

# Starfish as feedstuff

## Problem

An increase in demand for organic feedstuffs is expected to limit protein availability. Therefore, new and more sustainable protein-rich ingredients are needed.

## Solution

Starfish are caught to reduce predation on farmed mussels. Starfish meal contains 38-70% protein and can be used to partially replace other protein-rich ingredients in monogastric animal feed.

## Benefits

Feeding starfish meal gives comparable growth to feeding fishmeal in piglets. For layers, egg production and quality are maintained at normal levels when feeding up to 8% starfish meal.

## Practical recommendation

- Starfish should be harvested, at the earliest, three months before spawning to have highest protein and lowest ash content.
- High calcium levels limit the inclusion level of starfish meal in piglets' diets to around 5%.
- Starfish meal is not organically certified but can still be used because it is not of agricultural origin.
- Starfish meal is already commercially available in Denmark.
- Diets can be optimized regarding amino acids and with lower crude protein.

## Applicability box

### Theme

Pigs, layers

### Context

Coastal countries

### Application time

February-May

### Required time

Time of feeding

### Period of impact

Immediate

### Equipment

No extra equipment needed for feeding

### Best in

Piglets, layers



**Figure 1: Starfish before processing.** Photo: Jan Værum Nørgaard



**Figure 2: Boat specialized in fishing starfish.** Photo: Pia Sørensen

**Further information****Further reading**

- Afrose, S., M. Hammershøj, J. V. Nørgaard, R. M. Engberg, and S. Steinfeldt. 2016. Influence of blue mussel (*Mytilus edulis*) and starfish (*Asterias rubens*) meals on production performance, egg quality and apparent total tract digestibility of nutrients of laying hens. *Animal Feed Science and Technology* 213:108-117. (Article) doi: 10.1016/j.anifeedsci.2016.01.008
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- van der Heide, M. E., L. F. Møller, J. K. Petersen, and J. V. Nørgaard. 2018. Annual variation in the composition of major nutrients of the common starfish (*Asterias rubens*). *Animal feed science and technology* 238:91-97.
- van der Heide, M. E., D. Carlson, and J. V. Nørgaard. 2018a. Growth performance of weaned pigs fed different levels of starfish meal. *Animal feed science and technology* 238:84-90.
- Ter Beek, V. 2016. Can piglets be fed on starfish meal? *Pig progress*, 32 (3), pp 28.

**Weblinks**

- Check the Organic Farm Knowledge platform [www.organic-farmknowledge.org](http://www.organic-farmknowledge.org) for more practical recommendations

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**Project website:** [ok-net-ecofeed.eu](http://ok-net-ecofeed.eu)

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