Large cost savings and healthy animals

Fermentation of cereals, soy beans, raw peas, raw beans ...

Fermentation is a hot topic all over the globe. We were able to win Dr. Ronald Scholten of the company Dr. FERM, a designated fermentation expert, for an interview.

In cooperation with our Argentinian vendor, Porlaso, Dr. Scholten developed a highly interesting method for fermenting raw soy beans – which we discussed with him.

Scrofa+: "Dr. Scholten, you developed a successful fermentation method in cooperation with our Argentinian vendor Porlaso. What gave you the idea?"

Dr. Scholten: "I have been working on possible specific applications for fermentation for quite a while. In Argentina, I had a breakthrough: I was invited to give some lectures there about feeding and fermentation, and in the process I met Raúl Lasorella, a highly experienced and established man in the Argentinian pig farming industry. Together we developed the concept of fermenting raw soy beans. This is a perfect example of how practice and the power of innovation can be combined into a great solution.

Unique concept

Our concept means significant cost savings for Argentinian integrators (agriculture and pigs). With our solution, we cut out long journeys to powerful, multi-national companies which process soy beans into pressed roasted soy flour using an expensive and complex technological method and determine both purchase and sales prices.

Cost savings

Fermenting raw, full-fat soy beans directly on-site at the (pig) farm saves a lot of cost and time, and the quality of the fermented beans is also significantly better and more consistent compared to the roasted beans. In short: a great idea, which – after two years of intense research and development – is now ready to revolutionise fermentation world-wide."

Scrofa+: "What exactly does this method look like?"

Dr. Scholten: "Well, that is our trade secret of course. What I can tell you is that it is a brilliant combination of temperature and special bacteria as well as enzymes. This concept is unique and has been met with great interest all over the world, from South to North America all the way to Europe and Asia.

The fermentation unit is 99% comparable with the fermentation unit used by WEDA for fermenting cereals at individual pig farms for years. This is a great advantage, since the system has been proven many times over, making WEDA the absolute market leader. WEDA also features a detailed computer control for the fermentation process which facilitates monitoring pH and temperature even over extended periods of time. We always use the principle of 'batch fermentation': anytime the fermenter is fermenting for a certain amount of time, the second fermentation tank is emptied out and cleaned before the next batch is activated. This means that 2 fermenters are always required for any raw material. Hygiene plays a key role in fermentation. This is why the fermenters are equipped with a tank cleaning device."

Scrofa+: "What are the possibilities of use for this kind of soy?"

Dr. Scholten: "The fermented, liquefied soy beans can be used directly in liquid pig feed rations. Another possibility is drying the liquefied soy beans to facilitate selling the product over larger distances. The fermented soy bean is a great alternative to (expensive) products such as fish meal, potato protein, blood plasma or soy bean concentrate."

Scrofa+: "What are the benefits of fermented soy for the pigs?"

Dr. Scholten: "It is important to know that raw soy beans are not suitable for feeding pigs and chickens, since they contain certain anti-nutrition factors (ANFs). In the past, there have been attempts to eliminate some of the ANFs by means of roasting or extrusion. This refers to the destruction of ANFs under high pressure and heat. It is generally known that this method is rather hard to control and also carries a pronounced risk of overheating (which makes digesting proteins and amino acids difficult). However, insufficient temperatures (which cannot degrade ANFs) are also problematic. Furthermore, not all ANFs are broken down through heating up either. Scientific findings increasingly indicate that ANFs such as phytate, certain allergens and indigestible sugars are not fully degraded by means of roasting. Fermentation on the other hand makes this possible!

Improved digestion

As an additional bonus, a lot of lactic acid (up to 35 kg/ton of liquid ferment) is produced during fermentation. It is one of the most expensive acids and also one of the best for improving gastrointestinal health. This is a great benefit since the use of antibiotics in intensive animal husbandry needs to be reduced and ZnO as well as Cu are strongly restricted in Europe. Fermented soy beans also feature a low pH (between 3.6 and 3.8) and a low acid buffer capacity. Both these factors constitute great advantages when it comes to improving digestion in the stomachs of young animals."

