Topigs Norsvin



Piglet Nutrition and Management Manual

From birth to the nursery: Establishing a strong foundation for a successful lifetime performance

Global Nutrition and Female Reproduction Services
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1 Introduction

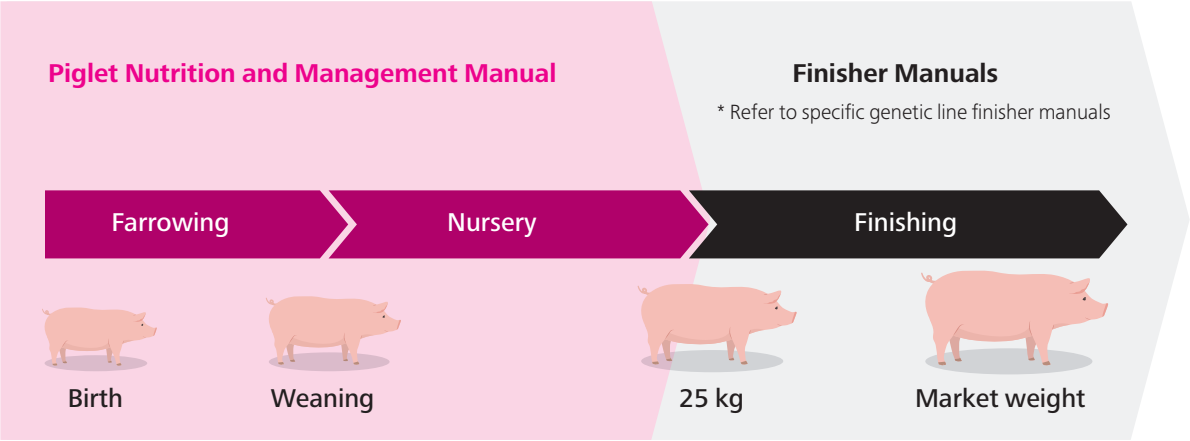
Topigs Norsvin has been committed to a responsible, sustainable, and balanced breeding program resulting in robust animals capable of generating high-quality progeny. This advanced and comprehensive breeding approach results in a healthy pig capable of high-level production across a range of farm conditions.

Effective piglet rearing relies on optimizing feed intake, growth rates, and ensuring a healthy gut development. Once feed intake is established, good management and feeding practices become key to supporting their continued growth in the nursery phase. The feeding program and management practices implemented before and during the nursery phase significantly influence lifetime performance and have a direct economic impact. Therefore, it is crucial to give this phase the attention it deserves.

2 Aim of the manual

The Piglet Nutrition and Management Manual provides comprehensive nutrition and management guidelines, tailored to all Topigs Norsvin sire lines progeny. This manual provides practical recommendations from the suckling period through the nursery and into the transition to the finisher barn, supporting producers in achieving performance targets while promoting piglet health and growth.

The following chapters provide step-by-step guidance to ensure piglets reach their full potential and achieve optimal performance from birth throughout the nursery phase, setting the stage for a strong finisher potential later in life.

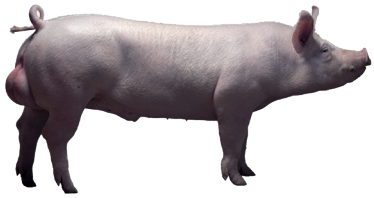
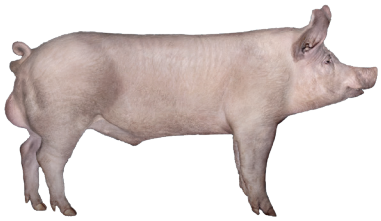
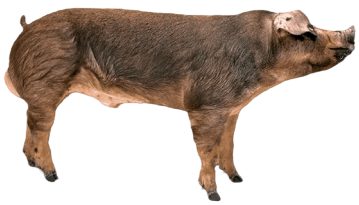


3 Topigs Norsvin sire lines and their success factors

Continuous progress in swine genetics is enhancing the efficiency of pork production, while also improving other desirable characteristics. The Topigs Norsvin sire lines are developed to meet the diverse requirements of the various markets worldwide. Due to the rapid genetic progress in pigs, it is important to feed all genetic lines according to their continuously changing nutritional requirements.

Even though each line has distinct requirements during the finisher period (>25 kg), the nutritional differences are minimal at an early age. In this manual, general requirements for Topigs Norsvin piglets are presented and can be used for all sire line progeny. Phenotypic differences between the lines should always be considered, especially around weaning (Figure 1). Ultimately, the specific needs per sire line can be managed through well-developed diets, feed programs, and adjusted management.

Figure 1. *Topigs Norsvin sire lines portfolio: characteristics and success factors.*

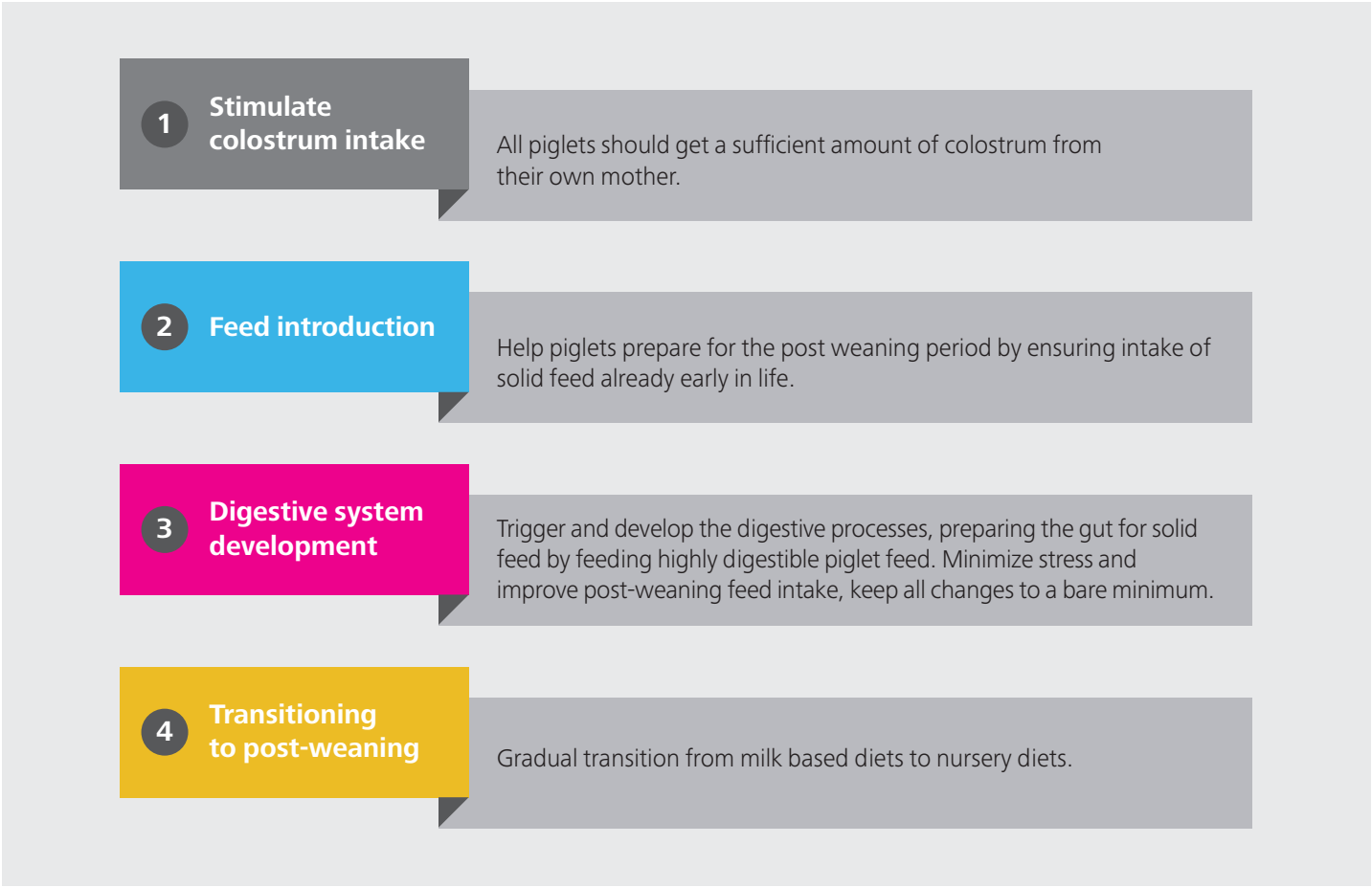
Sire line	Characteristics	Success factors
TN Duroc (D-line) 	A purebred Duroc boar who is naturally robust, known for its strong start and feed efficiency.	**Variation in feed intake reflects their adaptability** 1. Prioritize amino acid balance over high crude protein levels for superior performance. 2. Include sufficient fibers as they are crucial for maintaining proper digestive function and promoting early-life gut health. 3. Attention to feed intake in early life, since it can vary depending on different environmental conditions and feeding strategies.
TN Tempo (E-line) 	A white synthetic boar of Large White origin who is the world champion in robustness and vitality from birth until slaughter, with carcass traits that fit the world's demands.	**High feed intake pre- and post-weaning** 1. Robust and uniform piglets during the pre- and post-weaning period. Provide ad libitum feed and avoid empty feeders to promote uniformity. 2. Ensure optimal digestible lysine to energy ratio and optimized amino acid profile to support muscle growth and support behavior. 3. High feed intakes are reached at a young age. Therefore, support gradual feed intake to avoid overconsumption.
TN Select (P-line) 	A robust and fast-growing Piétrain with outstanding feed conversion and survival rates.	**Steady feed intake over time** 1. Feed intake stimulation at a young age is key. Concentrated diets (including digestible lysine to energy ratio) are needed to meet the daily requirements. 2. Ensure an optimized amino acid profile to support muscle growth and support behavior. 3. Provide a warmer environment at the beginning of the nursery phase compared to other sire lines.
TN Rex (E*P-Line) 	A robust Piétrain-type terminal boar who stands out for high daily gain with outstanding carcass quality, especially in hot climates.	**High and consistent feed capacity, also in hotter climates** 1. Lower crude protein diets will lower internal heat production, and using synthetic amino acids helps meet protein requirements for optimal performance. 2. Increase the number of daily feedings to lower the energy needed for digestion and decrease internal heat production. 3. Replace starch with fat to reduce the thermal effect of the feed.
Iberduroc (U-Line) 	A Spanish Duroc boar, specifically bred for the production of highly marbled premium pork.	**Superior feed intake at an early age** 1. Limit crude protein levels during the first week post-weaning and provide synthetic amino acids to meet the piglets' daily nutritional requirements. 2. Use high-digestible and good-quality raw materials, thereby limiting the risk of antinutritional factors. 3. Use the correct type of fiber in the diets to focus on gut health. Insoluble fibers are preferred in the initial diets.

