

Recommendations for using soya-based feedstuffs in pig husbandry

Problem

Soya beans are rich in protein with a valuable composition of amino acids but also contain anti-nutritive substances (trypsin inhibitors) and approximately 20% fat, which can limit the applicability in organic pig husbandry.

Solution

If soya beans are pressed and heat treated, the products can be used in organic feed rations for pigs. Critical points in ration planning must be considered to achieve a high meat quality.

Benefits

Short soya supply chains are in line with the principles of organic agriculture and help to enable farmers to meet requirements of organic farming regulations or private labelling systems.

Practical recommendation

- Soya beans need to be heat treated to enable digestion by pigs or poultry. Professional processing technology is required to apply a heat treatment of the right quality and intensity. This is essential to preserve protein quality.
- De-fatting of soya beans helps to increase shelf life and the amount that can be fed to sows, piglets and pigs. A mechanical press reduces the fat content down to approximately 7-10%, see table 1. The product is called soya cake (see figure 1). Before feeding it to pigs, it needs to be heat treated.



Figure 1: Soya cake. Photo: Donau Soja

Applicability box

Theme

Pigs; Feeding and ration planning

Context

For all livestock farms which have access to regionally grown organic soya feedstuff

Application time

Any time

Required time

Time needed to feed pigs

Period of impact

Immediate impact

Equipment

Special equipment is needed to process soybeans into feed. Further equipment on-farm for storage and mixing is needed.

Best in

Farms with pig production in proximity to soya production

- Soya cake or full-fat soya beans are best in growth phases with high energy needs: nursing sows, rearing piglets and in the first fattening phase (share in total feed <15 % DM), see table 2.
- The fat of soya beans contains relatively high levels of polyene fatty acids. For achieving lean meat of high quality, the use of soya cake is limited during the final fattening phase (approximately 5 % of DM). Full-fat soybeans should be avoided during this phase.
- If soya cake is the main protein feed during the fattening period, the share of corn should be lower than 20%. Otherwise, lean meat of high quality is not achievable.

Table 1: Average composition of soybean feedstuff. Source: ITAB

Values based on fresh matter	Soybean toasted	Soya cake toasted
Dry matter	90.7%	94.4%
Crude protein	37.6%	46.2%
Crude fibre	4.2%	5.9%
Fat	17.5%	8.7%
Energy	4990 kcal/kg	4780 kcal/kg
Net energy pig	2650 kcal/kg	2470 kcal/kg
Metabolizable energy broiler	3170 kcal/kg	2870 kcal/kg
Lysine	23.4 g/kg	26 g/kg
Threonine	15.1 g/kg	17.9 g/kg
Methionine	5.4 g/kg	6.6 g/kg
Cysteine	5.6 g/kg	7.2 g/kg
Methionine + cysteine	11 g/kg	13.8 g/kg
Tryptophan	4.8 g/kg	6.3 g/kg

Table 2: Recommendations for using soya feed in organic pig husbandry. Source: BioAustria 2011, see weblinks

% of DM in feed	Piglets	Sows		Fattening	
		Pregnant	Nursing	Start	Finish
Soybeans heat-treated	10	5	10	10	5
Soya cake heat-treated, de-fattened	15-20	5	15	10-15	5-10

Further information

Further reading

- For more practice abstracts on organic pig husbandry, go to the [Organic Farm Knowledge platform](#) > Search Toolbox > Select “By type: Practice Abstracts” and “By theme: Pigs”
- For more practice abstracts from Donau Soja, go to the [Organic Farm Knowledge platform](#) > Search Toolbox > Select “By institution: Donau Soja”
- Bernet T, Recknagel T, Asam T, Messmer M (2016): [Biosoja aus Europa. Empfehlungen für den Anbau und den Handel von biologischer Soja in Europa](#). Research Institute of Organic Agriculture (FiBL), Frick.
- Further information on organic farming can be found on the [Organic Farm Knowledge platform](#).

Weblinks

- LFI Oberösterreich, BioAustria, LFZ Raumberg-Gumpenstein, LK OÖ, 2011. [Bio-Schweinefütterung](#). Linz, Austria. (German)
- [Website of the Bavarian State Research Center for Agriculture \(LfL\)](#) (German)

About this practice abstract and OK-Net EcoFeed

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