BEWITAL agri
specialist in milk & fat

PIGLET REARING

Solutions for successful rearing from BEWITAL agri.

“It is important to promote the development of the young piglet’s gut as early as possible – so let’s “gut it”!”

Introduction

The gastrointestinal tract as the location of digestion and absorption is a complex ecosystem that contains a large number of microorganisms with different metabolic capacities. With 70–80% of immune cells being present in the gut as an organ, there is an interplay between the gut microbiome, the gut barrier and the local immune system. The gut barrier, also known as the intestinal mucosal barrier, acts as a physical and functional barrier between the gut lumen and the body’s internal tissues. It helps to prevent the passage of germs and toxins into the bloodstream. There is a strong relationship between the gut microbiome and the health and nutrition of pigs.

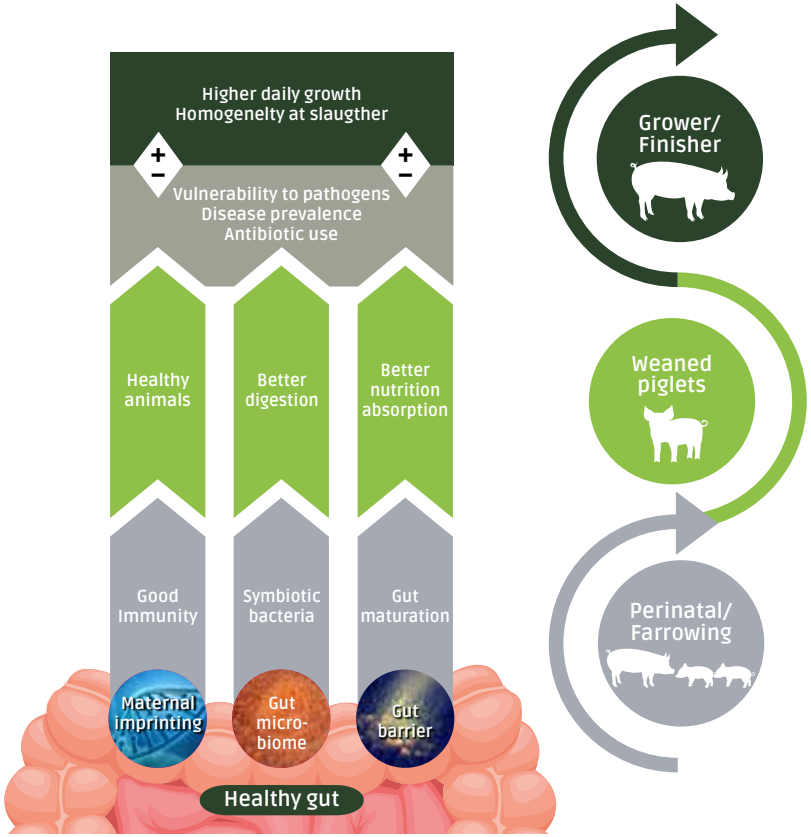
Consequently, improving livestock production and increasing economic efficiency can both be accomplished by targeting the gut microbiome. Economically successful farms pay great importance to high performance and, at the same time, good health and well-being of the animals. This can only be achieved by requirement-based nutrition and maximizing the earliest feed intake. “Targeted feeding makes a decisive contribution to guaranteeing successful piglet rearing. What is missed at piglet stage cannot be recovered later on during fattening or breeding. Promoting gut health plays a big role in long-term success. It is important to promote the development of the young piglet’s gut as early as possible – so let’s “gut it”, stresses Dr Ralph Schemmer, in charge of monogastric animals in the research and development department at **BEWITAL agri**.

Dr Ralph Schemmer
Research & Development
BEWITAL agri GmbH & Co. KG

Content

1 | Gut it!
Animal health begins in the gut

The largest organ in the body that is exposed to the outside environment while performing a number of complex functions is the gut. The gut is one of the most important aspects of immunity, as 70-80% of the body's immune cells are found in the gut. The gastro-intestinal tract's most well-known functions are digestion of feed and absorption of nutrients. In addition to aiding in digestion, the intestinal mucosa serves as a barrier to stop germs and toxins from passing through.



Maternal imprinting, gut microbiome and gut barrier are interrelated aspects of gut health that play a critical role in early life development and overall health. The animal's health, well-being, and performance can all be enhanced by modifying the gut microbiome and its metabolites through for example dietary adjustments of feed and feed supplements. Because finally a healthy intestine is crucial for the development of a healthy piglet.

1.1 Maternal imprinting

Maternal imprinting refers among other things to the transfer of intestinal microbiota from the sow to the neonate not only during birth, suckle and early life, but even before farrowing. It supports to establish the neonate's gut microbiome and shape the development of the gut barrier. The piglet's immune system development and, in turn, their growth and survival are influenced by the maternal programming. The piglets' survival at birth and in their early days depends heavily on the maternal body's passively acquired immunity. The maturation of the microbiome is key for the development of the piglet and has long lasting effect on animal health.

Colostrum is initially used to transmit immunity. The piglets' colostrum consumption at birth has a significant impact on both their survival and their performance, even after weaning. Here, it is especially crucial to consider the quality and amount of colostrum, which is full of antibodies. Everything that can assist or boost the colostrum immunoglobulin concentration during this brief window of time is more than welcome to support piglet immunity.

1.2 Gut microbiome

The microbiome is a group of microorganisms in our intestinal system that functions as an organ itself. It influences how resilient we are and how we respond to various stimuli as well as how do we react to the different nutrients in our system. As a result, the microbiome is crucial to our overall health and well-being.

The animal's gut health status can be impacted by a number of factors, such as management, pathogen pressure, and diet, which can result in microbiome dysbiosis, disturbance of intestinal homeostasis, gut mucosal barrier leakage and inflammation. Modulation of the gut microbiome can improve the growth and promote health in pigs. Therefore, it is crucial to promote nutritional solutions focused on intestinal barrier strengthening, oxidative stress reduction, pathogen avoidance and microbiota and immunological modulation in the highly intensive swine industry.

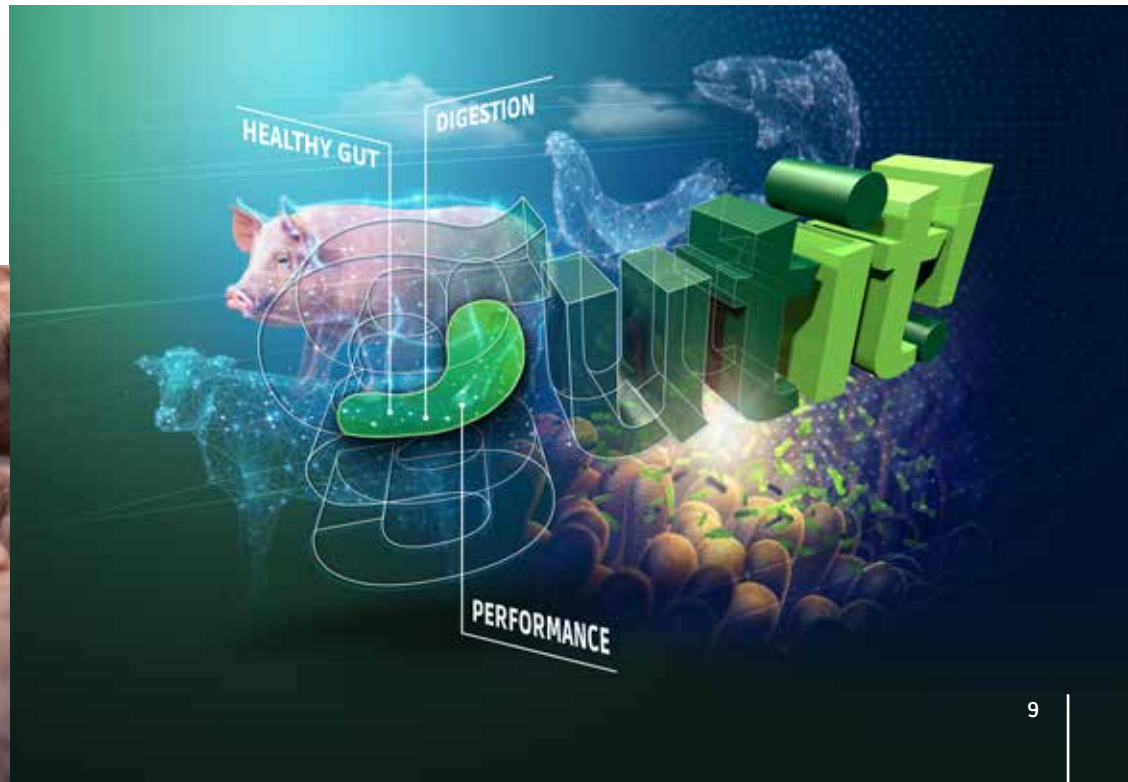
Maximizing feed intake in pre- and post-weaned piglets is important since reduced feed intake is a significant risk factor for poor gut anatomy and function. Therefore we are using only high-quality and high digestible components in our **BEWITAL** products.

