SCHOTHORST FEED RESEARCH

Circular Letter
SFR 2025-26

Lelystad, 20 October 2025

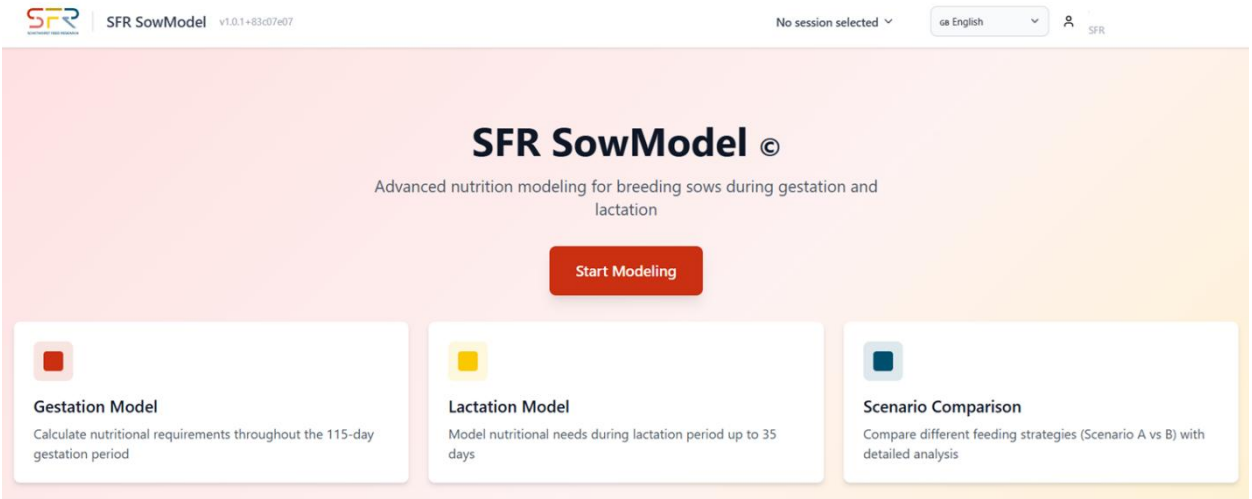
User manual for the SFR SowModel; a supporting tool to feed sows according to requirements

SFR SowModel is part of our new portal on the SFR website, an SSO (Single Sign-On) environment, which was launched 14 October 2025. Introduction of this new portal means there will be access to all available services with just one login; MySFR, Sprout, and the available models. With this step, we aim to provide a seamless and user-friendly experience by bringing our services together in one place.

SFR SowModel
The model is designed to serve as a supporting tool to help assess the nutrient requirements of sows under different conditions, and to provide potential feeding recommendations based on these requirements. It aims to assist nutritionists (or other users of the SowModel) in formulating diets that are aligned with the requirements of the sows during gestation and lactation.

However, the model should not replace professional judgement. It is essential that the nutritionist critically evaluates the model output and considers additional factors that may influence the nutrient requirements in practice. These may include geographical differences (e.g., climate, raw material quality, housing systems) and farm-specific conditions such as management level, health status, and feed delivery systems — factors that cannot be fully captured within the model. Therefore, the model results should be interpreted as a well-founded indication, rather than an absolute prescription, and always verified against practical experience and on-farm performance data.

Although the use of the model is largely self-explanatory, this user manual explains the input factors required to achieve an accurate and reliable model output.

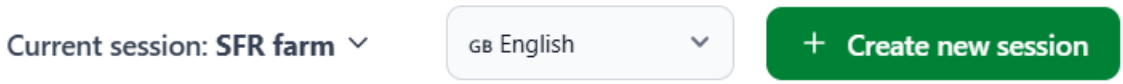


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General

If this is the first time using the model, a window displaying the Terms of Service will appear. Please ensure to accept these terms to gain access to the model.