For detailed nutrition advice on diets, please contact your responsible Topigs Norsvin specialist.

4 Success factors of the piglet management program

To maximize the piglets' genetic potential, Topigs Norsvin adopted an approach based on four key aspects of a successful piglet management program (Figure 2).

Figure 2. *Key aspects of a successful piglet management program.*



1. Stimulate colostrum intake

Ensure that all piglets get enough colostrum from their own mother.

- Piglets need, on average, 250 g of colostrum to be vital.
- The concentration of IgG in colostrum drops by around 70% in the first 12 hours after farrowing. Therefore, the colostrum intake shortly after birth is crucial. If piglets do not ingest colostrum in the first 6-12 hours, they have a higher chance of dying due to starvation or crushing in the first 5 days after farrowing.
- Gently feel the piglet's stomach. A full stomach indicates that colostrum was ingested.
- Split suckling can be an alternative management for improving piglets' survival in larger litters. Split the group by first-born piglets and later-born piglets. Mark and separate the first-born piglets for 45-60 minutes. This ensures that the later-born piglets also have sufficient time and space to consume colostrum.
  For more information, refer to the Sow Farrowing and Lactation Manual.

2. Feed introduction

The goal is to train and stimulate feed intake at an early stage, as there is a positive link between solid feed intake during lactation and the post-weaning period (Bruininx et al., 2002).

- Introduce piglets to the feeder and promote early feeding.
- Use a highly digestible and palatable creep feed (high in lactose and sugar) to encourage them to eat.
- Feed small quantities at higher frequencies to stimulate feed intake and make sure that the feeder is emptied at least once a day. This practice ensures that the piglets always have access to fresh feed. If a specialized feeder is not available, you can use floor (mat) feeding with crumble or meal as an alternative.
- *Learning to eat is more important than the diet itself.*

3. Digestive system development

Feeding a highly digestible piglet feed activates and develops the digestive processes and prepares the gut for other feedstuffs beyond milk.

- Introduction of creep feeding will help the digestive system to digest vegetable protein and starch complexes.
- Start introducing soybean proteins and cooked cereals.
- Minimize stress to improve feed intake.
- Introduce post-weaning diet at least 5 days before weaning to improve post-weaning feed intake.

4. Transitioning to post-weaning

Have a gradual transition from milk-based diets in lactation to post-weaning nursery diets.

- Top-dress with the same pre-weaning creep feed for at least one day post-weaning.
- Use the same or similar feeder and drinker that were used in the lactation room.
- Follow the recommended procedures (gruel feeding, feeding amounts, times, and schedules). provided in this manual to guarantee a smooth transition from milk to solid feed.

5 Feeding Topigs Norsvin piglets

Weaning is one of the most stressful periods in the pig production cycle, as it is associated with adverse effects such as abrupt withdrawal of sow milk, low and variable feed intake, and adaptation to a new environment. These early-life changes and stressors can impact piglets later in life, making them more susceptible to diseases, and may result in suboptimal performance.

To help pigs through this challenging period, supportive nutrition and care are essential. In that sense, it is crucial to ensure that piglets receive a good-quality diet that helps them cope with all the changes. In addition to the required nutrients, nursery diets should also support gut development. Research has shown that both growth rate and feed efficiency are highly sensitive to changes in feed quality in the first week post-weaning (Collins et al., 2017). These challenges can be addressed by following the recommendations and guidelines provided in this manual.

5.1 Background on piglet feeding programs

The conditions described below are as close as possible to the practical conditions found in most farms globally.

Condition	Specification
Time frame	From birth until 25 kg of body weight
Weaning ages	21, 28, and 35 days
Number of feeding phases	3-phase feeding program from weaning to 25 kg
Sire line	Diets comply with the needs of all sire line progeny
Feed type	Pellets, mash, or crumble with a dry matter content of 88%
Room temperature	See Table 8

5.2 Important aspects to consider before weaning

Birth weight

Topigs Norsvin piglets' feed programs have been developed considering piglet birth weight as a non-limiting factor. However, as weight at birth influences piglet survivability and later production, a guideline to improve birth weight is provided below.

Heavier piglets are more vital and have higher colostrum intakes. Higher colostrum intakes increase their chance of coping with challenges during the weaning period and thriving as finishers. Improved birth weight leads to higher milk and feed intake during lactation (improving weaning weights), reduced pre-weaning and post-weaning mortality, and a better lifetime daily gain. There are several strategies in sows' feeding and management which can be used to increase birth weight and litter uniformity.

For more information, refer to the sow nutrition manual for each genetic line.

Weaning age

The weaning age of piglets differs among countries and farms. This manual addresses the differences in feeding and managing piglets according to their weaning ages. The following distinctions have been made:

1. Weaning piglets at 21 days
2. Weaning piglets at 28 days
3. Weaning piglets at 35 days

The feed concepts and management guidelines presented in this manual apply to all groups (see Figure 3). The main difference between these three weaning age groups is the number of feeding days for the recommended diets. The influence of different weaning ages (19, 22, 25, 28, and 34 days) on nursery performance is shown in Figure 4.

Figure 3. *Layout of the Topigs Norsvin piglet management program (based on weaning age).*

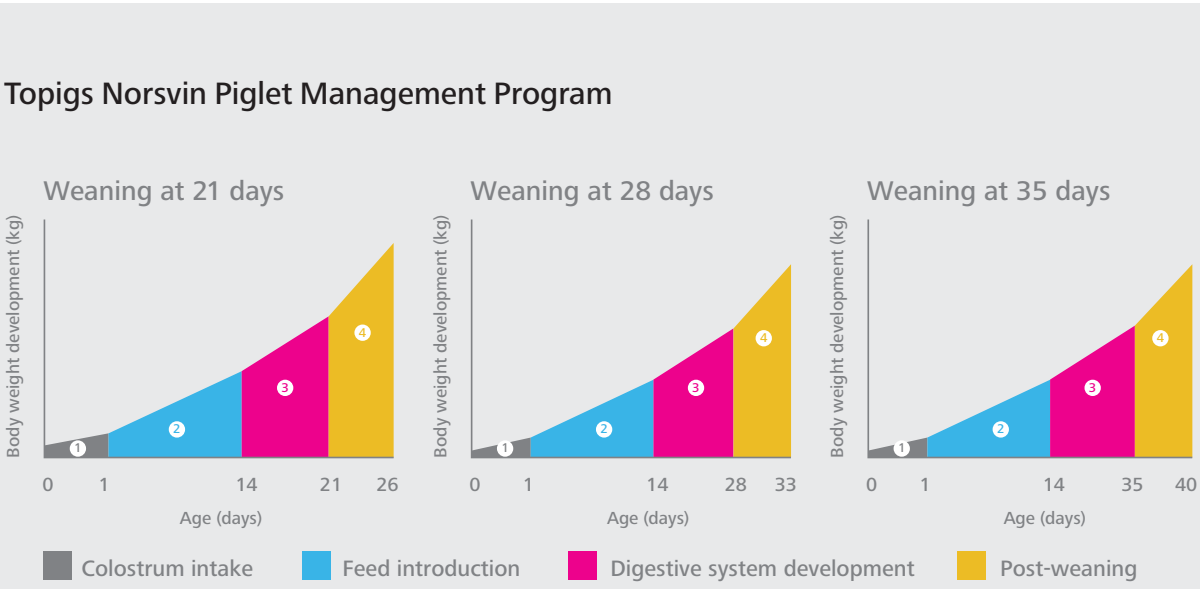
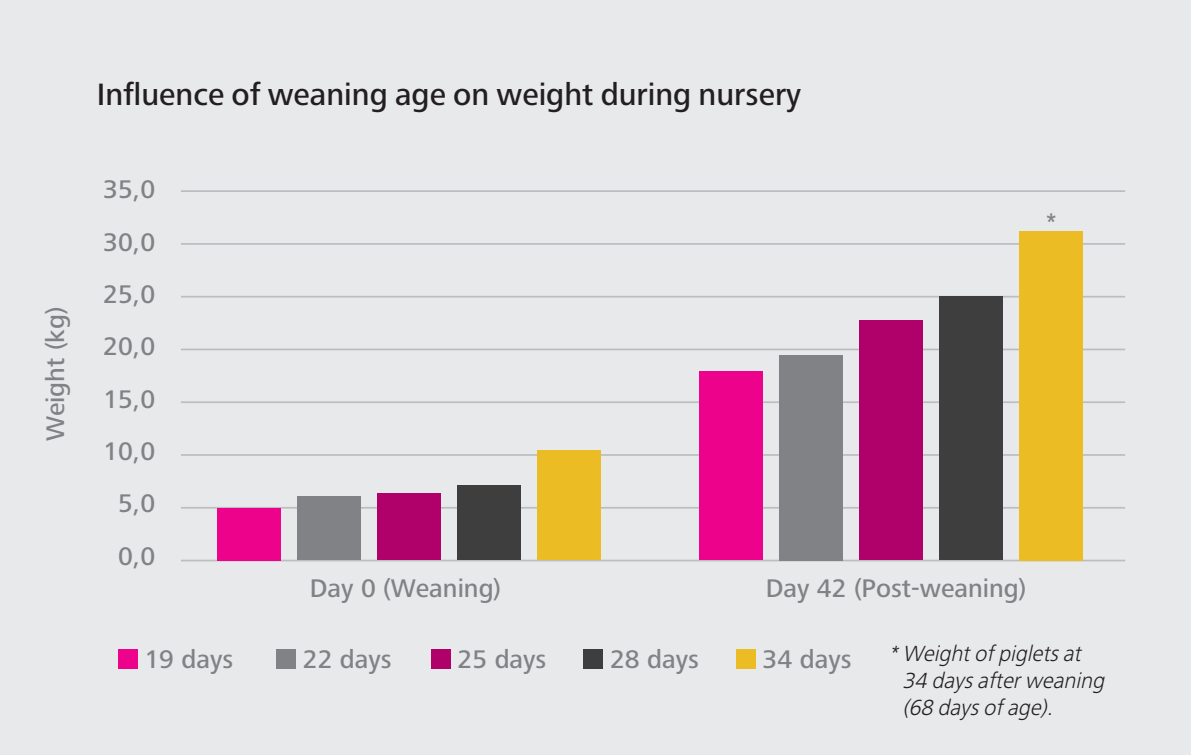


Figure 4. *Influence of weaning age on nursery performance 42 days after weaning (adapted from Animalia (2024) and Faccin et al. (2020a)).*





TIP: investing in older weaning ages supports better pig performance!