1.3 Gut barrier

The gut barrier, also known as the intestinal mucosal barrier, acts as a physical and functional barrier between the gut lumen and the body's internal tissues. It helps to prevent the passage of germs and toxins into the bloodstream.

The young born piglet only has a passive immunity, via the sow's colostrum. Until the piglet has fully developed its own immune status, there is an immunological gap, which often occurs during the critical phase of weaning.

In order to provide the piglet with the best possible conditions for a successful start, it is important to influence intestinal development in a positive way as early as possible. A stable intestinal flora and good intestinal health of the animal form the basis for optimal growth and are the basis for exploiting the maximum growth potential. This background forms the basis for the development of our products, especially in the **BEWI-SAN** and **BEWI-MILK®** portfolio.



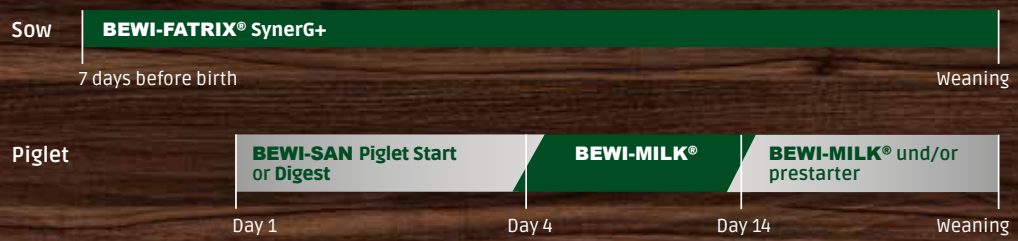
1.4 Our piglet concept to promote intestinal health

In order to provide the piglet with the best possible conditions for a successful start, it is important to influence the intestinal development in a positive way as early as possible - optimally already before birth through the mother sow's diet. Directly after birth we recommend the use of our **BEWI-SAN** products, followed by **BEWI-MILK®** piglet milk. By promoting early feed intake, the development of the gut microbiome and the gut barrier is positively influenced.

Targeted feeding makes a decisive contribution to the success of piglet rearing. What is missed in piglet age cannot be recovered later on during fattening or breeding.

Our **BEWI-MILK®** product range is equipped with a special safety package. The **BEWITAL**-Vitality-System (BVS) makes a decisive contribution to maintaining intestinal health.

matrix-encapsulated MCFA combination | post colostrum milk | early feed intake | piglet milk



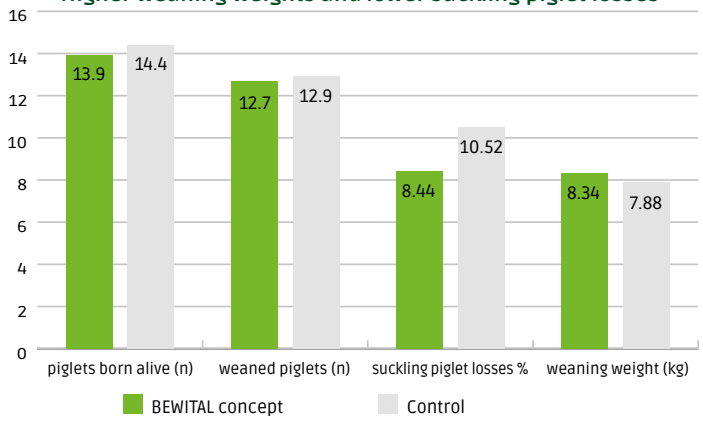
Promoting early intestinal development

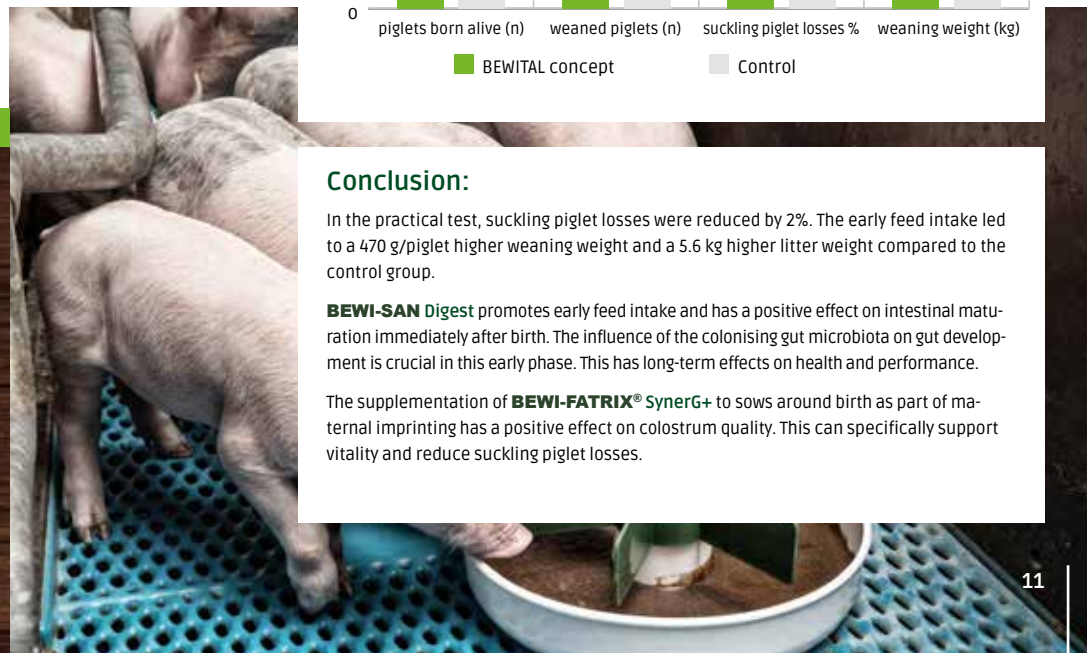
On our partner farm with 500 sows, the **BEWITAL** concept was tested in comparison to standard feeding. With the **BEWITAL** concept, there was added 0.4 % **BEWI-FATRIX®** SynerG+ into the lactation feed of the sows. From the 2nd day of life, the suckling piglets were offered **BEWI-SAN** Digest ad libitum in the piglet dish (50 g/litre) directly after the colostrum. From the 5th day of life, the group was switched to **BEWI-MILK®** piglet milk.

The control group did not receive **BEWI-FATRIX®** SynerG+. The piglets received a standard electrolyte drink from the 2nd to the 5th day of life. After that, they were switched to piglet milk.

Our recommendation: Feed the sows with **BEWI-FATRIX®** SynerG+ and the piglets with **BEWI-SAN** Digest.

The BEWITAL concept is convincing in practice: Higher weaning weights and lower suckling piglet losses





Conclusion:

In the practical test, suckling piglet losses were reduced by 2%. The early feed intake led to a 470 g/piglet higher weaning weight and a 5.6 kg higher litter weight compared to the control group.