At the top of the page, visible throughout the entire model, the name of the current session is displayed. From here, the model can easily switch between sessions, or create a new session by selecting *'Create a new version'*. These options will become available as soon as the first session has been created. The SFR SowModel is available in six languages — select the preferred language.



The **input parameters** within the model are organised into several relevant sections (tabs), each representing a specific area of data entry:

- **Model settings**
- **Management**
- **Weight and backfat**
- **Piglets**
- **Feed specifications** for gestation and lactation
- **Feed schedule** for gestation and lactation

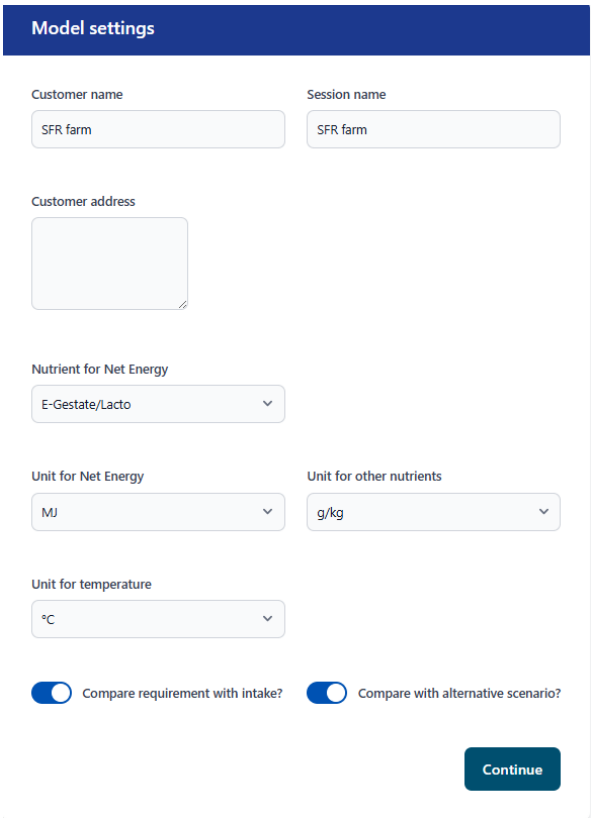
Upon completion of all input sections, the output module provides a comprehensive overview of the calculated results and modelled nutrient requirements.

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Model settings

This section defines the basic configuration and starting parameters of the SFR Sow Model. Before running the model, users must specify several general settings that determine how the calculations will be performed and how the results will be displayed.

- *Costumer details and session name*
  Enter the customer name and address and session name. This will also appear on the final output of the analysis.
- *Nutrient for Net Energy*
  Choose whether to use the SFR energy system (E-Gestate and E-Lacto), which is specifically designed for gestating and lactating sows, or the standard system (E-Swine). The choice usually depends on the energy system used in the diet formulation.
- *Unit for Net Energy*
  Select the preferred unit for energy: MJ, kcal, or EW, depending on the unit used in the diet formulation.
- *Unit for other nutrients*
  Select whether nutrients are expressed in % or g/kg, depending on what is used in the diet formulation.
- *Unit for temperature*
  Select the preferred temperature unit: °C or °F.
- *Compare requirements with intake?*
  Choose whether to compare the modelled nutrient requirements with the actual nutrient intake. To enable this comparison, the feeding scheme and nutrient composition of the diets used must be provided.
- *Model alternative scenarios?*
  Decide whether to model one situation or compare two different scenarios. For example, to compare the effect of a higher birth or weaning weight, or assess how changes in feed intake influence the required nutrient levels.



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Management

Under 'Management', users are asked to specify the general conditions such as genetics, parity, and ambient temperature, but also when the sows are moved to the farrowing room. All parameters must be entered for each scenario. Therefore, when 'Model alternative scenarios?' is selected in the model settings, both scenarios must be fully completed, even if some input values are identical.