- **Higher weaning weights**
- **Better intestinal health and immune barrier**
- **Lower stress levels**
- **Enchanced immune function**
- **Improved post-weaning performance**

Stronger ability to succesfully navigate the transition to the nursery phase and continue to grow on a faster rate, resulting in greater efficiency and reduced labor needs.

References: Faccin et al., 2020a, 2020b; Li et al., 2016; Moeser, Pohl & Rajput, 2017.

Type of feed programs

Aligned with global developments in piglet feeding programs, a clear distinction is made between programs that focus on gut development and those that primarily aim to achieve maximal performance. Based on the main differences mentioned, Topigs Norsvin developed two different feed programs: the Secure Feed Program and the Potential Feed Program. The basic assumptions per feed program can be found in Figure 5.

1. The Secure Feed Program - Focus on optimal gut health and intestinal development.
2. The Potential Feed Program – Focus on maximal growth and performance.

Note that a good growth rate can be achieved regardless of which program is chosen.

The feed programs are based on a minimum of 3 phases and cover the phase from weaning to 25 kg.

Figure 5. *Basic assumptions of the Secure and Potential Feed Programs.*

Topigs Norsvin Piglet Feed Management Program

Secure	Potential
• Focus on optimum gut development, health and integrity • Focus on preventing digestive upsets and villi atrophy • Slower start, better lifetime performance	• Focus on maximal growth and technical performance • Products (e.g. antibiotics, growth promoters, zinc oxide) might be needed in combination with higher nutrient-dense diets to manage digestive upsets • Fast start and higher nursery gains

5.3 Nutrient recommendations

The nutrient recommendations are based on data collected by Topigs Norsvin and best practices working with different Topigs Norsvin lines. The diet minimum (min) and maximum (max) ranges allow for variation between farms, health status, sire line, and daily feed intake. The min-max ranges also serve to address nutritional differences between diets formulated with wheat-barley versus corn-soy blends. Be aware that feed intake can vary due to different health statuses and between farms.

Diet specifications for Secure (Table 1) and Potential (Table 2) Feed Programs are given below.

Table 1. *Diet recommendations for the Secure Feed Program.*

Secure Feed Program						
Feeding plan (days on feed)						
	Phase 1		**Phase 2**		**Phase 3**	
Weaning age	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**
21-day weaning	7	14	14	21	14	21
28-day weaning	4	7	7	14	21	28
35-day weaning	0	5	7	14	28	35
Nutrients						
NE (MJ/kg)	9.9	10.3	9.8	10.2	9.7	10.1
NE (Kcal)	2366	2462	2342	2438	2318	2414
SID Lysine (%)	1.04	1.13	1.08	1.17	1.07	1.21
SID Lysine: NE ratio (g/MJ)	**1.05**	**1.10**	**1.10**	**1.15**	**1.10**	**1.20**
Minerals (%)						
Ca[1]	0.55	0.65	0.60	0.70	0.65	0.75
STTD P[2]	0.37	0.39	0.36	0.38	0.32	0.34
Na	0.25	0.40	0.20	0.25	0.20	0.25
Cl	0.32		0.32		0.32	
Mg	0.15	0.20	0.13	0.30	0.10	0.30
K		1.10		1.10		1.10

[1] *Topigs Norsvin bases its recommendations on total Ca and does not consider Ca release from phytase due to insufficient digestibility data.*

[2] *The level of digestible phosphorus (%) is expressed as STTD P (standard total tract digestibility). We recommend the utilization of phytase to reduce phosphorus excretion and environmental impact. Topigs Norsvin recommends a maximum release of 1.2 to 1.3 g/kg of STTD-P (digestible P) when using 500-1000 FTU of phytase, even in scenarios where super dosing is applied.*

Table 2. *Diet recommendations for the Potential Feed Program.*

Potential Feed Program						
Feeding plan (days on feed)						
	Phase 1		**Phase 2**		**Phase 3**	
Weaning age	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**
21-day weaning	5	14	14	21	14	21
28-day weaning	3	7	7	14	21	28
35-day weaning	0	4	7	14	28	35
Nutrients						
NE (MJ/kg)	10.1	10.9	10.1	10.9	10.0	10.6
NE (Kcal)	2414	2605	2414	2605	2390	2533
SID Lysine (%)	1.21	1.42	1.21	1.42	1.20	1.38
SID Lysine: NE ratio (g/MJ)	**1.20**	**1.30**	**1.20**	**1.30**	**1.20**	**1.30**
Minerals (%)						
Ca[1]	0.60	0.70	0.65	0.75	0.70	0.80
STTD P[2]	0.38	0.45	0.37	0.42	0.34	0.38
Na	0.25	0.40	0.20	0.35	0.20	0.25
Cl	0.32		0.32		0.32	
Mg	0.15	0.20	0.13	0.30	0.10	0.30
K		1.10		1.10		1.10

[1] *Topigs Norsvin bases its recommendations on total Ca and does not consider Ca release from phytase due to insufficient digestibility data.*

[2] *The level of digestible phosphorus (%) is expressed as STTD P (standard total tract digestibility). We recommend the utilization of phytase to reduce phosphorus excretion and environmental impact. Topigs Norsvin recommends a maximum release of 1.2 to 1.3 g/kg of STTD-P (digestible P) when using 500-1000 FTU of phytase, even in scenarios where super dosing is applied.*

Table 3. *Amino acid recommendations for nursery piglets.*

Amino acid profile[1]	Phase 1		Phase 2		Phase 3	
	Min	Max	Min	Max	Min	Max
SID Lysine	100	100	100	100	100	100
SID Methionine	32	34	32	34	32	34
SID Methionine + Cysteine	59	62	59	62	59	62
SID Threonine	63	67	63	67	63	67
SID Tryptophan	20	22	20	22	20	22
SID Valine	66	70	66	70	66	70
SID Isoleucine	53	57	53	57	53	57
SID Leucine	98	102	99	104	100	105
SID Histidine	31	34	32	35	32	35

[1] *The amino acid profile was calculated based on the recommended amino acid profile compiled from various sources, such as CVB (2023), FEDNA (2013), NRC (2012), NSNG (2010), and the practical experience of our nutrition team.*

5.4 Vitamin and mineral recommendations

Table 4. *Added vitamin recommendations per kg of feed for nursery piglets.*

Vitamins	Units	Phase 1		Phase 2		Phase 3	
		Min	Max	Min	Max	Min	Max
Fat-soluble vitamins							
Vitamin A	IU	15000	16000	13500	16000	12000	16000
Vitamin D3*	IU	1800	2000	1800	2000	1800	2000
Vitamin E	IU	150	250	125	250	100	250
Vitamin K3	mg	5.0	10.0	4.8	9.5	4.5	9.0
Water-soluble vitamins							
B1 (Thiamine)	mg	3.5	5.5	3.3	5.3	3.0	5.0
B2 (Riboflavin)	mg	10	18	10	18	10	18
B3 (Niacin / Nicotinic acid)	mg	50	80	43	73	35	65
B5 (Pantothenic acid)	mg	30	50	28	48	25	45
B6 (Pyridoxine)	mg	6	8	5	8	4	8
B7 (Biotin)	mcg	300	500	300	500	300	500
B9 (Folic acid)	mg	2.0	3.0	1.8	2.8	1.5	2.5
B12 (Cyanocobalamin)	mcg	50	70	45	65	40	60
Choline/Betaine	mg	400	800	350	650	300	500
C (Ascorbic acid)	mg	-	250	-	225	-	200
L-carnitine	mg	-	50	-	50	-	50

** Use a minimum of 50% in the form of 25-OH D3 as recommended by Global Nutrition and Female Reproduction Services.*

Table 5. *Added trace mineral recommendations per kg of feed for nursery piglets.*

Minerals	Units	Phase 1		Phase 2		Phase 3	
		Min	Max	Min	Max	Min	Max
Fe	mg	160	250	155	215	150	180
Cu	mg	15	150	15	125	15	100
Zn	mg	120	150	120	150	120	150
Mn	mg	50	150	50	150	50	150
I	mg	1.0	3.0	1.0	3.0	1.0	3.0
Se	mg	0.30	0.50	0.30	0.50	0.30	0.50

Remarks

- The recommended trace elements are presented as the added amount in the feed and were derived from various sources, LfL (2019), FEDNA (2013), NRC (2012), NSNG (2010), and the practical experience of our nutrition team.
- Topigs Norsvin recommends using organic or chelated minerals as recommended by the suppliers.
- Always comply with local legislation per country.

5.5 Raw material guidelines

The right level of nutrients combined with good quality raw materials results in the best technical performance. A basic layout containing boundaries or suggestions for certain ingredients is provided to aid in the development of the piglet feeding programs. In Table 6, the "+" represents the preferred inclusion rate of the raw material.

Table 6. *Ingredient boundaries for the Secure and Potential Feed Programs.*

Ingredients	Secure Feed Program			Potential Feed Program		
Energy	**Phase 1**	**Phase 2**	**Phase 3**	**Phase 1**	**Phase 2**	**Phase 3**
Cooked cereals (%)	5-30	5-15	0-5	15-25	5-10	0-5
MCFA[1] oil	+			+		
Lactose[2] (%)	0-5	0-3	0	8-15	5-10	0-5
Protein						
Fish meal/animal protein	+	+		+	+	
Blood plasma[3]	+			+		
Soybean meal	+	++	+++	++	+++	+++
Premium soy	+++	+		+++	+	
Potato protein	++	+		+	+	
Whey protein concentrate	++	+		++	+	
Fiber[4]						
Wheat bran (%)	1-2	2-3	3-5	0-1	0-2	0-4
Sugar beet pulp (%)	1-2	1-2	1-3	0-2	0-2	0-3
Oat hulls (%)	1-2	1-2	1-3	0-2	0-2	0-3
Additives[4]						
Organic acids	+++	++	+	++	+	+
Probiotics	++	+		+	+	
Prebiotics	++	+		+	+	
Enzymes	+	+	+	+	+	+
Organic minerals	+	+		+	+	
Sweeteners/Flavorants	+	+		++	+	
Antioxidants	+	+	+	+	+	+
Mycotoxin binder[5]	+	+	+	+	+	+

[1] *MCFA – Medium-Chain Fatty Acids.*
[2] *In case the weaning weight is lower than the targets, use creep feeds with higher lactose levels to help piglets support feed intake immediately after weaning.*
[3] *The use of any animal by-product in piglet diets needs to be used in accordance with local legislation.*
[4] *Consult with a nutritionist to develop the ideal mix of additives and fibers.*
[5] *Use mycotoxin binders according to the quality of raw materials and consult with a nutritionist for further guidance.*

5.5.1 Dietary fiber in piglet diets

Dietary fiber in piglet diets is a key component in supporting gut health and overall performance. Developing a resilient and healthy gastrointestinal tract is crucial during the critical phases of weaning. Providing the right amount and type of dietary fiber in the piglet diets can support digestive function, gut microbiota, immune function, and reduce post-weaning diarrhea. Fibers are typically characterized by two categories: soluble and insoluble fibers.