Scrofa+: "Is there a possibility of using the method you developed for other raw goods as well – and if so, for which ones?"

Dr. Scholten: "Yes, certainly. In Europe, there is significant interest in fermenting non-GMO raw materials such as raw peas and raw beans. In Asia and Australia, large quantities of co-products from cotton are available. All these raw materials feature certain ANFs which limit the incorporation of these raw materials in pig and poultry rations. Fermentation with specific bacteria and enzymes ensures that these (inexpensive) raw materials are enhanced and can be incorporated into pig and poultry feed in larger quantities. This makes fermentation a significant element contributing to a more efficient and healthier production of animal protein."

Suitable for raw peas and beans

Scrofa+: "Are these methods any different from soy fermentation?"

Dr. Scholten: "Not at all, the methods are nearly identical. The fermentation unit can be used for several raw materials. This makes it especially interesting for companies as well: depending on the raw material costs, it is possible to switch to a different raw material. We are already in contact with interested companies which intend to use our concept to enhance raw materials and to incorporate them into their (mixed) feeds or to dry them for export."

Scrofa+: "What do those methods look like?"

Dr. Scholten: "Exactly like a normal fermentation unit. What's needed is hot water, a dosing unit for bacteria and a dosing unit for enzymes. The combination of ideal temperatures, bacteria and enzymes is Dr. FERM's company secret."

Scrofa+: "What about the cost factor? Is it profitable for pig farmers?"

Dr. Scholten: "Roasted soy beans are mostly used in feed for young animals. The larger the pig husbandry operation, the greater the operators' desire to supply piglets with self-produced feed. For these companies, it is rewarding to ferment raw soy beans themselves and to incorporate fermented soy beans (or peas, or beans) into the rations for sows and finishers. Why is that? The raw material is enhanced through fermentation. This means more energy, improved digestion and formation of valuable amino acids and lactic acid as well as a degradation of detrimental ANFs.

The trend in animal husbandry is going towards increased efficiency, elevated production, reduction of medicines and additives (e.g. ZnO) as well as reductions in liquid manure and the soil contamination caused by its spreading. Fermentation has positive effects on all these issues.

Reduction of P and N

The issue of soil contamination should be of particular interest to your German readers for the following reason: regular feed must be supplemented with extra phosphor. This increases the phosphor content in liquid manure and causes problems when spread on fields. The phosphor in fermented feed is absorbed very well by animals and therefore does not end up in the liquid manure. This solves many problems and even saves costs, since phosphor supplements are no longer needed."

Scrofa+: "What would you say to pig farmers who are unsure about whether or not this method is advisable for their operation?"

Dr. Scholten: "In the Netherlands and in Germany, fermentation has been used in various pig farming operations since 2013. It is often done to cereals, but there is also a shift here towards using 'co-products' such as wheat bran, rapeseed meal, sunflower flour and beet pulp, meaning more cost-efficient raw materials which are enhanced by means of fermentation (improved digestion). On the pig farms which I visit regularly, a total of 8,000 tonnes of liquid ferment are produced fully automatically each week. The fermentation process is reliable and secure, and the results in sows and piglets are impressive. For example, sows can access much more energy from fermented raw materials, which results in them needing 5-8% less feed while still maintaining an excellent physical condition. This is remarkable, since it means cost savings of 50,000 euros per 1,000 sows (including piglets).

Improved health, reduced feed requirements

The fermentation of raw materials like soy beans, peas or beans is a great success. There is global interest, and soon the first companies will use our concept. Its main benefits are independence from multi-national companies, consistent and improved quality compared to roasting or extrusion, lowered costs and positive impacts on animal digestion and gastrointestinal health. What more could a pig farmer ask for?"

Scrofa+: "Thank you very much for this interview!"

Dr. Ronald Scholten

- Founder and owner of Dr. FERM
- 25+ years of experience in liquid feed & fermentation
- Degree from Wageningen University on the subject of "Fermentation of Liquid Diets for Pigs"
- 7 years of experience owning/managing a pig husbandry operation (7,500 piglets, 15,000 finishers, liquid feeding)

Porlaso

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