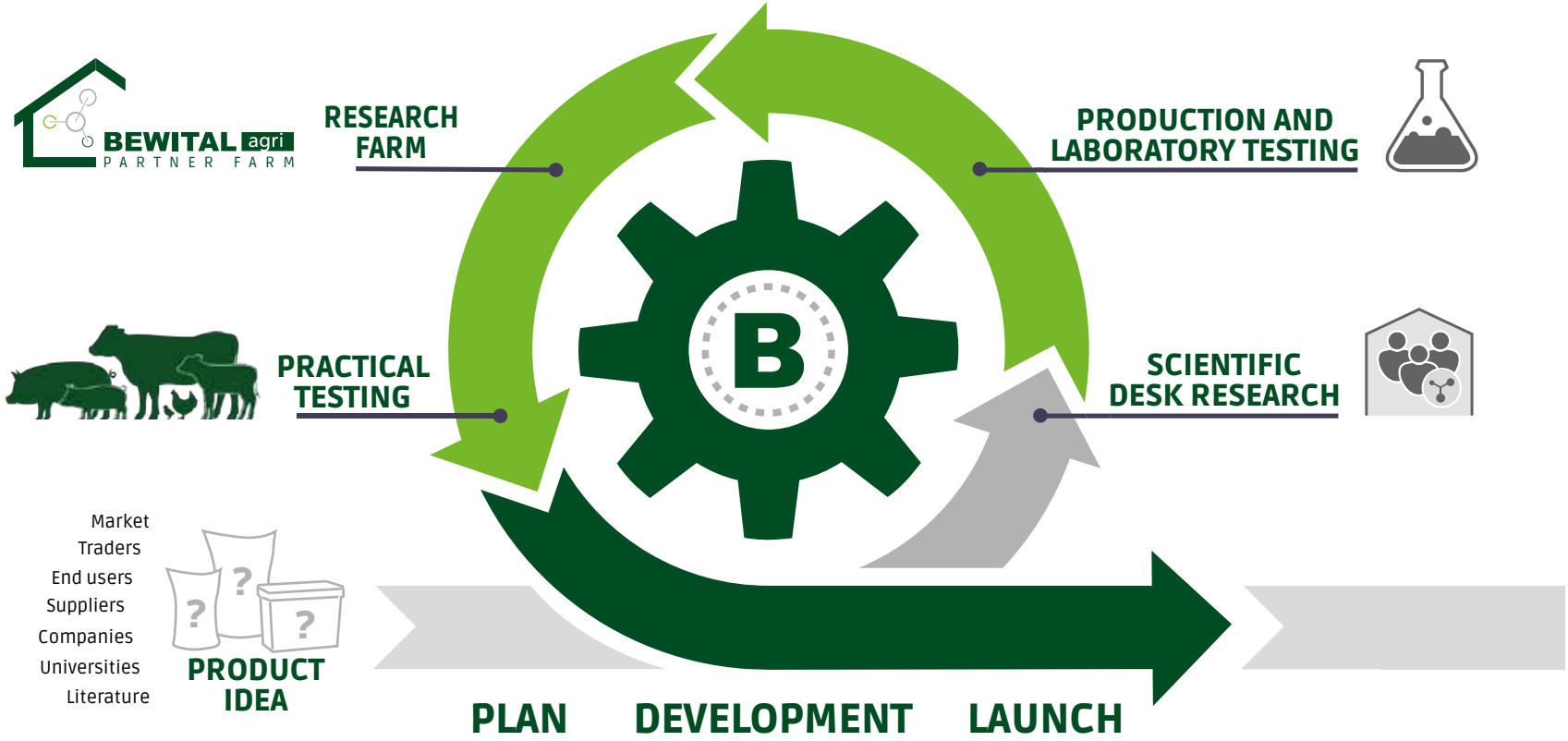
BEWI-SAN Digest promotes early feed intake and has a positive effect on intestinal maturation immediately after birth. The influence of the colonising gut microbiota on gut development is crucial in this early phase. This has long-term effects on health and performance.

The supplementation of **BEWI-FATRIX®** SynerG+ to sows around birth as part of maternal imprinting has a positive effect on colostrum quality. This can specifically support vitality and reduce suckling piglet losses.

2 | Product development at **BEWITAL agri**

Product development at **BEWITAL agri** is a continous process. It starts with a product idea and scientific research, which is followed by lab- and production testing. Finally every product is tested at our partner farms. On our partner farms, we can test the products under practical conditions to determine the animal performance and application before launching them on the market. Only if the product also shows the desired effect in practical use over a longer period of time will it be offered to the market.

Partner farms offer us the opportunity to evaluate product developments beyond the scientific research environment. Our practical tests aim to evaluate the effectiveness and practical applicability of new special feed solutions under real conditions. In doing so, not only our own products can be tested, but also the effectiveness compared to competitor products. In this way, we ensure that the feeds are always geared to the needs of our customers.



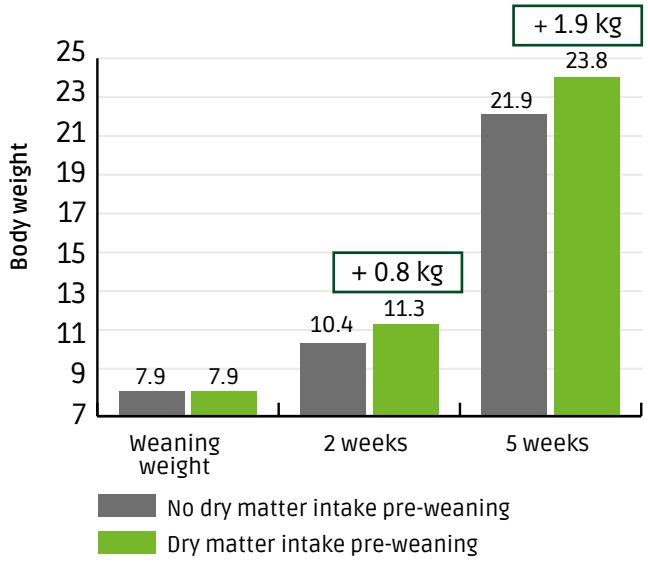
3 | Pre-weaning nutrition

3.1 Supplementary feeding

There are many benefits to be gained from supplementing the sow's milk with a supplemental diet. It takes about 3-4 days after starting with additional feed until piglets consume noteworthy amounts. Therefore the following applies: **start as early as possible!**

Supplementary feeding of suckling piglets has an effect on both pre-weaning and post-weaning performance. There is a higher feed intake until weaning and therefore a higher weight gain. Tests also show better homogeneity within the litter. Feed intake before weaning also has long-term effects. The figure below shows a trial testing the benefits of pre-weaning feed intake. At the same weaning weight, the piglets fed before weaning had a 1.9 kg higher liveweight gain 5 weeks after weaning.

Pre-weaning feed intake has long lasting effects

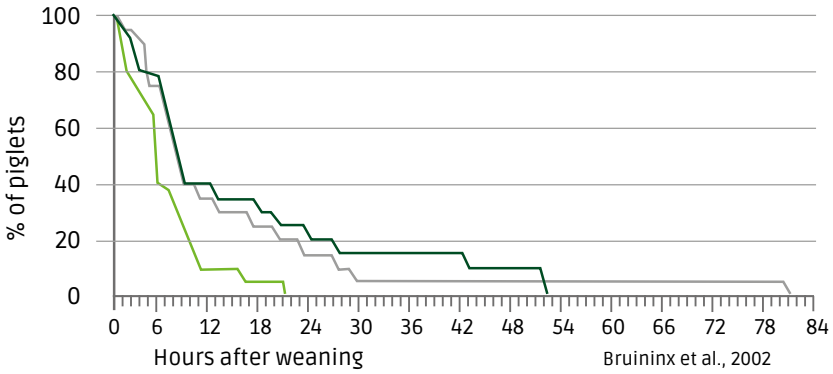


Peet-Schwering et al.,2012

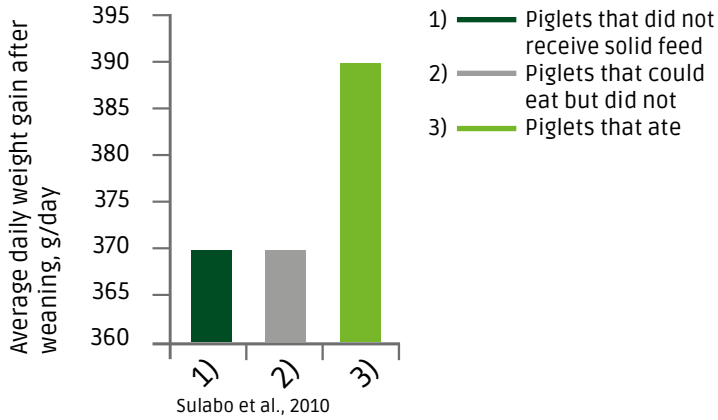
3.2 Advantages after weaning

Supplementary feeding has many advantages

Supplementary feeding of piglets has numerous advantages. In addition to the more homogeneous weaning weight of the litter.
Piglets that are offered additional feed in the farrowing pen show a significantly earlier feed intake after weaning. The lack of a weaning dip has a positive effect on the development of intestinal villi and shows improved daily weight gain in the long term.