Soluble fibers can increase digesta viscosity and slow down its passage through the gut. They are rapidly fermented in the hindgut, producing more volatile fatty acids that promote gut development. However, excessive inclusion in early nursery diets can increase the risk of post-weaning diarrhea. When used appropriately in later nursery stages, soluble fibers can support gut health and enhance intestinal development.

- Soluble fibers include pectins, gums, and β-glucans, commonly found in sugar beet pulp and citrus pulp (Jha & Berrocoso, 2015).

Insoluble fibers help increase the digesta passage rate, reducing the risk of pathogenic buildup and diarrhea. They are less fermentable than soluble fibers and produce lower amounts of volatile fatty acids. In the immediate post-weaning period, insoluble fibers are particularly beneficial, as young piglets have a limited capacity to ferment fiber in the hindgut.

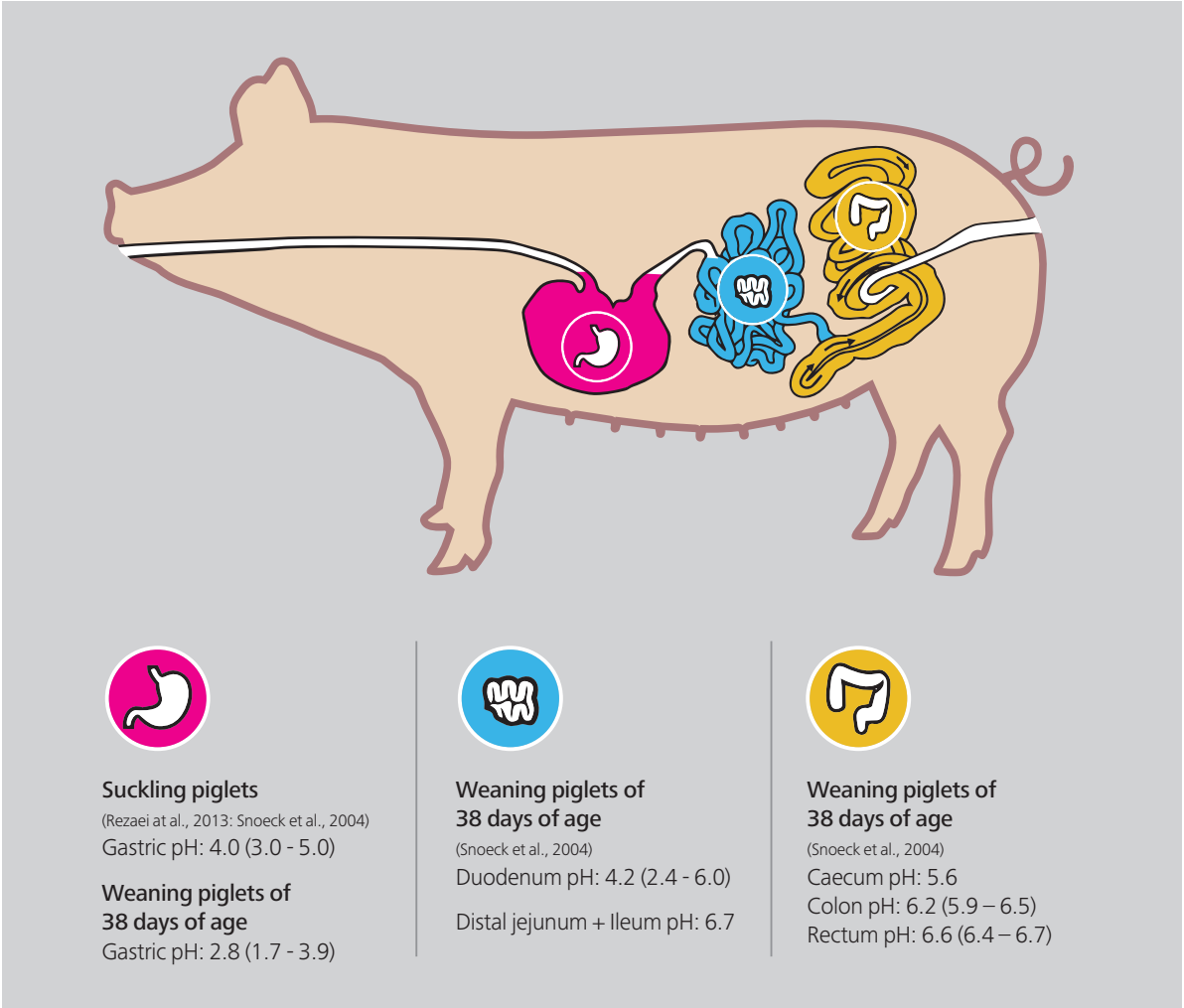
- Insoluble fibers include cellulose and hemicellulose, which are present in wheat middlings, wheat bran, rice hulls, and oat hulls (Jha & Berrocoso, 2015).

Achieving the right balance of fiber source, type, and inclusion level is essential and should be adjusted as piglets develop (Menegat et al., 2019). In the immediate post-weaning period, diets should emphasize insoluble fibers, while in later nursery stages, higher proportions of soluble fiber can be incorporated to further support gut health and development.

5.5.2 The importance of acid-binding capacity in piglet feeds

The Acid-Binding Capacity (ABC) refers to a feed or raw material's ability to resist changes in pH, which influences gastric pH and nutrient digestion (Figure 6). This parameter is particularly relevant for piglet diets, as their gastrointestinal tract is still immature and sensitive to pH fluctuations. Feeds with a low ABC value are important for minimizing the post-weaning dip.

Figure 6. *Schematic overview of different pH levels in the weaned piglets' stomach, small intestine, and large intestine.*



During the nursery phase, piglets have a high demand for calcium (Ca) to support growth and bone development. However, Ca sources are known to have a high buffering capacity, which can increase stomach pH. The ABC of Ca can vary significantly depending on its source. Therefore, it is recommended to partially replace Ca with high ABC values, such as limestone, with more bioavailable alternatives, like calcium formate, to reduce the overall ABC value of the diet.

5.6 Nutritional recommendations to overcome post-weaning dip

- Maintaining an optimal stomach pH level (<4.5) is essential for efficient protein digestion and for inhibiting the growth of pathogenic bacteria.
  Supportive feed additives during the post-weaning phase:

  Organic acids:
  - Reduce stomach pH and improve protein digestion.
  - Reduce the occurrence of pathogenic bacteria such as *Escherichia coli, Salmonella spp., Clostridium perfringens*, or *Streptococcus suis* and increase the beneficial microflora (*Lactobacillus spp.*).
  - Can be added to the piglet diet in the form of lactic, benzoic, citric, fumaric, propionic, and formic acid.

  Pre- and probiotics:
  - Support the intestinal gut flora, growth, and health of the piglets.
  - When combined with organic acids can serve as an alternative solution for antibiotics.

  Enzymes:
  - Promote gut health and the digestibility of the diet.

  Short- and medium-chain fatty acids:
  - Promote villi growth and enhance nutrient absorption.
  - Support the repair of damaged cells and inhibit the growth of pathogenic bacteria.

  Antioxidants:
  - Support immunity and gut health.
  - Examples are glucans, selenium, vitamin C, and vitamin E.

- Lowering the crude protein content and supplying synthetic amino acids to achieve an equal standardized ileal digestible amino acids content can have beneficial effects on the overall digestion of piglet feeds. Following the Secure Feed Program strategy, the maximum protein levels in the piglet diets are 18.0% in phase 1 and 17.5% in phases 2 and 3.

- Particle size should ideally be 0.5–0.6 mm to ensure feed digestibility and minimize digestive disorders.
  - Regularly monitor feed particle size to ensure adherence to the optimal grinding size.

- When developing creep feed and weaner diets, it is essential to pay special attention to the choice of raw materials. The raw materials should be highly digestible, very palatable, and have low buffering capacities. For more detailed information, refer to Table 6.