Note: Upon changing a value/field in scenario A for the first time, that value will be automatically copied to scenario B. If different value a required in scenario B, make sure to check and change the value in Scenario B.

- *Scenario name*
  Assign a name to each scenario, which will also appear in the final output of the analysis.
- *Breed*
  Select the breed to be modelled. The calculations within the model are the same for all breed, but the reference values given by the model are breed-specific. Currently, only 'TN70' or 'other' can be selected.
- *Parity*
  Select the parity of the sow to be modelled. Results for parity 3 and higher are generally comparable.
- *Housing conditions for the gestating sows*
  Choose whether the gestating sows are housed with straw or without straw. This choice affects how ambient temperatures below 18 °C influence maintenance requirements. When sows are housed on straw, temperatures below 18 °C do not increase maintenance energy needs.
- *Ambient temperatures for the gestating sows*
  Indicate the average ambient temperature for gestating sows. Temperatures below 18 °C increase energy requirements for maintenance, except when sows are housed on straw.
- *Duration of the recovery period*
  Specify the length of the recovery phase during gestation from body condition losses from previous lactation. This period usually corresponds to the 1st phase in the feeding scheme. SFR reference: 35 days.
- *Transition to farrowing room*
  Indicate when the sows are moved to the farrowing room and therefore when they are weighed. SFR reference: Day 108 of gestation
- *Weaning age*
  Enter the average weaning age. This value defines the duration of lactation and is used to calculate piglet daily gain and sow body weight loss. SFR reference: 28 days.
- *Number of gestation feeds*
  Specify whether one or two feeds are used during this phase.
- *Number of lactation feeds*
  Specify whether one or two feeds are used during this period in the farrowing room.



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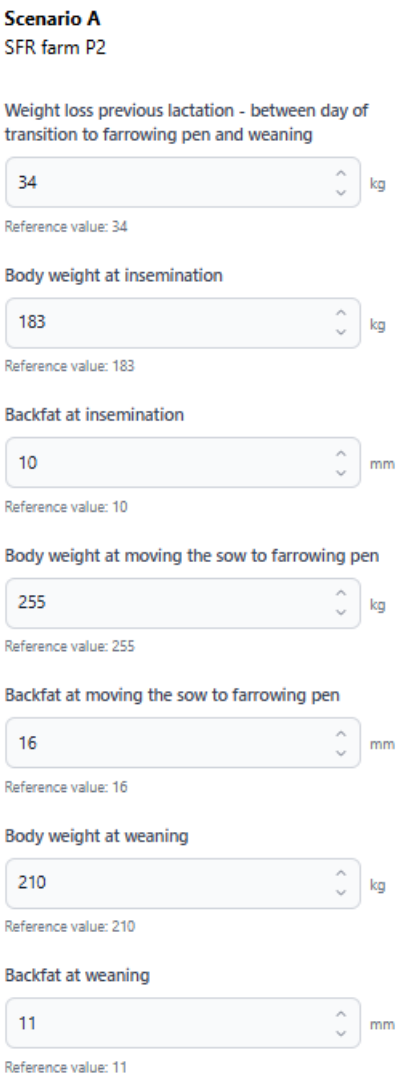
Weight and backfat

A large part of the sow's nutrient requirements is determined by body weight and backfat development. In the model these values can be based either on actual measured data or on the reference values.

The reference values provided for each parameter can be used as an indication when entering the values based on own input. Reference values depend on the selected parity and genetic line.

Note: When changing parity in the 'Management' screen, the body weight and backfat values will not automatically update to the corresponding reference values. These must be adjusted manually.

