

## FeedLock®: Close the door for ASF with feed biosecurity

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Over the past decades, the global swine industry was challenged by several viral pathogens with devastating economic impact. Porcine Epidemic Diarrhea (PED), belonging to the Coronaviridae family, was first reported in 1970 in the UK and thereafter in several countries across the globe. Since 2011, increased outbreaks have been described with very high mortality and morbidity, mainly in young piglets. In the mid-1980s, Porcine Reproductive and Respiratory Syndrome (PRRS), part of the family Arteriviridae, was first recognized in the USA and spread rapidly worldwide. More recent, as since 2016, worldwide swine industry is jeopardized by African Swine Fever, a DNA virus in the Asfarviridae family. Because of its very complex epidemiology, it is currently the highest threat to pork production. At this time, it is present in both wild and domestic pigs in Europe, Africa and Asia and it has led to a global reduction of the pig population with at least 25%.



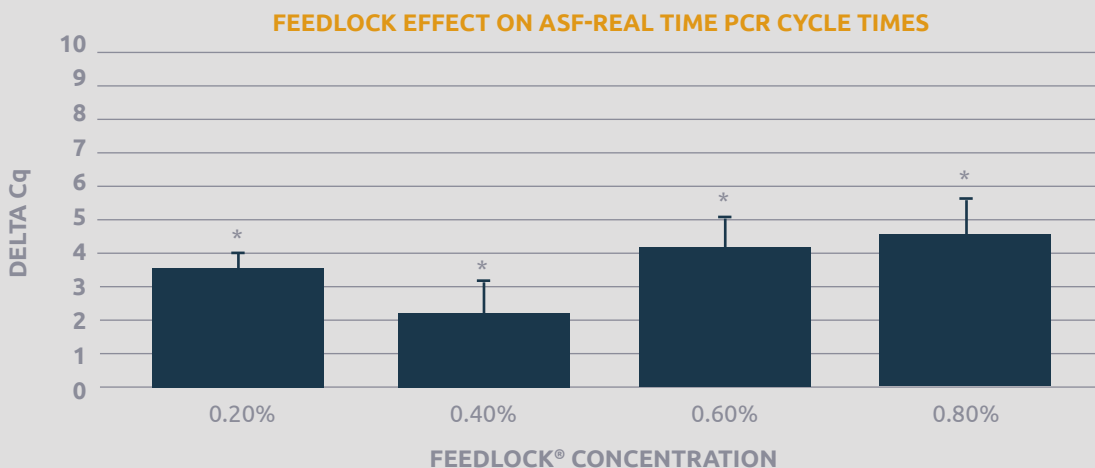
### Importance of feed and feed ingredients in viral transmission

Since the outbreak of PED in North-America in 2013, contaminated feed ingredients and animal feed were assumed to be a potential vehicle in viral entrance and transmission between farms and between countries. In a study of Dee et al. (2018) it was demonstrated that several viral pathogens (amongst which PRRS, PED and ASF) can survive in various feed ingredients and in animal feed. Moreover, Stoian et al. (2019) showed that plant-based feed materials promote ASF virus stability and survival. As feed delivery is a recurrent event and there is a high risk of viral mitigation via the feed, conclusion can be made that a considerable amount of pig farms can be infected via this route. Furthermore, Niederwerder et al. (2019) demonstrated that ASF can be transmitted orally via contaminated feed and cause infection.



## FeedLock®: closing the biosecurity gap

As there is an important need for improved global biosecurity via the feed, we recently developed [FeedLock®](#). FeedLock® is a patented mixture of medium chain fatty acids (MCFA) with proven effect on viral transmission via the feed. Independent research facilities in the US and Vietnam have proven the effects as well in vitro as with in vivo bio assay. FeedLock® is able to neutralize viruses in infected feed and this way safeguard the animal from being infected through this pathway. In that respect, a study was performed at the National Institute of Veterinary Research in Vietnam to test the efficacy of FeedLock® towards ASF. The MCFA containing product was added to complete feed spiked with ASF-virus. After 24h virus incubation, DNA was extracted and real-time PCR was performed. All tested concentrations showed a statistical increase in Cycle quantification (Cq) value compared to the positive control ( $P < 0.05$ ). Results, expressed as delta Cq value, can be found in the graph below.



The current hypothesized mode of action of the direct anti-viral effect of MCFA is creating viral instability by making pores into the viral envelope. Thomar *et al.* (1987) previously demonstrated this phenomenon by electro-microscopy. This anti-viral effect of MCFA was proven in a study performed at the University of Ghent in which it was confirmed that MCFA avoid invasion of Porcine Alveolar Macrophages by PRRS (own data, 2015).

## Our knowledge = Your benefit

Administering FeedLock® in the diets will not only provide a higher biosecurity on farm. For decades it is known that MCFA mixtures beneficially influence on performances of as well sows, piglets as finisher pigs. Being patent holder and market leader, Agrimprove specialists are known as the global expert in blending specific Free Fatty Acid combinations for specific challenges. FeedLock® is in this respect no exception. A very recent study at K-state, showed that increased ADG, ADFI, FCR were observed with increasing the FeedLock® levels (up to 1.5%) in the diets (Gebhardt *et al.* 2020) (see tables below)



## Safe, sustainable, high return on investment

Increasing the biosecurity standards on farm is all that can be done to prevent viruses from entering. Feed biosecurity is part of this biosecurity chain. Adding additives that are carcinogenic, bind proteins and can lead in the long term to stomach ulceration might not be the preferred solution. With FeedLock®, a mixture of natural components, it is possible to combine the best of both worlds: safeguard animal feed from spreading virus and improve your animal performance at the same time. That is what we call farming ideas. **Find out more on [agrimprove.com](http://agrimprove.com).**