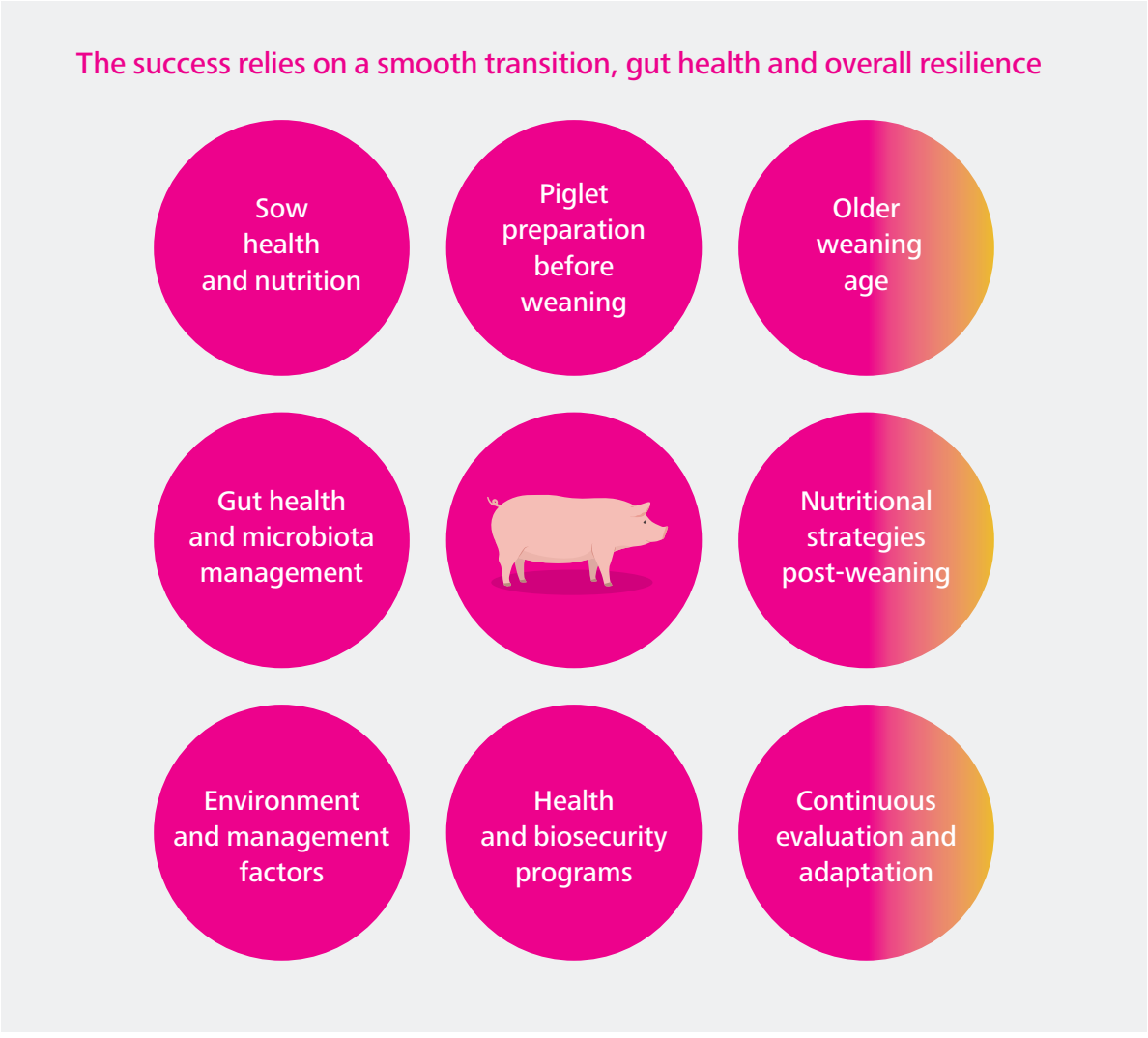
- Protein and fat digestibility of raw materials play an essential role in developing creep and weaner diets, due to the immature gastrointestinal tract of young piglets. Highly digestible protein and fat sources should be prioritized.

5.7 Managing the transition to zinc oxide, copper, and/or antibiotic-free feeding programs

The global pig industry is undergoing a significant transformation as the use of therapeutic levels of zinc oxide (ZnO), high copper (Cu) inclusion, and prophylactic antibiotics is progressively restricted or banned. These measures, once widely used to control post-weaning diarrhea and promote growth, are being phased out due to environmental concerns, antimicrobial resistance risks, and evolving regulatory frameworks. In Europe, this scenario has been a reality for several years, driving producers to adapt their management and nutritional strategies to sustain health and performance without these interventions.

This transition challenges producers to maintain pig health, growth performance, and welfare under conditions that inherently increase the risk of intestinal disturbances and reduced feed efficiency. Success in this new context depends on adopting a holistic and preventive approach: one that combines environment, management, nutrition, and health strategies to support gut integrity, immune function, and resilience from the earliest stages of life.

Figure 7. *Factors affecting piglet development.*



Sow health and nutrition to maximize piglet quality

- **During gestation:** to maximize piglet quality at birth. Heavier piglets at birth are more vital and have better performance throughout life.
- **During lactation:** to enhance colostrum quality, milk yield, micronutrient transfer, and the quality of the subsequent litter born.

Piglet preparation before weaning

- **Colostrum intake:** to guarantee strong passive immunity and early vitality.
- **Creep feeding:** introduce highly digestible, palatable feed early to stimulate enzyme development and prepare the gut from an early age.
- **Diet transition:** introduce post-weaning diet at least 5 days before weaning to improve post-weaning feed intake.
- **Health management:** vaccination and pathogen control programs reduce disease pressure. Be aligned with your veterinarian.

Older weaning age

- **Gut development:** older weaning age facilitates gut maturation, immune function, and higher weaning weights, reducing post-weaning disorders.
- **Smoother transition:** older piglets can cope better with stressors around the weaning process.
- **Improved feed intake and growth performance:** faster adaptation to solid feed, maintain higher feed intake after weaning, and show better growth consistency.
- **Better long-term performance:** better resilience, improved uniformity, survivability, and performance.

Gut health and microbiota management

- **Early gut health:** support the development of a healthy gut microbiome through probiotics, fermentable fibers, and organic acids.
- **Gut development:** Implement a phased feeding strategy that eases piglets from milk to solid feed, ultimately transitioning to vegetable protein and starch.
- **Smooth transition:** provide a smooth transition after weaning through transitional feeding strategies like gruel feeding.

Nutritional strategies post-weaning

- **Consistent composition:** maintain similar ingredient profiles between creep feed and nursery diets to support gut adaptation and ensure continuity.
- **Lower crude protein level:** reduces microbial protein fermentation in the colon, lowering the risk of post-weaning diarrhea, and improves small intestine conditions.
- **Highly digestible protein sources:** to support nutrient absorption and reduce gut stress.
- **Formulate balanced diets:** using synthetic amino acids to meet nutritional needs without overloading the gut with high levels of crude protein.
- **ABC value:** choose low ABC ingredients to reduce gastric acid demand and support better stomach pH and optimal digestion, such as replacing limestone with calcium formate.
- **Incorporate functional fibers:** to promote gut health and support microbial balance.
- **Functional feed additives:** support gut function, immunity, and integrity with organic acids, probiotics, and plant-based additives, as outlined in Chapter 5.6.

Environment and management factors

- **Weaning management:** reduce stress with a gradual transition, minimize the number of piglet sources as much as possible, guarantee adequate feeder space, and ensure consistent water availability.
- **Temperature control and ventilation:** prepare the environment before piglet arrival and maintain stable temperature and humidity to avoid stress and diarrhea outbreaks.
- **Water and feed access:** clean and verify proper operation, with special attention to drinker flow and function to prevent dehydration.
- **Post-weaning priority:** maintaining consistent feed intake is more critical than total feed amount, as it reduces the risk of digestive disorders and drives gut adaptation.
- **Environmental hygiene:** keep pens clean and try to minimize pathogen load.
- **Staff:** train staff to identify early signs of stress, diarrhea, or reduced feed intake.

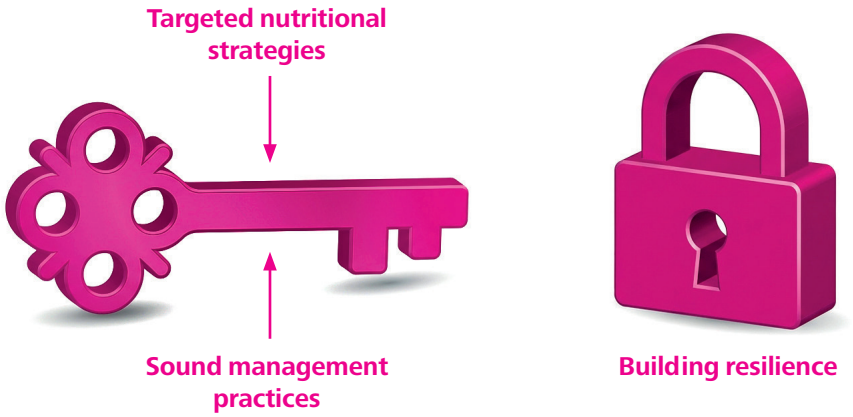
Health and biosecurity programs

- **Vaccination and monitoring:** reinforce farm-specific protocols to prevent enteric diseases.
- **Biosecurity:** prevent contamination by managing animal flow, cleaning, and disinfection.
- **Minimize piglets sources:** fewer sources mean fewer health status variations and lower biosecurity risks.

Continuous evaluation and adaptation

- **Data monitoring:** track growth, feed efficiency, diarrhea incidence, and mortality.
- **Farm-specific adjustments:** consider local conditions, genetics, and health status.
- **Collaboration:** align nutritionists, veterinarians, and farm managers on the same goal.

Building resilience from the very start of a piglet's life is critical for long-term health and performance. Achieving this requires an integrated approach that combines targeted nutritional strategies with sound management practices, ensuring that piglets are supported both biologically and environmentally. When transitioning to Zinc Oxide, Copper, and/or Antibiotic-free feeding programs, it is important to recognize that no single intervention guarantees success.
Rather, consistent attention to multiple factors working together drives optimal outcomes.



6 Piglet management before and after weaning

6.1 Creep feeding

Creep feeding is the practice of providing piglets with solid feed during lactation to support their intestinal development and facilitate a smoother transition from the farrowing room to the nursery. This approach offers several benefits, but these can only be fully achieved when appropriate diets and effective feeding management strategies are implemented.

Advantages of creep feeding:

- The earlier the creep feed is offered (day 7 vs. day 14 or day 21), the higher the average daily gain and body weight are at 24 days weaning (Lee & Kim, 2018).
- Total feed intake during lactation is higher (Lee & Kim, 2018; Yan, Jang & Kim, 2011).
- Improves weaning weights, post-weaning feed intake, and growth performance (Lee & Kim, 2018; Shea & Beaulieu, 2014).
- Improves feed conversion ratio (reducing the cost per kilogram of weight gain) by advancing gut development and microflora.
- Helps adapt the piglets' gut to nutrients that are not found in milk.
- Helps bridge the gap between the nutrient requirements of piglets and the nutrients supplied by the sow's milk.
- Especially beneficial in large litters where the competition for milk is high.

Creep feeding in practice:

Do

- Offer highly palatable diets that contain high amounts of digestible energy and milk products (lactose).
- Start providing creep feed early to the piglets.
- Offer creep feed frequently in small amounts. Start with very small amounts from around day 7 of age, and replace the feed at least twice a day. This ensures the creep feed remains fresh and palatable to the piglets.
- Offer the creep feed on a flat surface (e.g. in the feeder or on the floor) to stimulate exploratory behavior (Middelkoop et al., 2019).
- If you choose to use a creep feeder, it should be placed near the head of the sow and the drinker to stimulate creep feed intake.
- Providing creep feed while the sow is eating has been shown to increase piglet feed intake, as piglets are more active and are not nursing the sow, making them more interested in eating solid feed.
- Make sure that piglets have ad libitum access to good-quality water. If piglets are eating creep feed, they will need a steady supply of clean water.
- Store the creep feed in a cool and dry place to preserve the quality and to avoid the creep feed from becoming stale.

