Research summary

Efficiency and safety of using black soldier fly larvae in laying hen feed

About the study

Solutions for protein-rich, sustainable and efficient feed for hens are becoming increasingly important as the egg industry continues to grow. Currently soybean meal is widely used as a source of protein in hen feed. However, soybean cultivated for feed requires large areas of land, which could otherwise be used for grain production for human consumption. The scarce supply of organic soybean may also affect organic poultry operations. For these reasons, the growth in soybean production may not keep up with growing demands in the future. It is important to look at alternate sources of protein and energy for poultry feed for future challenges.

Researchers have found that insect larvae contains protein and fat content that could be used as an alternative in animal feed. One of the insects that can convert large amounts of vegetable waste into protein-rich larvae is the black soldier fly—a wasp-like fly native to the Americas.

While the Canadian Food Inspection Agency (CFIA) has approved black soldier fly larvae in broiler chicken diets, it is not yet approved in laying hen diets due to a lack of research in this area. As such, the purpose of this study is to assess the efficiency and safety of using dried black soldier fly larvae in laying hen feed.

Methods

For the study, 90 hens were placed in three experimental diet groups and fed 0%, 10% or 18% dried black soldier fly larvae over a 13-week period. The growth performance of the hens, their feed intake, egg production, egg weight, egg quality, egg safety, hen welfare and biochemistry characteristics were investigated.

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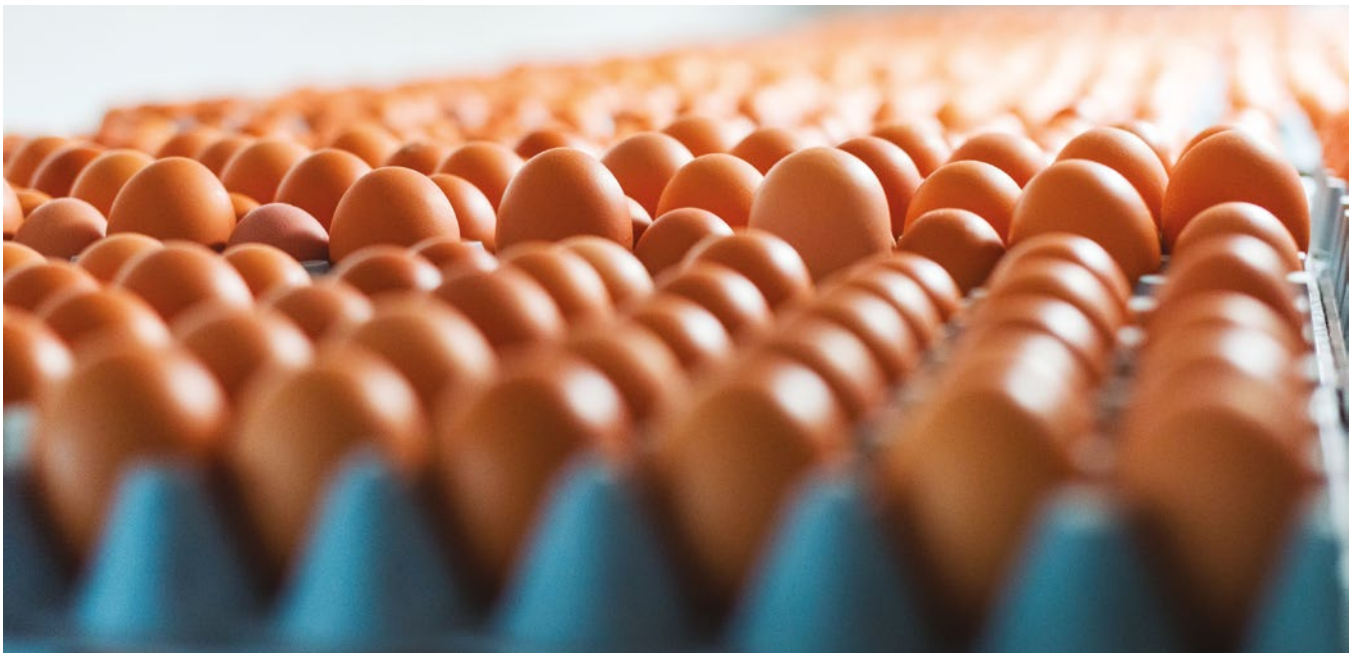

Findings

Researchers found that hens in the 18% control group were slower in gaining weight and laid fewer, smaller eggs than the control hens, which is likely due to less efficient feed conversion. However, both the 10% and 18% treatment groups gained weight and maintained a 90% egg production rate. They still produced large eggs and the egg internal quality was no different from the control group.

Because of the high fat content of the larvae, researchers increased the fibre content to balance the diet. This may have increased overall feed intake and compromised digestibility in the 18% treatment group. As well, the exoskeleton of the larvae may have also increased the overall feed intake and decreased digestibility. The digestibility of larvae could be improved in future studies by using a defatted version of this larvae as a source of protein in laying hen diets while maintaining hen health, safety and production.

Conclusions

Exploring new efficiencies and sustainable measures is critical as our industry continues to grow. The findings in this study demonstrate that soymeal diets can be partially replaced with black soldier fly larvae in laying hen diets while maintaining egg production and quality. The impact of combining black soldier fly larvae with soymeal diets may help create a more sustainable future for egg farming.

About the researchers

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Citation

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