- *Bodyweight loss previous lactation – between day of transition to the farrowing pen and weaning.*
  Represents the body weight loss, including the weight of the litter and uterus fluids, during the previous lactation, and is therefore only applicable when modelling multiparous sows. This value is used to estimate requirements for the recovery of body reserves during the modelled gestation period.
- *Body weight and backfat at insemination*
  The sow's body weight and backfat at insemination for the cycle being modelled.
- *Body weight and backfat at moving the sow to farrowing pen*
  The sow's body weight and backfat when moved to the farrowing room for the cycle being modelled. Based on these values, the model estimates the maternal body weight of the sow at the end of gestation.
- *Body weight and backfat at weaning*
  The sow's body weight and backfat at weaning for the cycle being modelled, used to determine body tissue mobilization during lactation.

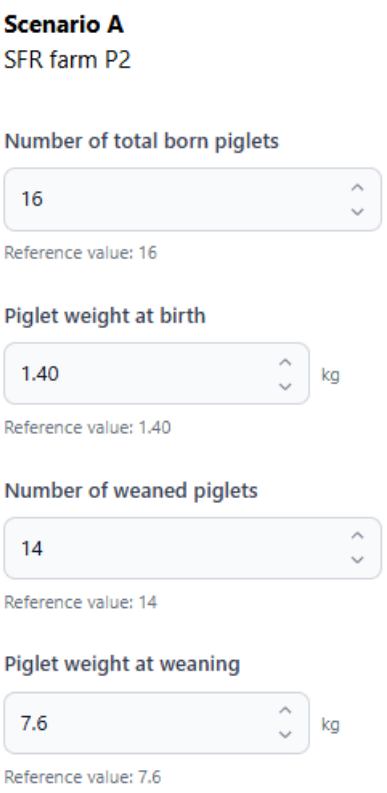


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Piglets

To determine the nutrient requirements for fetal growth and milk production as part of the sow's total nutrient needs, the litter size and piglet birth weight at birth and weaning must be specified. The displayed reference values depend on the parity and breed which are selected.

- *Number of total born piglets*
  The total number of piglets born, so both liveborn and stillborn piglets, is used to calculate the nutrient requirements for fetal growth, as stillborn piglets also represent nutrient investment during gestation. Though mummies also contribute to the requirements they are not taken into account in the model.
- *Piglet weight at birth*
  The average birth weight of the piglets is sed to determine fetal growth during gestation and litter growth during lactation.
- *Number of weaned piglets*
  The number of weaned piglets represents the number of piglets nursed by the sow for the majority of the lactation period, usually corresponding to the litter size after standardisation. Although some mortality may occur during lactation, the majority of losses typically occur within the first three days, and therefore have little effect on the nutrient requirements during lactation.
- *Piglet weight at weaning*
  The average weaning weight of the piglets, used to determine pre-weaning litter growth and thereby the nutrient requirements during lactation.