Bruininx et al., 2002



Sulabo et al., 2010

4 | BEWI-SAN – promote early feed intake

BEWI-SAN Piglet Start

Post colostrum milk,
to support immunity directly after the birth

BEWI-SAN Digest

Dietary feed supplement,
tasty porridge to promote intestinal development and to support the physiological digestion

BEWI-SAN Pulmo

Supplementary feed,
to support piglet vitality in phases of increased demand

BEWI-SAN Piglet Power

Isotonic tasteful lectrolyte drink,
to regulate the water and electrolyte balance, to provide direct available energy and better blood circulation.

4.1 Post-colostrum milk for large litters and when colostrum intake is insufficient

Piglets are born without maternal immunity. Therefore, earliest colostrum intake is essential for newborns. Due to the placental barrier, they are born without maternal antibodies. This means they do not have any protection against infections or diseases. For this reason, an immediate as well as adequate supply of colostrum is not only essential but also plays a decisive role in farrowing management.

However, litter sizes are increasing and the amount of colostrum per piglet may be insufficient. Particularly the lighter and later born receive less colostrum and therefore have poorer starting conditions. In the case of large litters or if the sows have a below average colostrum supply, this can quickly lead to shortages in supply for the suckling piglets.

In these situations, it is recommended to offer the piglets post-colostrum milk.

BEWI-SAN Piglet Start

Post-colostrum milk to support the immunity of newborn piglets immediately after birth

- ✓ Supports the piglet in the case of insufficient colostrum intake and low resistance
- ✓ Prevents dehydration and stabilises the electrolyte balance
- ✓ With immunoglobulins and special egg powder (rich in antibodies)
- ✓ Protects the sensitive gut tissue
- ✓ Contains lactic acid bacteria to stabilise the intestinal flora
- ✓ With all important vitamins to support the immune system in the first weeks of life

Application:
Dissolve 150-200 g **BEWI-SAN** Piglet Start in 1 litre of lukewarm water (max. 40 °C). Immediately after birth up to the 4th/5th day of life (ensure colostrum intake); then switch to milk from the **BEWI-MILK**® Piglet programme.

Packaging:

3 kg bucket | 10 kg bucket

4.2 To support gut development and physiological digestion

Pig producers are seeing a trend toward greater birth weight and performance variance among piglets in large litters. Consequently smaller and more vulnerable piglets are challenged to consume adequate nutrients. Good intake of fibrous, palatable feed at a young age is essential for a good gut maturation, well balanced gut microbiota, resulting in excellent piglet health. Therefore, helping the piglet to cope with neophobia direct after birth will improve feed intake and result in better performance.

The development of the gastrointestinal tract of piglets is a process that begins immediately after birth and continues after weaning. The gut microbiota has many beneficial functions, such as fermenting fibre, stimulating immune development and preventing colonisation by undesirable bacteria. Dysbiosis of the gut microbiota is one of the factors leading to problems and is considered to be one of the main causes of post-weaning diarrhoea and associated intestinal infections in piglets.

Therefore, the influence of colonising gut microbiota on intestinal development is crucial as in this early-life period, because it has long-lasting impact on health and performance.

BEWI-SAN Digest

Dietary feed supplement to stabilise the water and electrolyte balance and to support physiological digestion

- ✓ Natural, dietary components with toxin-binding properties
- ✓ Appetite-stimulating substances increase early feed intake
- ✓ Normalises intestinal function
- ✓ Promotes the regeneration of the intestinal wall and protects the intestinal mucosa
- ✓ Low risk of spoilage, therefore easy to use

Application:
As starter feed for suckling piglets and/ or in the in case of diarrhoea: Mix 75 - 90 g in 1 litre of lukewarm water; feed in small quantities from the 2nd day of life until piglet milk is offered.

To support after weaning or in case of feed change:
Mix 75 - 90 g in 1 litre of lukewarm water; feed immediately after weaning, restrictively and in several portions throughout the day;
Application: 3 - 4 days

Packaging:

3 kg bucket | 10 kg bucket | 25 kg bag

4.3 Importance of an optimal water and electrolyte balance

Pre-weaning strategies aim to give piglets a stronger start and to learn them eating as early as possible to prepare them for the post weaning challenges. We offer feeding solutions, a strategy used to increase piglets' nutrient intake and familiarize them with solid food prior to weaning.

Weaning is one of the most stressful events in a pig's life. The piglets undergo social, environmental and nutritional stressors at a time when their immune system is not fully developed. Many different strategies can be adopted to get piglets off to a better start, both pre-weaning (in the farrowing stable) and post-weaning (in the nursery).

BEWI-SAN Piglet Power is used from day 2 until **BEWI-MILK**® is offered. It helps piglets rebuild the electrolyte and water balance and has a taste profile they can't resist. Phytogenic components facilitate the bloodstream and facilitating the better thermoregulation. The first week of life sets the basis for healthy growth throughout its lifetime.

BEWI-SAN Piglet Power

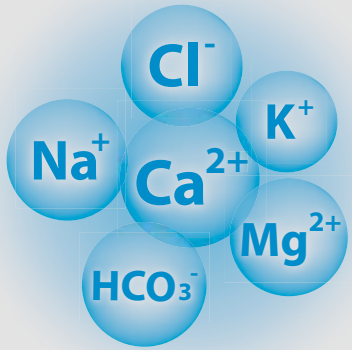
Isotonic tasteful electrolyte drink to stabilise physiological digestion and regulate the electrolyte balance of suckling piglets

- ✓ A learning process for early consumption of supplementary feedstuffs offered in addition to sow's milk (e.g. piglet milk, pre-starter)
- ✓ More active piglets thanks to easily digestible and quickly available energy
- ✓ Ensures that animals receive enough electrolytes, stabilises physiological digestion
- ✓ Ideal supplement for additional water intake by piglets

Application:
Dissolve 50 g of **BEWI-SAN** Piglet Power per litre of water (around 30°C). Offer unlimited amounts until the piglets are five days old. Then switch to piglet milk or pre-starter. Specially developed to provide suckling piglets in the first few days of life with an additional source of direct available energy, valuable electrolytes and more fluid.

Packaging:

3 kg bucket | 10 kg bucket | 25 kg bag



4.4 Stabilisation of growth performance

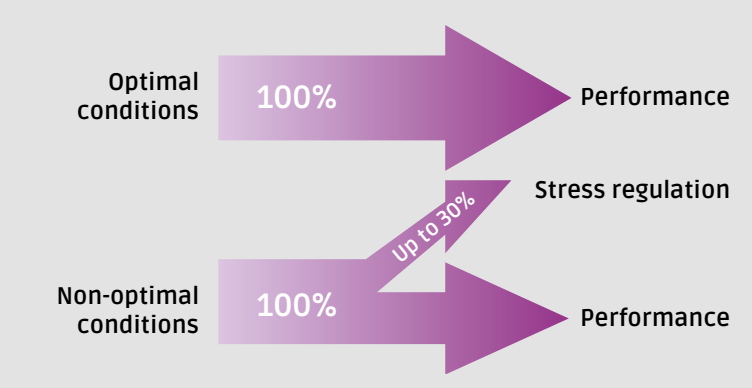
In piglet rearing, the growth potential of the animals should be optimally used. Stress during this phase costs the animal energy and therefore usually also growth. It is therefore of great importance to cover this increased need of the animal. This can prevent growth depression and minimise financial losses.