Don't

- Oversupplying creep feed.
- Avoid placing the feeder near the heating lamp, as heat can deteriorate feed quality. Also, avoid placing the creep feeder near the dunging area.

Piglet milk replacer management
If the sow is unable to supply the piglets with a sufficient amount of milk, a milk replacer can be an alternative. Please contact your supplier for guidance. The hygiene of the materials used to prepare milk replacer must be optimal. Clean feeding bowls regularly, ensure fresh and high-quality drinking water, and store the milk replacer properly.

TIP: After weaning, to support the transition period from lactation to nursery room, especially at younger weaning ages, include lactose in the feed formulation.

6.2 Feeding management in the first days post-weaning

Providing the pre-weaning creep feed in a gruel form can help piglets transition smoothly to solid feed after weaning, thereby increasing their feed intake. The gruel is a mixture of warm water (40°C) and dry feed mixed in a ratio of 3:1. Gruel can be offered alongside traditional dry feed up to five days post-weaning.

Gruel feeding tips:

- Always use warm water to mix the gruel. Piglets are used to warm milk.
- Feed an amount of gruel that can be consumed within a few minutes (<10 min).
- Feed multiple times (3 or 4) per day to keep the freshness and to avoid spoilage.
- Use bigger round feeders or longer troughs. Piglets prefer to eat together.
- Gruel pans should be cleaned and the stale gruel removed before the new gruel is fed.
- Gradually reduce the amount of water in the gruel to increase the feed dry matter content.
- Decrease the number of gruel feedings over five days.
- Feed the piglets with gruel as close as possible to the feeders to associate the gruel with the feeder and increase feed intake.
- Gruel feeding of diets with high milk content is most beneficial for the smallest piglets post-weaning to help them with the transition.
- Gruel is recommended to be used during the first days after weaning (Table 7).

***Table 7**. Number of feedings per day when using gruel feeding.*

Days after weaning	0	1	2	3	4	5
Times per day	●●●●	●●●●	●●●	●●●	●●	●●

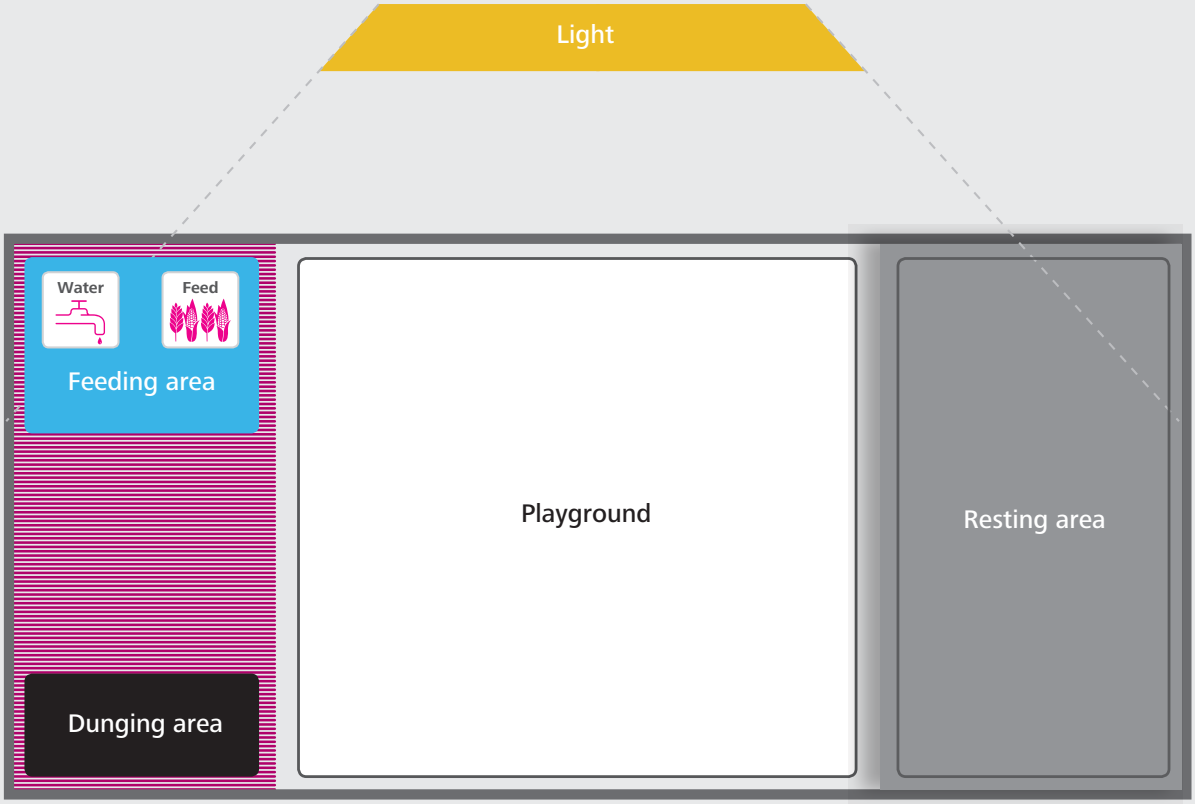
6.3 Reducing variation in piglet growth through special pen use

Piglet weaning weights are highly related to their birth weight, but through optimal management of both the sow and her piglets, weaning weights can be improved and litter variation reduced, providing the piglets a better chance to thrive after weaning. **For more information on piglet management during lactation, refer to the Sow Farrowing and Lactation Manual.** To improve uniformity in finishing barns, it is often beneficial to group the 10% lowest-performing pigs in a pen of their own and follow a separate feed program, whereby they can be fed better diets for a longer period. This management practice promotes the growth of lighter pigs and reduces variation outside the nursery.

Steps for creating a special pen

- Group all the lighter and weaker piglets together in one pen.
- Select a pen that is easily accessible because more attention is required.
- If the entire floor is slatted, cover it partially to help the piglets control their body temperature and to avoid draft air.
- Provide an extra source of heat in case the temperature is not high enough (<28°C).
- Feed these piglets creep feed or highly digestible piglet feed for a longer period to help them catch up. Follow a similar gruel feeding program as described in the manual.
- Remember: a special pen is only special if you do something special to it.

6.4 Key components of the nursery pen



Water

- Provide additional water (nipples and pan drinkers) to stimulate early water intake.
- Water can be added to the gruel feeders after feeding.
- Drinkers should be similar to those used in the lactation room and preferably placed over a slatted area.
- Place a minimum of 1 drinker per 10 piglets at the correct height (see Table 8). Ensure that the nipples are at shoulder height of the smallest pigs (horizontal nipples) or just above shoulder height (angled nipples).
- Piglets grow approximately 15 cm in height during nursery. The recommendation is to have water nipples at different heights to ensure every piglet can drink.
- Ensure a water flow rate between 500 and 1000 ml per minute (Brede, 2006).
- For best quality, the level of total dissolved solids (TDS) should be lower than 1000 ppm.

Feeder

- Allow more feeder space per piglet, especially in the first days after weaning, to ensure the piglets can all eat together.
- In addition to the main feeder, providing a feeder similar to the one in the lactation room can help increase feed intake. If floor (mat) feeding was applied during the pre-weaning period, encourage this practice for the first couple of days.
- In the first days after weaning, the feed should be easily accessible. Later, the settings of the feeder should be adjusted to a pan coverage of 50% to reduce feed wastage.

Dunging area

- The flooring should be slatted, allowing feces to fall through.
- Try to make piglets defecate and urinate in the desired corner by creating additional corners.
- Widespread defecation in the pen signals poor environmental conditions, such as insufficient ventilation or incorrect air flow.

Lighting

- Proper light in the room increases feed intake.
- Brighter barns encourage piglets to separate specific areas for dunging, resting, and eating.
- Target a light intensity of at least 50 lux for the first days after weaning.
- Provide 16 hours of light after weaning (> day 2), followed by 8 hours of darkness to avoid stress and promote overall health.

Resting area

- It is advised to keep a solid floor for the resting area.
- Keep the resting area clean, warm, and dry at all times.
- Ventilation should be at a minimum to prevent drafts.
- Use a cover above the resting area to create a warmer climate.

Playground

- Keep piglets occupied with different enrichment materials.
- The right rooting material will reduce stress, boredom, and aggressive behavior. Examples are sawdust, straw, and hay.
- Comply with local regulations in supplying rooting material.
- **For more information on pig behavior and enrichment, refer to the Happy Pigs Abnormal Behavior Manual.**

6.5 Housing and environment

The housing system plays an important role during the early life of pigs, and the pen layout strongly influences piglet development (growth rate, FCR, and uniformity) and behavior. The pen layout, when not proper, can contribute to the development of stereotypical behaviors. By combining an appropriate layout with the right pen size, temperature, and proper placement of feeders and drinkers, piglets' needs can be better met, leading to improved performance and a reduction in behavioral problems.