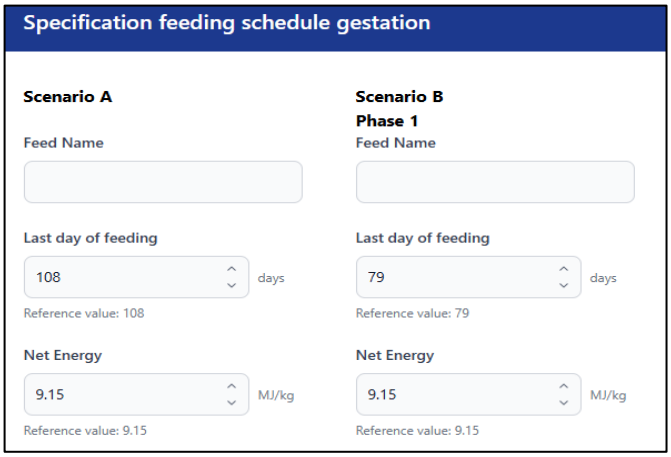


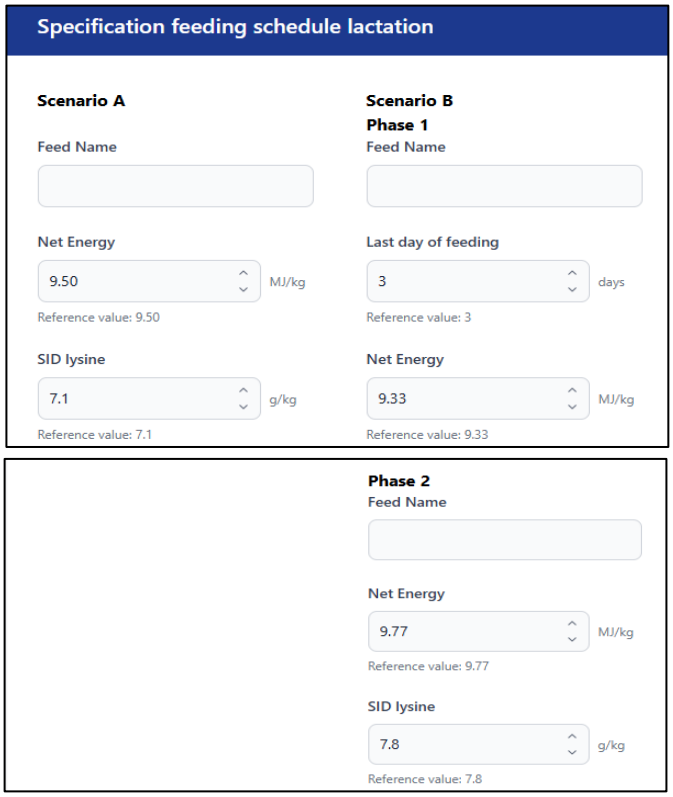
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Feed specifications for Gestation and Lactation

To compare the nutrient requirements with the actual nutrient intake, the details of the nutrient composition of the diets must be provided. Most of the parameters required are similar for both gestation and lactation.

- *Feed name*
  Specify the diet name(s) to be shown in the output.
- *Last day of feeding*
  This parameter indicates the final day on which a specific diet is fed.
  - When one gestation diet is selected (scenario A, see below on the left), this day usually corresponds to the day the sows are moved to the farrowing room, although in some cases feeding of the gestation diet may continue until farrowing. SFR reference: day 108 of gestation.
    Note: This value is not automatically updated when earlier entry for 'moving to the farrowing room" is changed in the *Management* section.
  - When two gestation diets are selected (scenario B, see below on the left), the 1st phase typically ends at about two-thirds of gestation, and the second phase continues until the sows are moved to the farrowing pens. SFR reference: days 79 and 108 of gestation.
  - When one lactation diet is chosen (scenario A, see below on the right), the last day of feeding will be at weaning, which therefore does not need to be indicated again.
  - When two lactation diets are used (scenario B, see below on the right)— a transition/farrowing diet followed by a lactation diet — the last day of the transition diet is usually a few days after farrowing. SFR reference: day 3 of lactation.
- *NE, SID Lys, available Calcium and STTD-Phosphorus*
  Nutrient levels of the diets should be entered in the units selected in the model settings: for Net Energy either MJ, kcal, or EW per kg feed, and for other nutrients either % or g/kg as appropriate. SFR reference values are provided as guidance and correspond to the recommended feeding scheme.





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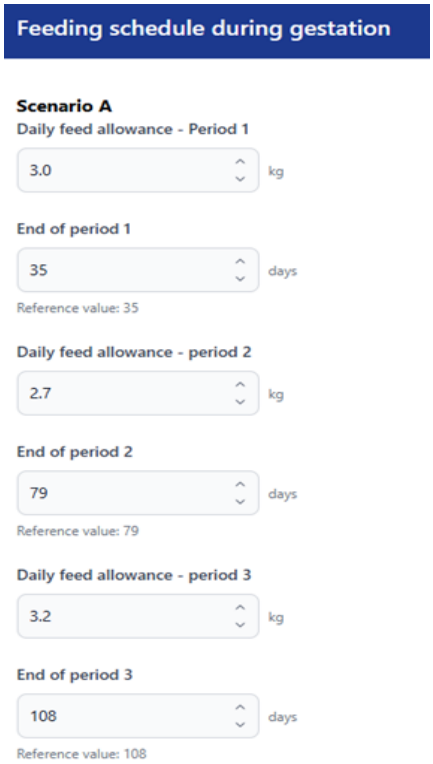
Feeding schedule for Gestation and Lactation

Besides details on the nutrient content of the diets also the feed level during the different phases is required.

