Oregano essential oil: benefits for the prolific sow and her offspring

With sows producing more piglets born alive than ever before, meeting sow nutritional requirements and ensuring adequate feed intake can be challenging. Oregano essential oil can help to reduce the intensity of such challenges, as a result of the ability of it natural components to stimulate olfactory receptors and chemosensory systems.

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Sow feed intake and superior management during lactation are fundamental aspects in ensuring optimum performance and with ever increasing numbers of piglets born alive, the requirement for high quality milk for each piglet is amplified.

Meeting such milk requirements can be challenging and puts further pressure on body reserves, voluntary intakes and subsequently the sow is under an increasing degree of oxidative stress.

Sows of a prolific nature are more likely to produce piglets with lower birth weights and increased litter variability. Piglets of low birth weights can struggle to consume sufficient quantities of colostrum and therefore incidence of pre-weaning mortality has risen in line with increasing litter size. Pre-weaning piglet growth performance and health is directly related to colostrum and milk intake, therefore maximising sow intakes and supporting milk production is the most cost-effective method to improving progeny performance.

Ensuring gilts are supported nutritionally and their immune system is well developed before joining the breeding herd is paramount to lifetime performance.

During parity one, the gilt must meet challenging energy requirements for maternal growth and foetal development.

There are multiple factors involved in maximising feed intakes during lactation, this includes provision of high quality feed and feed hygiene, as well as ensuring feed palatability and feed form allowing for adequate voluntary intakes.

Parity two and whole lifetime performance is known to be affected by first lactation intakes so we need to ensure we give these young animals the best chance for lifetime success. Flavours and some essential oils can help to increase feed interest and have been shown to benefit lactation voluntary intakes.

How can oregano essential oil help?

Oregano essential oil contains many volatile and aromatic compounds which are involved in the olfactory response and can be used to drive voluntary feed intakes.

The two main ones are carvacrol and thymol but the natural oil contains a number of other compounds known to add to the beneficial effects and provide the complex mode of action attributed to natural oregano essential oil.

It has been found to have a role in appetite enhancement and antioxidant function, as well as in both immunomodulatory and anti-inflammatory processes.

Oregano oil has also been shown in recent work to have a positive effect on the gut microbiota of the sow and her offspring, perhaps helping to manage intestinal health by supporting optimum gut integrity and thus reducing enteric stress.

The oregano plant from which the essential oil is extracted by steam distillation.

Improving sow and progeny performance

In recent trial work conducted by Nottingham Trent University in conjunction with Anparío plc, the inclusion of oregano essential oil within sow diets was shown to enhance retention of sow body condition throughout lactation,

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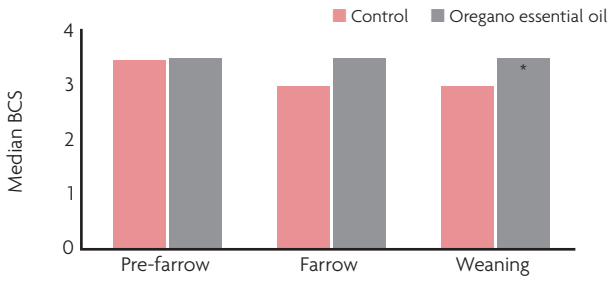
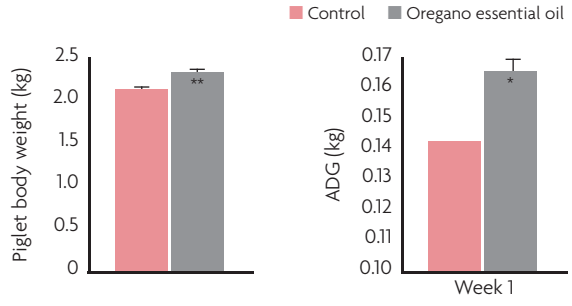
Fig. 1. Effect of oregano essential oil on sow body condition score (BCS) during lactation (Le Bon et al, 2019 BSAS proceedings).