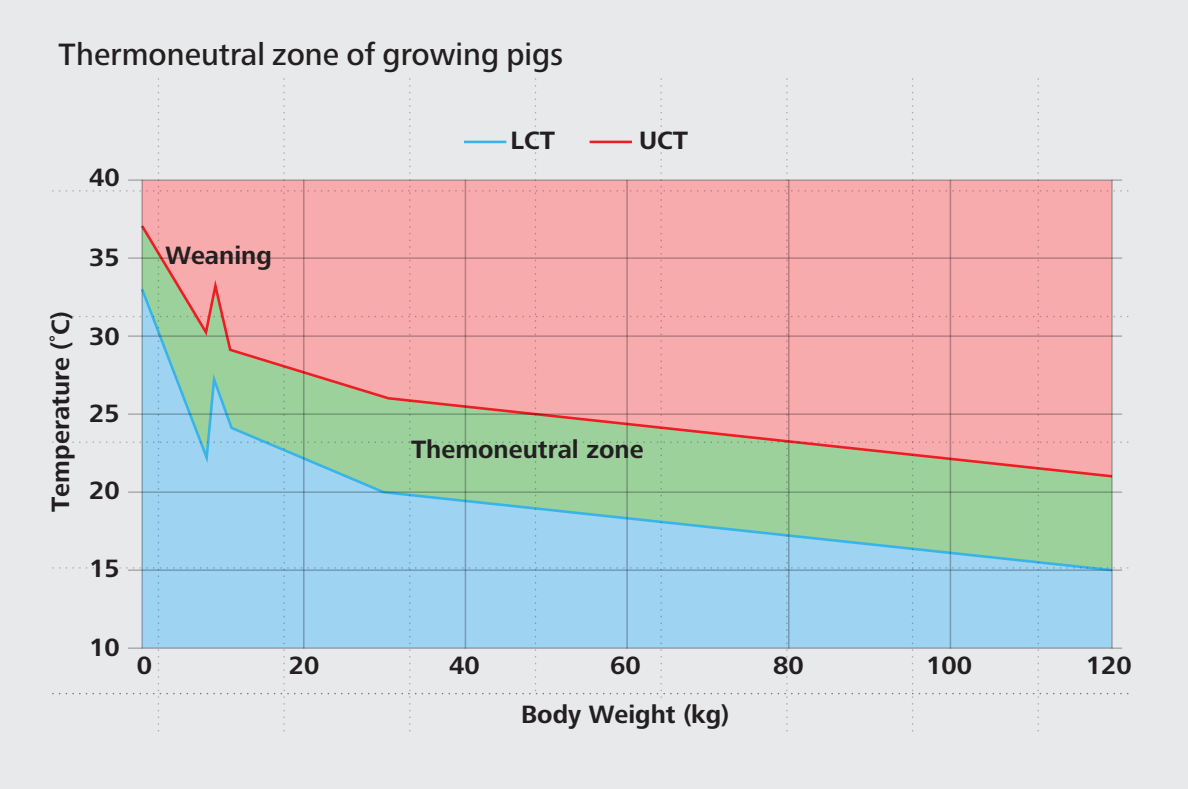
A poor environment can increase pre- and post-weaning mortality, reduce growth rates, increase variability within the group, and decrease overall farm output. While the housing system is a key factor influencing farm productivity, it is often overlooked. Table 8 outlines the recommended housing requirements for the nursery period.

Table 8. *Environmental requirements for specific live weight of piglets, adapted from Primary Diets (n.d.) and Zeng et al., 2023.*

Live weight (kg)	5 – 7	8 – 12	13 – 18	19 – 25
Temperature (°C)	28.5	25.5	24.0	22.0
Water intake (L/pig/day)	0.6	1.0	1.5	1.6
Drinker height (cm)	20	24	28	30
Trough space restricted (mm)	100	100	130	180
Trough space ad libitum (mm)	75	75	40	50
Floor space (m^2)	0.15	0.15	0.20	0.20
Light intensity (lux)	40-50	40-50	40-50	40-50

Piglets should be kept within their thermoneutral zone, where minimal energy is spent for maintenance and the majority can be directed toward growth. Figure 8 illustrates the thermoneutral zone for piglets of different bodyweight categories. The light red area represents heat stress (hyperthermia), while the blue area represents cold stress (hypothermia).

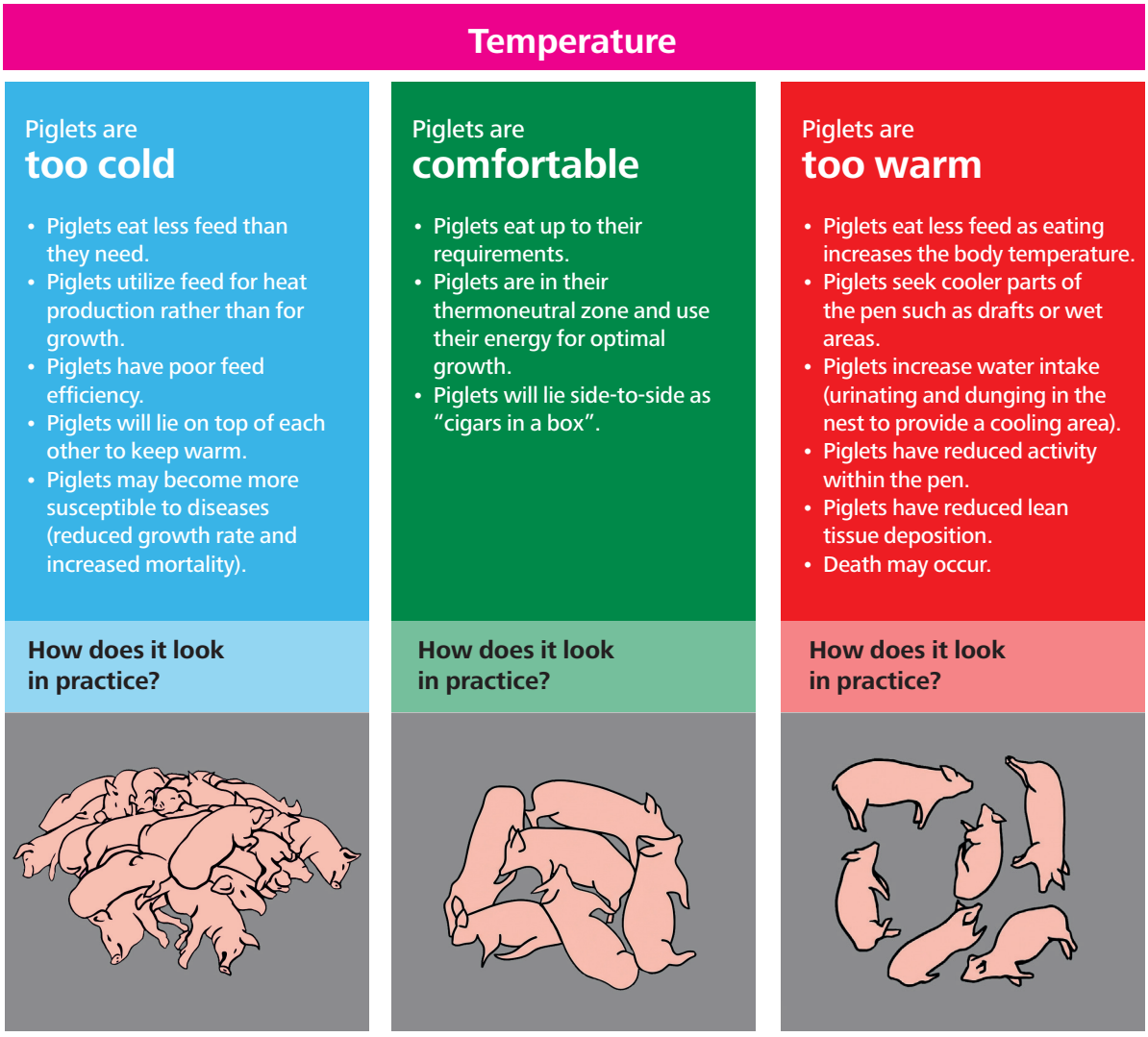
Figure 8. *Schematic relation between thermoneutral, hyperthermia, and hypothermia zones and bodyweight (Payola & Piriou, 2021). LCT = Lower Critical Temperature and UCT = Upper Critical Temperature.*



Ambient temperature also affects piglet behavior, and in practice, different postures can be observed in the pen depending on whether piglets feel too cold, too warm, or if they feel comfortable (Figure 9).

TIP: Leaner genotypes such as TN Select need a warmer environment before and after weaning.

Figure 9. *Characteristics of piglets subjected to different ambient temperatures post-weaning.*



As an addition to the information in Table 8, feeder space is another critical aspect of housing. The space of feeders should be sufficient to allow all piglets in the pen to access feed at the same time. According to Laskoski et al. (2021), maximal growth performance can be reached with ≥ 0.25 m2/pig floor space in combination with 4.0 – 4.4 cm/pig feeder space. In another study, Laskoski et al. (2019) demonstrated that lowering the number of pigs per feeder space (7.50, 6.25, 5.00, 3.75 pigs per feeder space) tended to improve growth rate and resulted in fewer tail biting issues. Fewer piglets per feeder space also significantly increased ADFI in the first two weeks.

6.6 Management tips to minimize the post-weaning dip period

Maintaining a consistent feed intake during the post-weaning period is essential to reduce piglets' susceptibility to low-grade infections that may lead to scours. However, the combination of dietary change, weaning stress, and environmental transition often results in a post-weaning dip lasting about 7 to 10 days. This phase is characterized by variable feed intake, low weight gain, poor feed efficiency, and increased susceptibility to disease. These effects are largely due to the young piglets' limited ability to digest and utilize the new diet. Regular monitoring of manure characteristics, such as consistency and color, offers valuable insights into piglet health. This enables early detection of issues and the adjustment of feeding and management strategies. Piglets' manure consistency can be scored (Table 9). A score of 1 or 2 indicates normal or slightly soft manure, whereas a score of 3 or higher suggests mild to severe diarrhea. Routine scoring facilitates early diagnosis and timely intervention.

Table 9. *Piglet manure classification scoring (adapted from Eriksen et al., 2023, and Pedersen & Toft, 2011).*

Score	1. Firm and shaped	2. Soft and shaped	3. Loose	4. Watery
Picture				
Texture	Firm and varies in hardness	Varies in softness. Peanut butter-like	Mush. Often shining surface	Varies from gruel to water
Shape	Sausage-like	Varies from sausage-like shape to small piles	Tends to level with the surface. Does not flow through or flows slowly through slatted floors	Levels with surface. Flows through slatted floors
Color	Dark brown or black	Dark grey or grey	Light grey	Light brown
In container	Preserves original shape	Does not flow when the container is rotated. Preserves original shape	Inert when container is rotated. Merges and covers bottom of container in most cases	Flows easily when container is rotated. Merges and covers bottom of container

6.7 Piglet behavior

The development of the piglet behavioral phenotype starts already in the uterus, and it is called early-life programming. This means that the nutrition, management, and health of the sow during gestation influence the piglets' cognitive abilities and memory (Jensen, 2017). Exposure of pregnant sows to distress, such as repeated mixing during gestation, could, for instance, lead to more anxiety-prone piglets.