During gestation, the model includes three feeding 'periods' with different feed levels, based on the standard high–low–high feeding scheme commonly used in practice. As the model currently allows for three feeding periods, adjustments may be needed to align the used feeding schedule with this structure. If fewer feeding periods are used in practice, one phase from the used feeding schedule can be split into two model periods. For example, when using two feeding periods, enter the feed allowance and end day of the 1st first period under *Period 1*, and the feed allowance of the 2nd period under both *Period 2* and *Period 3*, with the same feed level. In this case, the value entered for *End of Period 2* will not affect the model. If more feeding periods are used, it is recommended to combine two phases to align with the model structure.

During lactation, the model assumes an increasing feeding curve, which is generated automatically based on a number of input parameters.

- *Feed allowance one day before farrowing*
  The feed allowance on the day before farrowing is used as the starting point for the increase in feed allowance during lactation.
- *Maximum Daily feed intake*
  Define the maximum feed allowance during lactation (note that this is not the average feed intake in the farrowing room). As a guideline, a maximum of 7 kg/day is recommended for gilts, and 8 kg/day for multiparous sows. Under heat stress conditions, this maximum can be reduced to simulate a more realistic feed intakes under tropical conditions.
- *Day of Maximum Daily Feed Intake*
  Indicate the day of lactation when the maximum feed level is reached — typically between day 10 and 14 of lactation.

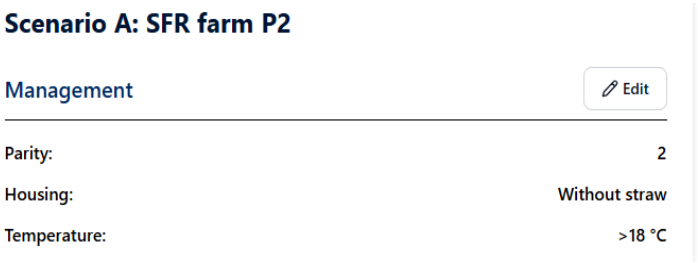




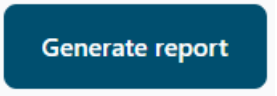
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Overview of input

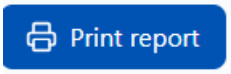
First, as a validation, an overview of some relevant input factors - such as management settings, sow body weight and backfat, and litter size and piglet weight - is provided to present the initial values of the calculated scenario. Subsequently, the output of the model presents the input data on feed composition and feeding schedule. In case any adjustments are required, the '✎Edit' function can be used to directly navigate to the corresponding input fields.



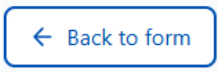
When all input data appear to be correct, proceed to the next step by selecting 'Generate report'.



The complete report can be saved as a PDF or printed directly. Individual graphs can be saved by right-clicking on the graph with the mouse.

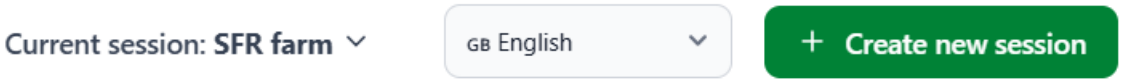


By clicking 'Back to form', the model will return to the previous page showing the input overview.



Note: When 'Reset all' is used, all input will be deleted and a new session will start. Be aware that no additional warning will appear. If this happens accidentally, the model can recover the last version by clicking on the name of the current session displayed at the top of the page.