Inanimate influencing factors: e.g. transport, stabling/re-stabling, feed change, weaning

Animated influencing factors: e.g. viruses, bacteria

Farm management and an 'eye for the animal' also often play an important role. Inanimate factors can often be minimised by simple management measures. Supporting the immune system is extremely important to prevent negative effects.

- **BEWI-SAN** Pulmo supports the pig's immune system in situations of increased demand.



BEWI-SAN health & care

BEWI-SAN Pulmo

Supplementary feed to support piglet vitality in phases of increased demand

- ✓ Supports the animal in phases of increased demand
- ✓ Promotes balanced feed intake
- ✓ To prevent growth depression
- ✓ Supports the immune system
- ✓ Promotes healthy growth
- ✓ With appetising fenugreek

Application:
Add 10 g **BEWI-SAN** Pulmo per animal and day to the milk feeding. Feed throughout whole time of drinking period.
For piglet rearing use 3.5-5 kg **BEWI-SAN** Pulmo per ton of compound feed.

Packaging:

3 kg bucket | 10 kg bucket | 25 kg bag

BEWI-SAN health & care

4.5 Better heat with **BEWI-SAN** Flush

After weaning, the aim is to get the sows back into the next heat quickly. This forms the basis for optimum fertility performance and pregnancy rates. In addition to environmental influences such as light, boar contact and housing conditions, feeding should also be scrutinised.

With BEWI-SAN Flush, we offer the optimum supplement for your sows after weaning. The supply of quickly available energy increases the ovulation rate in a targeted manner. The increased energy supply ensures that the production of luteinising hormone (LH) and follicle stimulating hormone (FSH) is quickly stimulated after lactation. These are responsible for the growth and maturation of the follicles. This is initiated by an increased insulin level in the blood.

The additional supply of vitamins and trace elements strengthens the sow's immune system, replenishes the stores and has a positive effect on fertility. A vitamin supplement can have a positive effect on the animal, especially in phases of increased demand such as after weaning.

We were able to demonstrate the positive effect on the following lactation in a trial on our **BEWITAL agri** partner farm.

	n	Live-born piglets	Weaned piglets
BEWI-SAN Flush	377	14.41	13.31
Positive control	291	14.06	12.89
		+ 0.35	+ 0.41

BEWITAL agri partner company; data collection from Q3-2023 to Q2-2024

BEWI-SAN Flush

Supplementary feed to support heat and ovulation before insemination

- ✓ Special formulation for rapid achievement of optimum condition (BCS)
- ✓ With quickly available energy and highly digestible crude protein
- ✓ Vitamin E improves vitality and cell protection
- ✓ Vitamin A and beta-carotene support follicle maturation and ovulation
- ✓ Stimulates pregnancy and optimal cell maturation

Packaging:

25 kg bag

Application:
After weaning, feed 100 g **BEWI-SAN** Flush per sow per day over a period of 5 days.

Crude fat:	10.6%
Crude protein:	10.0 %

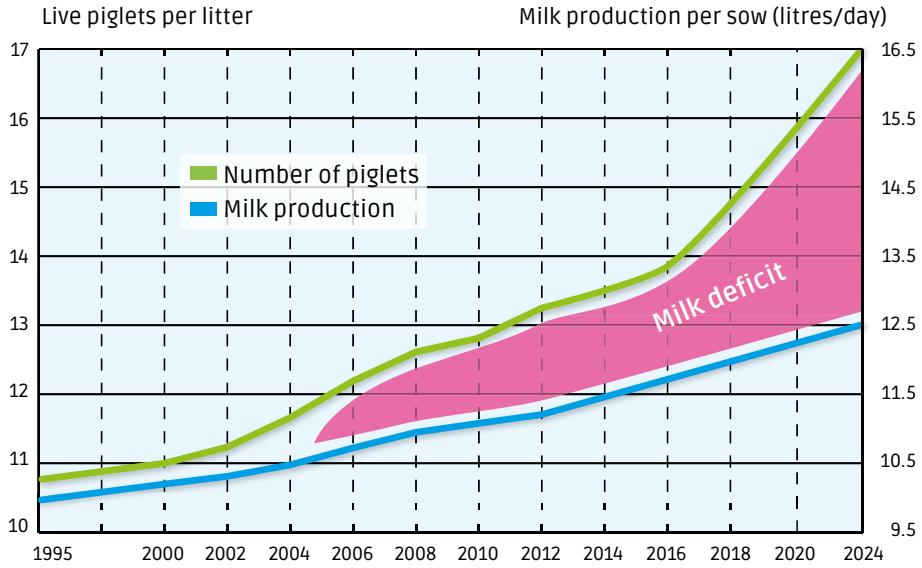
5 | BEWI-MILK® – Our milk replacers

5.1 Why use milk replacer

As the modern sow gives birth to more and more live-born piglets, an alternative feeding strategy on the farm is needed. There are many benefits to be gained from supplementing the sow's milk with a high quality milk replacer. Due to the natural suckling behavior of pigs, increasing litter size results in an increase in number of piglets missing milk production, increased risk of dying and reduced weaning weight.

Supplying additional nutrition from milk replacer reduces motality, more weaned piglets with the mother sow and results in higher weaning weights. This brings additional benefit for the piglets as well as the sow like less stress, less spreading of bacteria and viruses and higher weight gain. Additionally piglets are more homogeneous and there are further advantages after weaning.

Litter size rises much faster than milk production



5.2 Follow-on milk and liquid prestarter

Besides milk replacer for the first weeks of life we also offer phase 2 milk replacer or liquid prestarter. Those contain besides high-quality dairy components also vegetable protein and carbohydrates. Carefully selected ingredients help to get the suckling piglets used to digesting those plant-based components at an early stage.

Feeding vegetable protein and starch before weaning optimises the preparation of the gastrointestinal tract and trains the digestive system for the time after weaning. Early preparation for plant-based digestion therefore significantly reduces the problems associated with weaning.

5.3 Our **BEWITAL**-Vitality-System

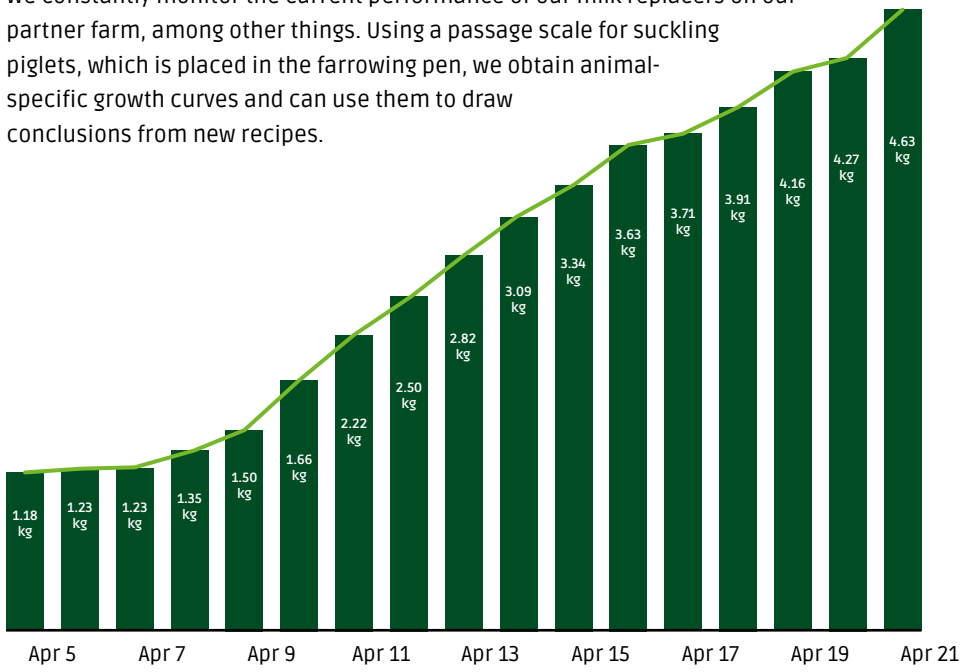
In order to optimise piglet rearing and support the health of the animals, our **BEWITAL**-Vitality-System (BVS) was further developed on the basis of the latest results of animal nutrition research and extensive practical studies on farms.