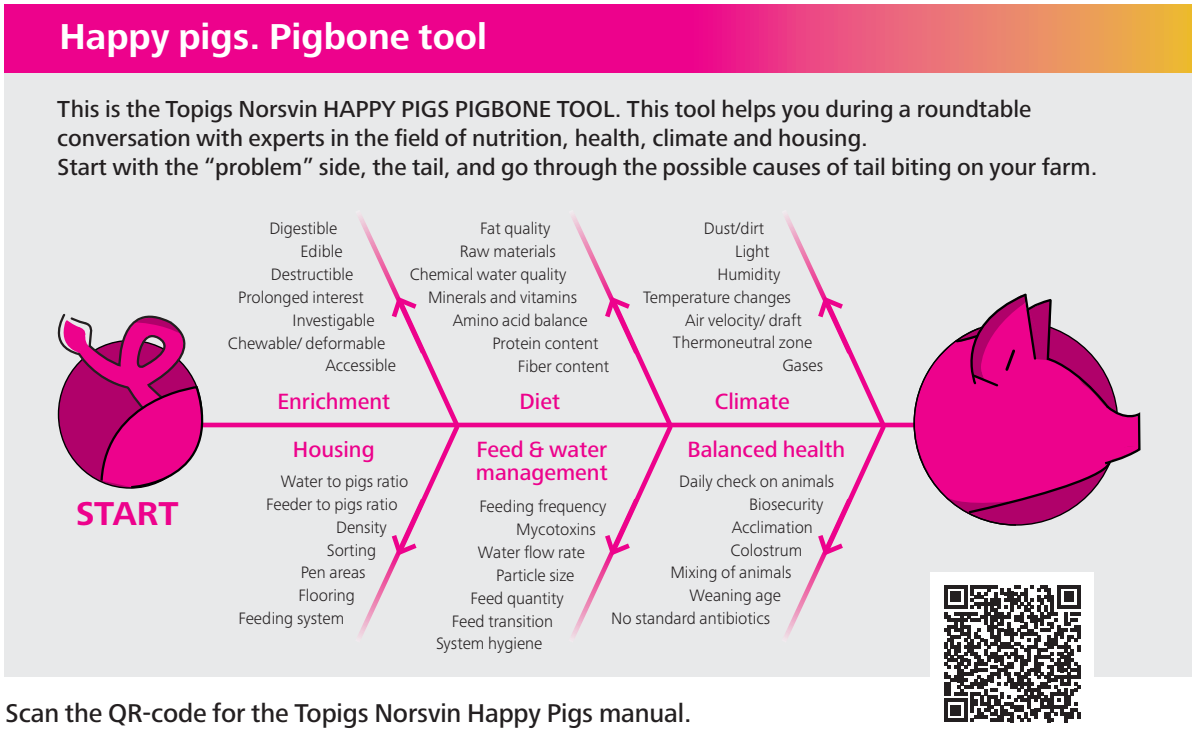
Piglets show a range of behavior from day one. Play is important for the proper development of social skills and cognitive abilities. Play includes elements like scampering, dashing, pivoting, flopping on the belly, and elements of play fighting. Play is a good welfare indicator because it only occurs when piglets are healthy and thriving (Franchi et al., 2023, Jensen, 2017). Environmental enrichment (e.g., straw, hay) renders piglets more resilient to stress, including being handled by humans, mixing with other pigs, and transportation.

In contrast, raising piglets in barren environments increases the incidence of abnormal behaviors, such as, for instance, belly nosing, ear- and tail-biting. These behaviors are indicators of compromised welfare and typically occur due to overcrowding, a lack of resources (such as food and water), adverse environmental conditions (high noise, high ammonium levels, humidity, and temperature), or a shortage of foraging materials (Broom & Fraser, 2007).

The prevention of abnormal behavior is key throughout all phases of pig production. In piglets, focusing on the prevention of abnormal behaviors during weaning and the nursery period is particularly critical, as it can help avoid issues later in the finisher phase.

A summary of important factors that can prevent or alleviate abnormal behavior issues is presented in Figure 10.

Figure 10. *The Topigs Norsvin "Pigbone tool", part of the Happy Pigs Abnormal Behavior Manual, shows important factors related to prevention or to be curative in case of abnormal behavior.*



Scan the QR-code for the Topigs Norsvin Happy Pigs manual.

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8 Appendix

8.1. Piglet management and feeding checklists

Below is a detailed management and feeding checklist for different phases throughout the nursery that has been developed to help producers get all aspects in place to unlock the highest technical and economic results. Our recommendation is to work through the checklist for each batch of piglets that is being weaned. Another option is to adapt and develop your own on-farm checklist for staff members to ensure all procedures and protocols are implemented to maximize performance.

How to prepare the nursery room

Nursery rooms should be fully prepared before each batch:

- [ ] Empty feeders and remove feces from pens.
- [ ] Pre-soak the room for 6 to 12 hours and reduce ventilation to enhance soaking. Pull manure plugs to allow drainage. Discuss with your veterinarian the right protocol in your situation.
- [ ] Clean the room with a power-washer using hot water and detergent, including all exposed areas and feeders. Pay attention to slats, fan blades, air ducts, and light bulbs.
- [ ] Once cleaned, restart ventilation and turn on the heating system to warm up floors and the room.
- [ ] Disinfect all equipment with a correct concentration of disinfectant.
- [ ] Flush out the water line, clean header tanks, and ensure all nipple drinkers are not blocked and have the correct flow rate.
- [ ] Adjust nipple drinkers to ensure they are at shoulder height of the smallest pigs (horizontal nipples) or just above shoulder height (angled nipples) and ensure that water availability is obvious either via a bowl or cup or through allowing the water to drip from the drinker.
- [ ] Ensure that the room is warm and dry before the entry of the piglets. Set the thermostat to a standard temperature recommendation of 28°C.
- [ ] Ensure the ventilation system does not lead to chilling of piglets with drafts – this can be a cause of diarrhea.
- [ ] Add heat mats or feed mats if required to the pen.
- [ ] Just before pigs enter, ensure feeders have fresh feed and are adjusted so that approximately 40% of the feeder trough is covered with feed. Do not tighten feeders too much to avoid piglets having to work excessively to obtain feed.
- [ ] If feeding gruel (feed and water mixed), ensure that the bowl or tray is clean and that fresh gruel is made and used throughout.
- [ ] Ensure that the correct feeding program is in place according to weaning weight including provision for smaller pigs within the nursery system.
- [ ] On the day of the pigs' arrival, set up a fresh disinfectant bath at the entry point to each room.

The first days after weaning (until 3 days post-weaning)

The first days after weaning are critical, and it is very important to pay more attention and put more effort into ensuring that the piglets are transitioning easily during this challenging period.

Consideration should be given to:

- ☐ Depending on your strategy: on arrival, sort pigs by sex and weight and assign them to pens or keep litters together for a better health perspective.
- ☐ Keep 10% of pens available for sick pens in a proper place in the building to avoid further stress, such as drafts.
- ☐ If required, vaccinate or tag pigs whilst assigning them to pens to avoid double handling.
- ☐ If applicable, ensure that the room climate controls are set with the correct batch settings for the temperature, ventilation, days, and number of pigs present.
- ☐ Ensure that room temperature is monitored.
- ☐ If pigs have been transported a long distance, provide an electrolyte or glucose solution.
- ☐ Check the water flow rate. The water source should be easy to find – use a supplementary drinking bowl such as a turkey drinker for the initial 3 days post-weaning.
- ☐ If mats are being used, place them in front of the feeder and put a small quantity of feed on the floor (mat) to reduce wastage. Crumble or meal feed is preferable. Mats with a lip will reduce feed wastage dramatically. Feed should not be oversupplied – feed on a "little but often" basis (ideally at least 3 times daily).
- ☐ Observe pigs regularly to make sure they have adapted to feeders and water drinkers.
- ☐ Pigs taking longer than 80 hours to consume feed after placement will be the problem pigs at a later date. Separate them into a sick pen now and feed them separately with gruel placed in bowls within the pen.
- ☐ Identify injured pigs and place them in a sick pen to treat them accordingly.
- ☐ Monitor health regularly - deteriorating health can include sneezing, coughing, rough hair, and lack of activity. Lethargic pigs or a pile of animals in a pen corner indicate discomfort and poor health.
- ☐ Monitor environmental factors such as ammonia levels, light bulbs and lighting programs, feed bins, and bridging of feed.
- ☐ Do not leave feed bags in the nursery.
- ☐ Adjust feeders so that 40% of the feeder trough is covered with feed and that the pigs do not have to excessively "work the feeder". Feeder adjustment should be reviewed daily in the first 3 days post-weaning.

The first two weeks after weaning (3 – 14 days post-weaning)

Consideration should be given to:

- ☐ If floor (mat) feeding, remove the mats after 3 days.
- ☐ If the room climate controls are not on a present curve, adjust the room temperature accordingly.
- ☐ Monitor pigs' behavior regularly to spot management or health issues.
- ☐ Adjust drinker height daily if needed. Horizontal drinkers should be at approximately the shoulder height of the smallest pig in the pen, and angled drinkers slightly above shoulder height.
- ☐ Pigs assigned to the sick pens need more attention.
- ☐ Where possible, feed the initial pre-starter feed for a longer period with a maximum of 3 to 4 days.
- ☐ Observe feed changes to ensure the transition goes well and to see if there are any changes in the manure consistency.
- ☐ Feed a high-quality diet post-weaning – it is important to get the pigs off to a good start to get a better result during finishing.

Nursery routine (14 days post-weaning to end of nursery)

Consideration should be given to:

- ☐ Continue a daily check walk-through of the room.
- ☐ Refresh disinfectant baths and assign specific boots to a specific house to improve internal biosecurity.
- ☐ Monitor and record minimum and maximum temperature levels to aid with the management of the room. Monitor pig activity and behavior. Check each pen and ensure that all pigs get up and move.
- ☐ Check drinker height and flow.
- ☐ Check the feeder adjustment and remove any stale or wet feed.
- ☐ Remove dead pigs from the pen and dispose of them within guidelines.
- ☐ Record all deaths - day and weight if possible.
- ☐ Record all small piglets' removals (day and weight).
- ☐ Adjust ventilation as pigs grow. Monitor air quality for ammonia:
  - At 50 ppm, pigs lose the ability to clear harmful bacteria from their respiratory tract.
  - At 100 ppm, the lining of the airways becomes damaged.
  - At >100 ppm, sneezing becomes prominent, and appetite is suppressed.
- ☐ Monitor feed quality:
  - Particle size should be between 0.6 and 0.8 mm.
  - Look at pellet quality and level of fines.
  - Use a high-quality feed with quality raw materials to maximize performance.

End of nursery and review finished nursery batch

Consideration should be given to:

- [ ] Move pigs into finisher accommodation and feed according to the feed program to meet target grower/finisher growth rates.
- [ ] Weigh all pigs out of the nursery and compare against target growth.
- [ ] Review feed budgets: Was the correct amount of each diet fed? If not, this can have a negative impact on technical and financial performance.
- [ ] Review vaccination and medication programs to see if they were followed as outlined by the veterinarian.
- [ ] Review performance data for each batch. Evaluate target goals and achievements and review the feeding program for the next batch of pigs entering the nursery.
- [ ] Start preparing the nursery for the next batch of pigs.