential oil

**E**gg quality is important for both the producer and consumer and refers to both internal and external egg quality parameters.

External egg quality is primarily focused on the eggshell in terms of cleanliness, strength, texture and shape, while internal egg quality relates to egg white and yolk condition, and the size of the air cell.

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Poor eggshell quality can lead to an increase in downgraded eggs and is associated with substantial economic losses for producers which are estimated to be around \$478 million every year in the US alone.

In addition to internal and external egg quality parameters, egg size is an important factor for producers. Consumer demand is subject to regional variations, but in general small eggs command a lower price and peewee eggs are commonly unable to be sold as table eggs.

## Oregano essential oil

Phytochemical feed additives, such as oregano essential oil (OEO), are widely becoming a recognised tool in supporting laying hen performance in the absence of antibiotics. With proven efficacy across many species, phytochemical feed additives, such as OEO, provide a multitude of well-documented properties.

This includes antimicrobial, anti-inflammatory, immunomodulatory and antioxidant functions, all of

which have a role in supporting optimal hen health, performance and quality egg production.

## Early lay performance

Supporting gut health is fundamental in helping the bird to achieve their genetic potential and maintain optimal lifetime performance. A recent trial conducted at North Carolina State University (2020) found that OEO supplementation (Orego-Stim, Anpario plc) supported development of the gut structure during the pullet rearing phase.

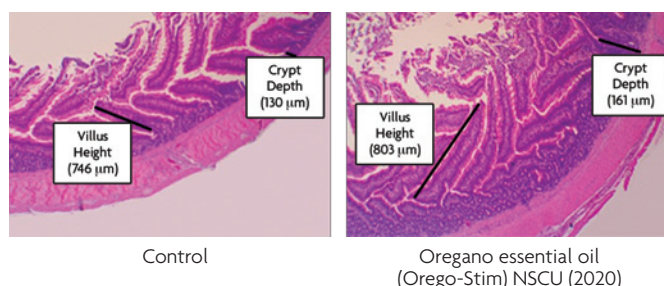
Dietary supplementation increased villus height, which can support an increased surface area for nutrient absorption. In addition, OEO supplementation also resulted in a deeper crypt depth, which further supports digestive function and nutrient utilisation (Fig. 1).

OEO helped to optimise gut health, which enabled production of high quality pullets, with 17.4% greater uniformity, that produced more eggs during the laying period.

A recent commercial study conducted in Mexico found that OEO supplementation (Orego-Stim, Anpario plc) during rearing and early lay (13-23 weeks of age) resulted in an additional six whole eggs per hen, with heavier eggs being produced.

There was an 84% greater egg mass in OEO supplemented hens and a 25% improvement in egg production. Increasing production of more valuable, larger eggs during early lay, when peewee and smaller eggs are most common, the producer benefitted from a return on investment of 13.6:1 with Orego-Stim supplementation.

These findings are similar to those seen in the trial conducted at North



**Fig. 1. Photomicrograph (x 40 magnification) demonstrating the beneficial effect of oregano essential oil on development of villi and crypts within the gut, specifically the jejunum, of poultry (NCSU, 2020).**

Carolina State University (2020), in which hens fed OEO (Orego-Stim, Anpario plc) during rearing and early lay, produced 2.2% fewer peewee eggs and more medium eggs compared to control fed hens during the first week of lay (18 weeks of age).

## Egg production and quality

Supporting gut health helps to maintain optimal feed digestion and absorption, which can help to support egg production and shell quality. In addition, good gut health can help to improve litter quality, helping to reduce the number of dirty eggs, supporting egg quality and increasing the number of first class eggs.

A recent commercial study undertaken in Western Europe found that OEO supplementation (Orego-Stim, Anpario plc) from the start of laying until end of lay improved hen performance and egg quality parameters. The study found that egg production was increased by 13 extra eggs per hen, with an increased economic gain from extra-large and large eggs by 26.9% and 21.6% respectively. In addition to increasing the number of eggs per hen and improving egg grade distribution, there was also a 1.7% increase in first class eggs.

Hens supplemented with OEO also produced, 12.4% less liquid eggs, 13.2% less cracked eggs and 9.9% less dirty eggs compared to the group of control hens (Table 1). These improvements in hen performance

and egg quality parameters resulted in a return on investment of 5.5:1 for the producer.

Regarding eggshell hygiene, Denli, Vural and Yesilmen (2019), reported that OEO supplementation reduced bacterial contamination on the eggshell surface. They hypothesised that this was most likely a result of the well-established antimicrobial effects of OEO. Both coliform and *E. coli* percentages were significantly reduced compared to hens fed control diets. A commercial study undertaken in Mexico reported similar results in broilers, with OEO supplemented birds (Orego-Stim Liquid, Anpario plc), demonstrating an 88% lower average *Enterobacteriaceae* count in cloacal swabs compared to control fed birds.

## The benefits of a natural oregano essential oil source

OEO feed additives are available as a liquid or powder, enabling flexibility in application and ease of inclusion either in feed or drinking water. Non-synthetic, natural OEOs, have been shown to contain over 100 different active compounds, including carvacrol and thymol, which work in synergy to offer extensive benefits and functions, all of which play an important role in maintaining gut health and ensuring optimal hen health, performance and egg quality.

**Table 1. Percentage of liquid, cracked and dirty eggs in hens fed either a control diet or an oregano essential oil supplemented diet.**

Egg type	Control	OEO
Liquid eggs (%)	1.69	1.48
Cracked eggs (%)	9.2	8.0
Dirty eggs (%)	1.82	1.64

References are available from the author on request