With our **BEWITAL**-Vitality-System (BVS), our milk replacers contain all the important safety components for optimal piglet rearing:

- **Sweetener and flavour package:**
  This ensures optimal acceptance and intake
- **Organic acids:**
  These regulate the pH value in the intestine and optimise the living conditions of the intestinal flora
- **Special fat formulation:**
  Optimal particle size, optimised for best digestibility and utilisation
- **Probiotics:**
  Living microorganisms displace pathogenic germs
- **Prebiotics:**
  Promote the growth of positive bacteria in the gut

Optimisation through continuous monitoring

We constantly monitor the current performance of our milk replacers on our partner farm, among other things. Using a passage scale for suckling piglets, which is placed in the farrowing pen, we obtain animal-specific growth curves and can use them to draw conclusions from new recipes.



5.4 Our **BEWI-MILK®** Product range

BEWI-MILK® Piglet Premium

Milk replacer for piglets to supplement sow's milk with increased crude fat and crude protein content

- Tasty and highly digestible
- With lactic acid bacteria to stabilise the intestinal flora
- Perfect solubility
- Stimulates the development of intestinal villi
- For vital and vigorous piglets

21.0 % crude protein
18.0 % crude fat

BEWI-MILK® Piglet Sprint

Milk replacer for piglets to supplement sow's milk

- Palatable and high digestible
- High quality dairy products combined
- with high quality protein sources
- Perfect solubility
- For vital and vigorous piglets

20.0 % crude protein
15.0 % crude fat

BEWI-MILK® Piglet Cup

Milk replacer for piglets to supplement sow's milk

- Specially designed for use in automatic feeding systems
- High milk protein content
- For healthy and fast-growing piglets
- Perfect solubility
- Very tasty for good intake

21.5 % crude protein
12.5 % crude fat

BEWI-MILK® Piglet Grow

Milk replacer for piglets to supplement sow's milk as follow-on milk or liquid prestarter

- For a smooth transition to the weaning phase
- For cost-effective feeding
- Suitable for automatic feeding systems
- For healthy and fast-growing piglets
- Optimal preparation of the gastrointestinal tract
- Targeted selection of plant-based sources of starch and protein

18.0 % crude protein
8.4 % crude fat

6 | BEWI-FATRIX® – incorporated ingredients

With the help of our special technology of spray cooling in the spray freezing process (cryotechnology), liquid components are mixed with vegetable fats with a high melting point (e.g. palm and rapeseed oil, refined/hydrogenated). The result is small, crystallised particles that are now storage-stable, free-flowing and easily mixable with other feedstuffs.

6.1 BEWI-FATRIX® SynerG+

Medium-chain fatty acids (MCFAs) are particularly important in animal nutrition because of their fast and effective energy-providing properties. The different MCFAs are used to provide energy for the intestinal cells, to improve growth performance and to optimise the rearing of piglets. Stable feed intake and a performance-oriented energy supply are the basis for optimal growth.

The aim must therefore be to support the development of the young piglet as early as possible and to optimise the animal's growth.

BEWI-FATRIX® SynerG+

Unique combination product based on medium-chain fatty acids and plant extracts

- ✓ Optimises the rearing of animals
- ✓ Efficient combination of various fatty acids and plant-based ingredients
- ✓ Stomach-stable and available in the gut
- ✓ Especially for phases of increased demand
- ✓ Very good processability and storability thanks to special production process
- ✓ Free-flowing and easy to dose

This unique combination has been used successfully in practice for many years.

Application:

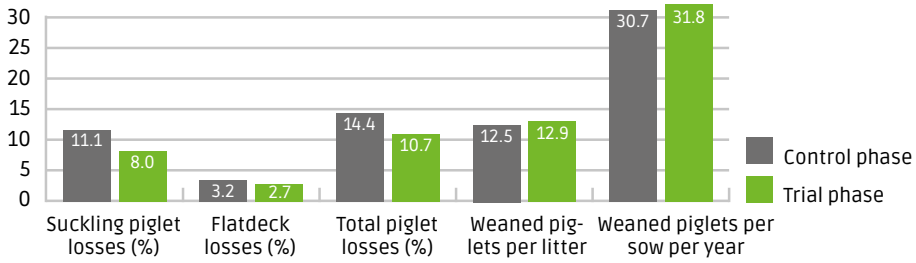
- **Sows:** Use up to 2 % **BEWI-FATRIX®** SynerG+ in the complete feed
- **Piglets:** Use up to 2 % **BEWI-FATRIX®** SynerG+ in the complete feed
- **Fattening pigs:** Use up to 2 % **BEWI-FATRIX®** SynerG+ in the complete feed

Packaging:

25 kg bag

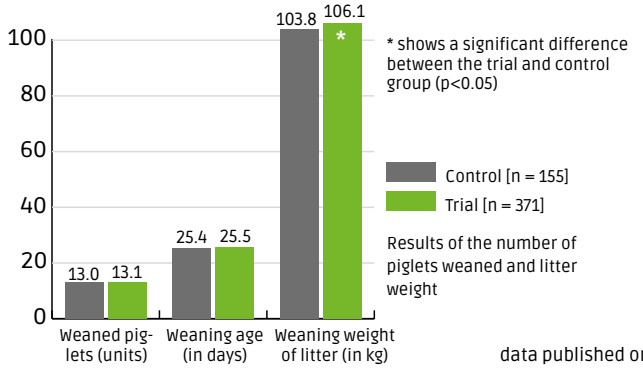
BEWI-FATRIX® SynerG+: practical trials

BEWI-FATRIX® SynerG+ has already been tested many times in practical trials. In this study, its use was tested on a 500 sow farm in the Netherlands. The farm manager reported that the number of piglets weaned was well below the farm's typical performance. The effect of **BEWI-FATRIX**® SynerG+ on piglet losses and the sow's performance was tested on the farm. In the trial phase, the sows were given 4 kg/t **BEWI-FATRIX**® SynerG+ 7 days before to 4 days after farrowing.
In addition, **BEWI-FATRIX**® SynerG+ was dosed with 4 kg/t in the piglet rearing feed.



Results of piglet losses and performance of the sows.

Based on the trial mentioned above, a feeding trial was carried out with a total of 526 analysed litters. The use of **BEWI-FATRIX**® SynerG+ on the performance of lactating sows was tested. Both groups received the farm's standard lactation feed, with the trial group again receiving a supplement of 4 kg/t **BEWI-FATRIX**® SynerG+.



Results of the number of piglets weaned and litter weight

data published on BAT-Conference, Munich, 2021

6.2 **BEWI-FATRIX**® Anionic

Ammonium chloride to reduce the KAB in sow feed
The strongly negative cation-anion balance (CAB) of the product significantly reduces the CAB of the feed. Due to the close correlation between the KAB of the feed and the urine pH of the sows, the urine pH is also significantly reduced by dosing **BEWI-FATRIX**® Anionic. This can greatly reduce the occurrence of MMA.
Our solution for a quick labour and a good start to lactation is therefore as follows: **BEWI-FATRIX**® Anionic.

- ✓ Highly concentrated anionic product
- ✓ High palatability for constant feed intake
- ✓ Continuous release in the metabolism
- ✓ Low dosage and easy application
- ✓ Reduces the risk of MMA
- ✓ Improves the start of lactation in sows

Application:
- 25-35 g **BEWI-FATRIX**® Anionic per sow and day from approx. 3-4 days before farrowing up to 2 days after farrowing
- Control the dosage via urine pH measurement
- Target pH: <6.5

Crude fat:	44.5 %
KAB:	-10175 meq/kg

Packaging:

25 kg bag

7 | Our **BEWI-SPRAY®** and **BEWI-PIG®** products

7.1 Oils and fats

Oils and fats play an important role in animal nutrition. They act as a source of energy, storage medium, help build membranes, and are involved in absorption, synthesis and transport of hormones and vitamins.
Fat is the energy source with the highest energy density in feed. Sow's milk contains around 40 % fat on dry matter basis. This shows that piglets can easily digest fat.