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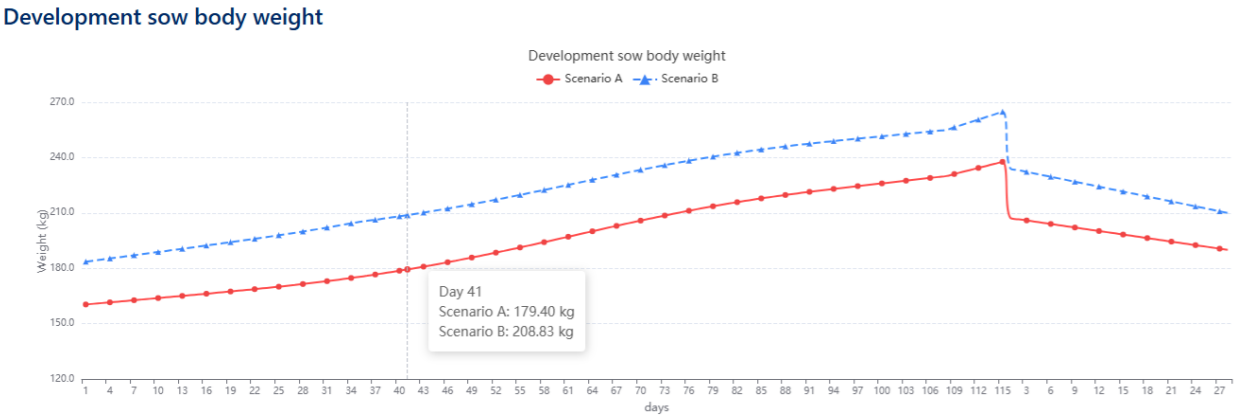
Report of the modelled scenarios

The report is divided into three main parts:

- Development sow body weight
- Daily nutrient requirement versus intake
  - Gestation (graphs and tables)
  - Lactation (graphs and tables)
- Feed report – gestation and lactation

Development sow body weight

The report starts with a graph illustrating the body weight development of the sow throughout the period. Hovering the mouse over the graph allows the user to view the exact body weight for each day.

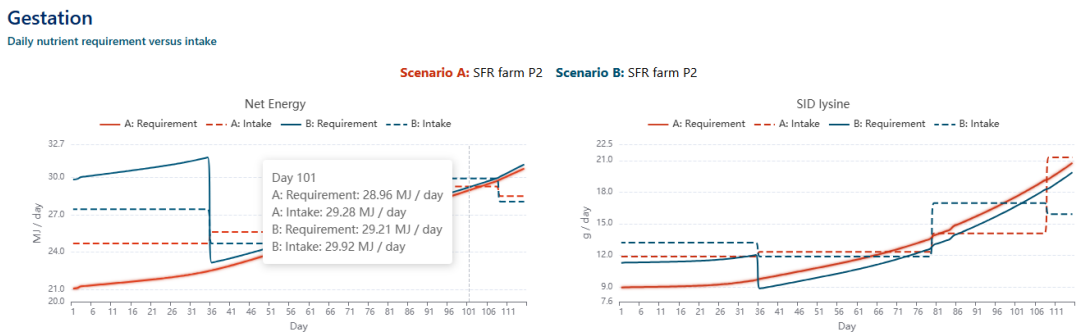


Daily nutrient requirement versus intake

The calculated nutrient requirements, compared to the actual nutrient supply (based on feed composition and feeding schedule), are presented in two formats — graphical and tabular. Both formats display essentially the same information, showing whether there is a deficit or surplus of specific nutrients. The choice between formats depends on user preference.

The overview for gestation is displayed first, followed by the overview for lactation. The layout and structure of the overview are similar for both phases.

- In the graphic overview, each nutrient is presented in a separate figure, showing the requirement versus the intake for one or both scenarios. By moving the cursor over the figure, the exact values for each day can be viewed.