*Denotes significant difference from control at p<0.05.

Fig. 2. Effect of oregano essential oil on the body weight (kg) and average daily gain (ADG) (kg) of piglets from sows fed oregano essential oil at one week of age (Le Bon et al, 2019 BSAS proceedings).



*Denotes significant difference from control at p<0.05;
**Denotes significant difference from control at p<0.01.

Continued from page 11
resulting in a significantly improved body condition score at weaning (Fig. 1) ($p<0.05$).

Maintaining body condition would be expected to improve metabolic status of the sow and help to improve hormone status and conception rates associated with subsequent breeding events.

In this study, piglets from sows receiving oregano essential oil had significantly increased body weights and average daily gain by one week of age (Fig. 2).

It is well documented that increases in pre-weaning growth rate and weaning weights benefit lifetime growth performance and survivability, therefore a small improvement in pre-weaning average daily gain can significantly benefit herd profitability.

After weaning, pigs from sows fed oregano essential oil were found to be heavier 10 weeks post-weaning, even though all pigs were fed commercial diets following supplemented creep diets (Fig. 3).

At finish, the difference between groups had increased to 3.4kg, exceeding the benefit expected by the small difference in weaning weights if the relationship by Fix et al. (2010) was applied.

This suggests that sow supplementation can have a bigger impact on piglet lifetime performance than piglet supplementation alone. In this work all piglets received oregano essential oil in the creep diet, sows were fed either control or the basal diet supplemented with oregano essential oil.

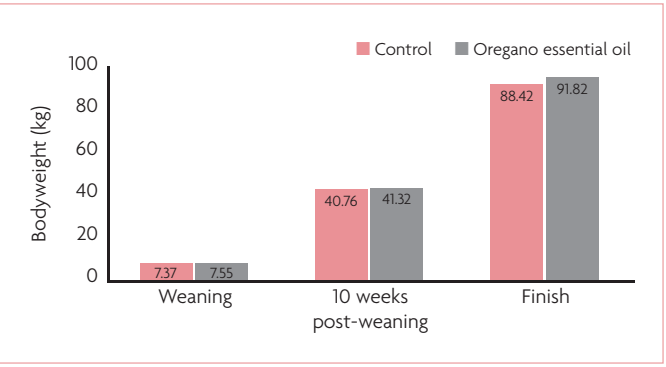


Fig. 3. Effect on body weight (kg) of piglets from sows fed oregano essential oil from weaning and followed through to slaughter.

Improving sow and progeny gut health

A well balanced gut microbiota in the sow will subsequently benefit piglet health and performance as initial microbial colonisation occurs by transfer from the sow at birth, during lactation and through faecal ingestion. Therefore, early microbial colonisation in young pigs represents a window of opportunity to modulate the pig's mature gut microbiome.

The diversity and composition of this population has been linked with overall growth performance, animal health and the functionality has been associated with lifetime feed efficiency.

Oregano essential oil has been found to have many beneficial effects on gut health and microbial populations in pigs; for example, inclusion of oregano essential oil was associated with decreased enterobacteriaceae, most likely as a result of its promotional effect on intestinal barrier integrity and competitive exclusion by beneficial bacteria.

This could help to reduce the likelihood of bacterial proliferation post-weaning by potentially harmful bacteria (E. coli spp. and Salmonella spp.).

Sows in this study had increased abundance of beneficial lactobacillaceae, which may confer benefits on diet digestibility and gut environment.

Health records in this recent study showed a reduction in pre-weaning mortality and medication use in piglets from oregano oil supplemented sows ($p<0.1$).

At weaning piglets are subjected to a massive variety of stressors which can result in impaired feed intake, poor growth and scours. Ensuring piglets are robust and of high health can help reduce the severity and incidence of post-weaning scours and can improve lifetime growth performance.

Anpario are currently reviewing these relationships to try and understand the links between the microbial population and overall animal health and performance. ■

References are available from the author on request