However, the fat contained in the ration must be of the highest quality and easily digestible. The use of **BEWI-SPRAY®** fat powders is an optimal component to close the energy gap in the feed of lactating sows and in piglet feed in particular. This makes a valuable contribution to maintaining performance in all production systems.

BEWI-SPRAY® fat powders offer many advantages

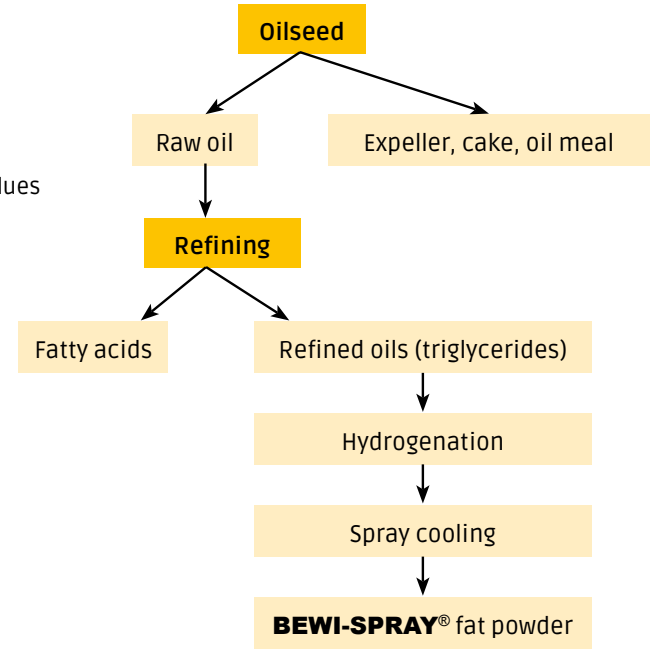
Compared to liquid fats, spray-cooled **BEWI-SPRAY®** fat powders offer many advantages. They can be used not only in complete feeds but also in mineral and concentrate feeds, in contrast to liquid fats.

	BEWI-SPRAY® fat powder	Liquid oils/fats
Storage	Silo, big bag, bag	Tank
Durability	12 months	3-6 months
Oxidation	No risk	Risk exists
Dosage	No limit	Max. 5 % (product quality)

Production process of **BEWI-SPRAY®** fat powders

Refining
Removal of unwanted substances, e.g. dioxins, toxins and pesticide residues

Refining process



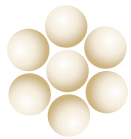
Advantages of BEWITAL fat powders

- Use of pure triglycerides
- High product safety (no risk of undesirable substances)
- No oxidation of hydro-genated triglycerides
- Highest palatability
- Highest digestibility due to fine particle structure

Average fat powder

Large particle size = small surface area for enzymes = low digestibility

BEWI-SPRAY® 99 L
BEWI-SPRAY® RS L



Fine particle size = large surface area for enzymes = high digestibility

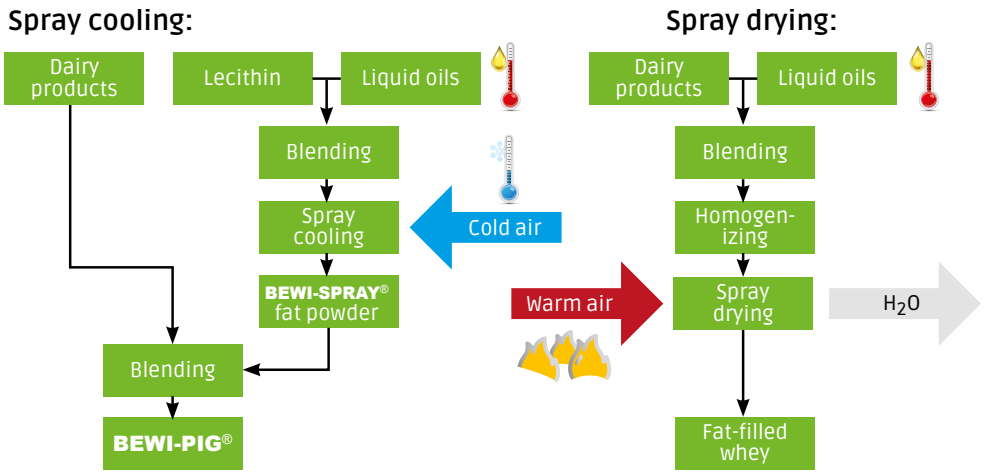
7.2 To ensure energy supply

Genetic development has significantly increased the growth and performance capabilities of pigs. This is accompanied by a significantly higher energy requirement.

For successful and economic pig farming, it is therefore important to optimally design the feed. Highly digestible and energy-rich individual components should therefore be used. This is the only way to optimally maintain vitality and performance capabilities in sows, piglets and fattening pigs.

Spray cooling vs. spray drying

The **BEWITAL** fat powders are produced with a unique production technique in a spray-cooling process. Liquid fats and oils are transformed together with lecithin into highly digestible and easy-to-handle products. They are designed specially for dry feed applications and contain a fat content of >99%.

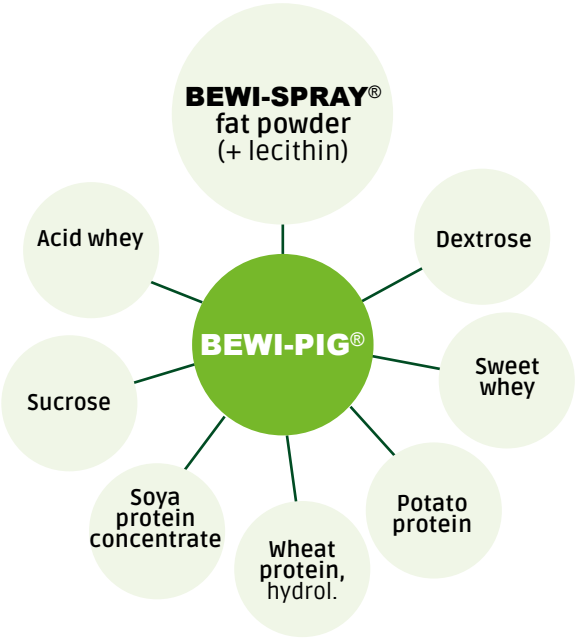


BEWI-PIG® whey fat concentrates

The aim after weaning is early and consistent feed intake. This can only be achieved with the help of palatable and highly digestible protein and energy components. The components are optimised for the piglets' sensitive digestion and specific enzyme activity.

Careful ration design can have a positive influence on the development of intestinal villi, the establishment of a stable intestinal microbiome and the non-specific immune response.

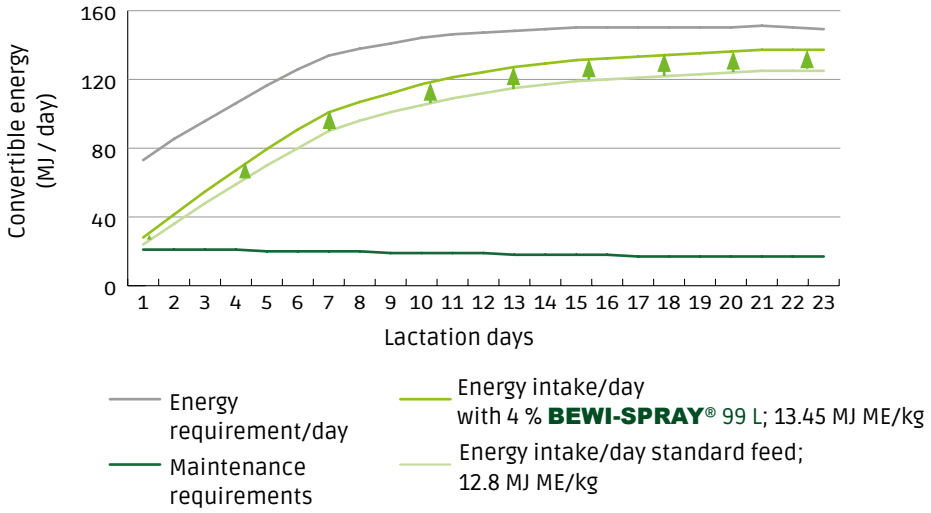
The combination of refined fats, dairy products and high-quality functional proteins offers a high physiological and energetic benefit. All components can already be digested very well in the first days of the piglets' lives. As they are highly digestible and rich in valuable components, they promote high daily weight gains, more vigorous piglets, a quick turnover and lower piglet losses.