Using the tabular overview, the data can be displayed per day (resulting in a long table), or grouped by a selected number of days indicated at the bottom of the table ('skip days to shorten table'). The difference

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between requirement and intake is expressed as a percentage. For Net Energy and SID lysine large deviations (≥5%) are highlighted in red, while small or no deviations (<5%) are shown in green. For minerals, an oversupply is not highlighted in red, as this does not necessarily have a big negative impact performance and costs. However, an intake well below requirement (≥-10%) are marked in red, and intakes slightly below requirements (<-10%) are marked in orange, and intakes above requirement (>0%) are shown in green

In case two scenarios are modelled, each scenario will appear on a separate tab, allowing to easily switch between them with the buttons above the table.

Summary - Gestation nutrition

Daily nutrition requirements vs. intake during gestation. The table can be shortened by changing the settings underneath this table.

Scenario

SFR farm P2 | SFR farm P2

Day	Energy (MJ)			SID Lysine (g / day)			Available Calcium (g / day)			STTD Phosphorus (g / day)		
	Req.	Intake	Diff.	Req.	Intake	Diff.	Req.	Intake	Diff.	Req.	Intake	Diff.
1	21.1	24.7	+17%	8.9	11.9	+33%	10.8	16.7	+55%	4.3	6.7	+55%
7	21.4	24.7	+16%	9.0	11.9	+32%	10.8	16.7	+54%	4.4	6.7	+54%
14	21.6	24.7	+14%	9.0	11.9	+32%	10.9	16.7	+53%	4.4	6.7	+54%
21	21.8	24.7	+13%	9.1	11.9	+30%	11.0	16.7	+52%	4.4	6.7	+52%

☑ Skip days to shorten table Show every 7 days

Feed report

Finally, together with the cumulative feed intake, the model provides recommended nutrient levels, based on the modelled requirements and the selected feeding schedule for both gestation and lactation.

How are the required (recommended) nutrient levels determined?

When a single-phase feeding strategy is selected, the model accounts for the fact that the requirements of the sow cannot be completely covered the whole gestation or lactation. Net Energy and SID lysine requirements will be cover to approximately day 85 of gestation and day 17 of lactation. If the goal is to meet the nutrient requirements more precisely throughout the period, a two-phase feeding strategy should be used, ensuring that the highest required nutrient levels are covered.

However, considering the importance of available Calcium and STTD Phosphorus on sows legs health and bone strength, the required level for both minerals are assumed to be fully covered in all phases, regardless of the number of feeding phases used.

Feed report SFR farm P2

Cumulative feed intake gestation: 331.5 kg

Diet composition gestation (1)

Phase 1

Parameter	Unit	Input	Required
Last day of feeding	days	108	-
Net Energy	MJ	9.2	8.5
SID lysine	g/kg	4.4	4.6
Available calcium	g/kg	6.2	8.4
STTD phosphorus	g/kg	2.5	3.1

Cumulative feed intake lactation: 172.0 kg

Diet composition lactation (1)

Phase 1

Parameter	Unit	Input	Required
Last day of feeding	days	108	-
Net Energy	MJ	9.5	10.5
SID lysine	g/kg	7.1	10.0
Available calcium	g/kg	9.3	10.0
STTD phosphorus	g/kg	3.5	3.9

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Nutrient gap around farrowing

Unfortunately, there will be a gap between requirements and intake during the first week of lactation due to the low feed intake. Therefore, it is important not to feed too little around farrowing and to increase the feed allowance promptly after farrowing, depending on the sow's appetite.

Even when a transition/farrowing diet is provided before farrowing and continues a few days afterwards, it is impossible to fully meet the sow's nutrient requirements after farrowing while at the same time supporting the farrowing process, and supporting intestinal health. Therefore, it is recommended to switch to a more dense lactation diet 2-3 days after farrowing, provided that the piglets are suckling well.

If case you have any questions about how to use the model or its background, please contact your SFR consultant.

Yours sincerely,

Schothorst Feed Research B.V.

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