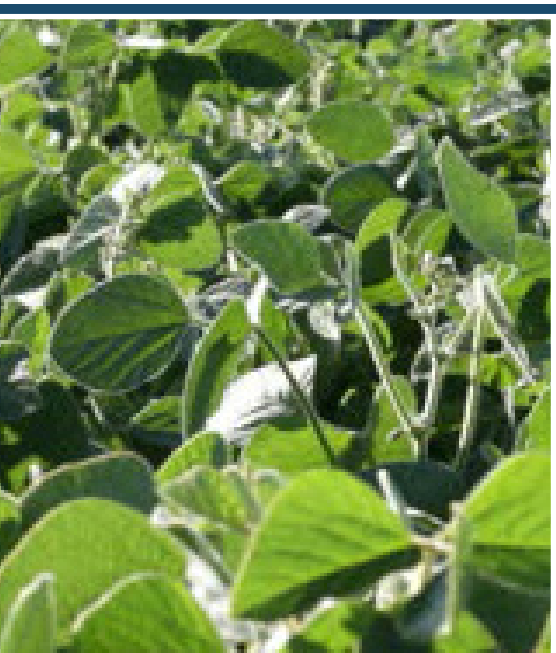


EFFECTIVE SOYBEAN PROCESSING FOR YOUR OWN FEED

Make your own feed with Farmet technologies.



WHY CULTIVATE AND PROCESS YOUR OWN SOYBEAN?

- Process your own high quality, protein- and fatty acid-rich feed for your livestock. Soybean is among crops with the highest protein content. With your own feed you can keep track of what exactly your animals eat.
- Treat the soybean with the extrusion process to obtain fat-rich soybean extrudate. Soybean thus processed is convenient for feeding for nearly all livestock thanks to its taste, energetic value and nitrogen content.
- Treating the soybean with extrusion pressing will get you defatted pressed soybean cake (convenient especially for milk cows) and soybean oil.
- All the above processes are mechanical and chemically pure, avoiding organic chemical solvents used in common extraction methods of groats production.
- Get a high quality vegetable oil with the extrusion pressing technology. The pressed oil is readily digestible, rich in unsaturated fatty acids and convenient for both food and feed production. The other product of pressing, the press cakes, are rich in nitrogenous substances. This nitrogen content can be further increased up to 48 % (depending on the original levels in the seed) by removing hulls prior to pressing with the use of our dehulling technology.
- Ground soybean seeds stabilize the extrusion process, leading to a more efficient reduction of anti-nutritional substances and extending service life of the working parts in the extruder. We thus recommend using our grinding technology prior to the pressing.
- Rather than buying expensive compound feed, save considerable resources by making your own. Keep your economy under your control. The process of dry extrusion is simple whether in terms of maintenance, finance or space.

SOYBEAN IN FEED PRODUCTION

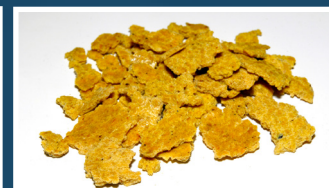
• **Extruded soybean** – produced in the process of extrusion, which involves grinding, crushing, mechanical processing at high temperatures between 130 – 140 °C and a high pressure. Soy processed in such way has a low content of anti-nutritional substances, a high content of nutrients with urease activity up to 0.4 mg.N/g/min. The starch undergoes gelatinization and protein structure is transformed.

- **Soybean press cakes**
- **Dehulled soybean press cakes**

Varieties of extruded soybean:

Full fat

Pressed



Farmet offers technologies for the processing of GM-free soybean to produce soybean oil, press cakes and extrudate. Final products contain no added chemicals and contribute to healthy diet.

SOYBEAN EXTRUSION

During the process of extrusion, anti-nutritional substances, which are a natural component of soybean (e.g. trypsin inhibitor and lectins), are removed. This is important mainly for the use of soybean in the diet of monogastric livestock (such as pigs and poultry). For the feeding of ruminants it is convenient that extrusion shifts protein fractions in favor of proteins that are not digested in the rumen (i.e. it increases by-pass protein content).

Our extrusion technology satisfies these requirements and produces an extrudate low on anti-nutritional substances and rich in protein fractions indigestible in the rumen.



SOYBEAN PRESSING WITH EXTRUSION

This technology combines the advantages of extrusion (reducing anti-nutritional substances and transforming proteins) with those of oil release from the seeds. Remaining oil content in the press cakes is only about 6-8 %. Pressing the oil out of the seeds thus increases the relative protein content by 7 %, from about 37 to 44 %.

SOYBEAN PRESSING WITH EXTRUSION AND INITIAL DEHULLING

Removing the hulls from the seeds increases protein content in the press cakes by 3 %, from 44 to 47 %. **Protein content in cakes made in the process of extrusion pressing of dehulled soybean is at a similar level as that in soybean groats made via solvent extraction.**

ADVANTAGES OF YOUR OWN EXTRUDED FEED

- tastier and easier to digest
- reduced content of anti-nutritional substances
- more nutritious, especially in terms of the most valuable nutrients, compared to initial soybean
- higher weight gains
- you know exactly what you process – your own soybean
- independence of prices at commodity exchange
- complete control over the quality of the final product (no chemicals; organic grade)

	Raw soybean	Extruded soybean	Extruded and pressed soybean	Extracted soybean meal
Water	12 %	7 %	5 %	12 %
Fat	21 %	21 %	7 %	2 %
Urease activity	2 – 10 mg N/g/min	up to 0,4 mg N/g/min		
Trypsin inhibitor	75 – 115 mg/g	2 – 5 mg/g	2 – 5 mg/g	2 – 5 mg/g
Protein	40	40	44 – 47	40 – 48

SOYBEAN – TRANSFORMATION OF PROTEIN FRACTIONS IN RUMINANTS ACCORDING TO THE CORNELL SYSTEM

Fraction	Before extrusion	After extrusion	
A2	87 %	21,5 %	Protein fractions and other nitrogenous substances fully degradable within rumen.
B1	10 %	76,8 %	Protein fractions slowly degradable within rumen, partially transient to small intestine.
B2	2 %	0,4 %	Protein fractions non-degradable within rumen, fully transient to small intestine.
C	1 %	1,3 %	Indigestible.