The **BEWI-PIG®** range is specially suited to the particular properties of the still-developing digestive system of piglets.

Positive effects for sow and piglets

BEWI-SPRAY® fat powders can also be used to adjust the ration, especially in summer and during periods of increased demand. For example, by adding 4 % **BEWI-SPRAY®** 99 L to the lactation feed, the energy content can be increased from 12.8 MJ ME/kg to 13.45 MJ ME/kg. This significantly reduces the energy gap at the same feed intake. Because of the higher fat content in the complete feed, the lactating sow can consume more easily digestible energy and therefore needs to burn less body fat reserves, which relieves the liver. In addition, the higher energy content increases the sow's milk yield. As a result, the piglets consume more milk and therefore more energy, which has a positive effect on growth.



modified according to Tokach et al., 2019

7.3 Our **BEWI-SPRAY®** fat powders

BEWI-SPRAY® 99 L
BEWI-SPRAY® RS L

Feed material for pigs

- Refined vegetable fats for a high-value source of energy
- Lecithin guarantees maximum digestibility
- Very free-flowing for excellent processability

Also available as a variant with European raw materials!

Application:
BEWI-SPRAY® products can account for 2 to 5% of the total feed.

>99.5 % crude fat

Our **BEWI-SPRAY®** fat powders for monogastric animals contain lecithin. Trials show higher weight gains, better feed conversion and higher digestibility.

The advantages of lecithin:

- Young animals need support with fat digestion
- Contains very effective natural choline to support fat metabolism
- Contains phospholipids, which promote cell formation

Lecithin improves fat digestibility due to its emulsifying and micelle-forming properties.

This guarantees maximum digestibility.
BEWI-SPRAY® fat powders also have very good flow properties. This enables maximum processability on farms and in feed mills.

7.4 Our **BEWI-PIG®** product range

BEWI-PIG® 80 L

Whey fat concentrate with coconut and palm oil for feeding piglets

- Optimal preparation of piglets for a high back-fat quality
- High-energy feed for the best piglet yields
- Lecithin as an emulsifier improves the digestibility of fat and facilitates metabolism
- Fat fraction: 80 % palm, 20 % coconut

Application:
Use 2 to 8 % **BEWI-PIG®** 80 L in total ration.

2.5 % crude protein
80 % crude fat

BEWI-PIG® 50 L

Whey-fat concentrate for piglet feeding

- Combination product for use in piglet feed
- Lecithin guarantees maximum digestibility
- The special manufacturing process enables very good processability
- Fat fraction: 100 % palm

Application:
Use 2 to 8 % **BEWI-PIG®** 50 L in total ration.

5.8 % crude protein
50 % crude fat

BEWI-PIG® 50 CPL

Whey fat concentrate with coconut and palm oil for feeding piglets

- Combination product for use in piglet feed
- Lecithin guarantees maximum digestibility
- The special manufacturing process enables very good processability
- Refined vegetable fats serve as a very good source of energy with an excellent fatty acid pattern
- Fat fraction: 50 % palm, 50 % coconut

Application:
Use 2 to 8 % **BEWI-PIG®** 50 CPL in total ration.

6.0 % crude protein
50 % crude fat

BEWI-PIG® 20-20 S

Combination product for producing high quality piglet feed

- Supreme quality whey protein: guarantees high digestibility and increases immunity
- Source of lactose: highly digestible and palatable
- Highly digestible energy source: refined vegetable fats
- Up to 25 % in complete feed

Application:
Use 2 to 8 % **BEWI-PIG®** 20-20 S in total ration.

20 % crude protein
20 % crude fat

BEWI-PIG feed ingredients

7.5 Effects of different fat sources on energy digestibility in piglets

Objective:
The aim of the study was to quantify the effects of supplementing the piglet feed with different sources of fat on energy digestibility.

Material and methods:
In a trial at TH Bingen, the following fat sources were tested for their energy digestibility in young piglets: Soya oil, whey fat concentrate, **BEWI-SPRAY®** 99 L and **BEWI-PIG®** 80 L.
For this purpose, the tested fat sources were added to basic feed. All variants were isoenergetically optimised. After a 5-day adaptation phase to the test feed, the 5-day trial phase took place with quantitative collection of the faeces. The average weight of the piglets at the start of the trial was 12.8 kg (+/- 0.4 kg). The trial was carried out as a 6-fold repetition.

Results:

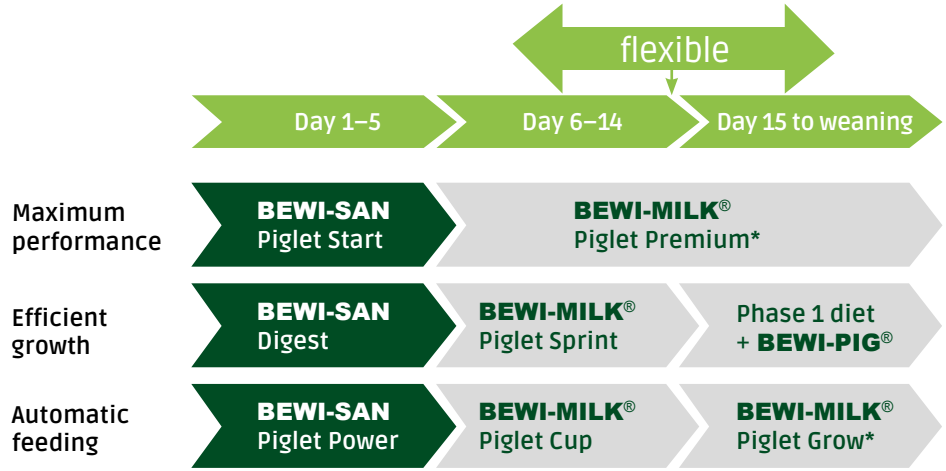
Variants	Soya oil	Whey fat concentrate	**BEWI-SPRAY®** 99 L	**BEWI-PIG®** 80 L
Gross energy (MJ/kg)	19.0	18.8	19.0	18.9
Crude protein (g/kg DM)	23.5	22.6	22.9	24.0
Crude fat (g/kg DM)	57	58	54	53
Crude fibre (g/kg DM)	58	54	58	56
Energy digestibility (%)	**86.3**	**84.6**	**84.1**	**83.4**
Significance	n.s.*	n.s.*	n.s.*	n.s.*

*n.s.: not significant

Conclusion:
At 84.1% and 83.4%, the energy digestibility of **BEWI-SPRAY®** 99 L and **BEWI-PIG®** 80 L is just as good as that of soybean oil and whey fat concentrate. No significant differences in energy digestibility could be determined, which shows that piglets digested the energy from all variants equally well.

8 | Feeding instructions

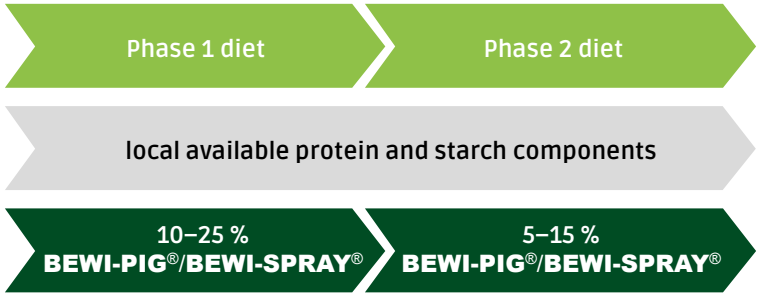
8.1 Suckling piglets



* administer phase 1 diet minimum 7 days before weaning

The optimum feeding plan depends on various factors on the farm. Talk to us to find the perfect feeding concept for your farm.

8.2 Weaned piglets



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