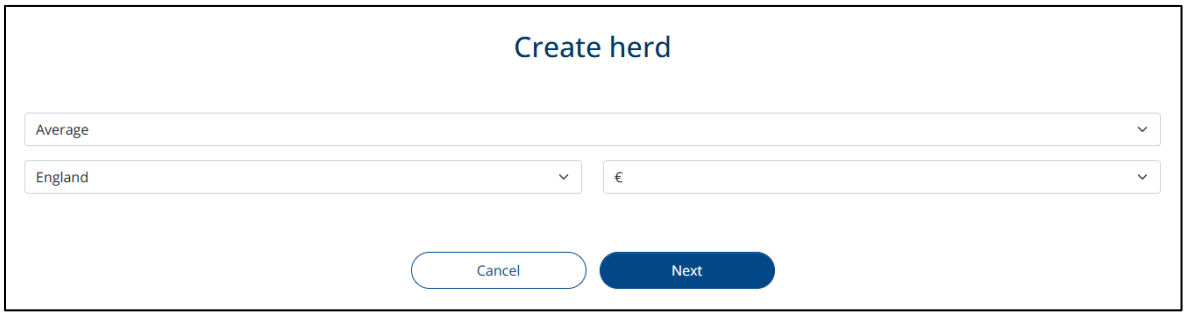
SimHerd exercises

SimHerd A/S, August 2025

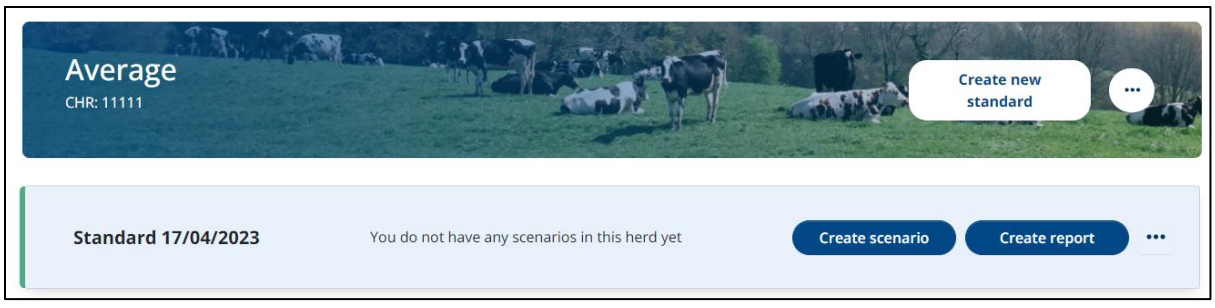
Get started

- Go to https://simulate.simherd.com
- Log in with your username and password
- Click ”Create new herd” and then ”Create from template”

- Choose the "Average" herd
- Choose ”England” as country
- Choose ”€” as currency
- Then click ”Next”



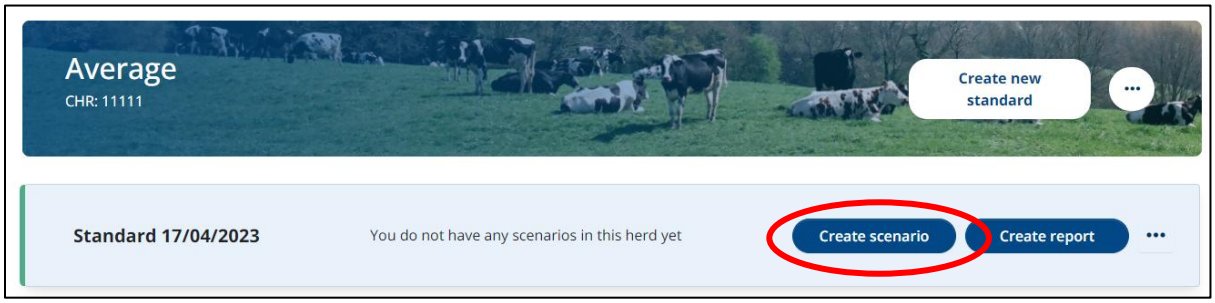
After creating the herd, you will be directed to the herd page shown below. You are now ready to move on to the exercises and create scenarios.



Exercise 1: What if the occurrence of lameness is reduced?

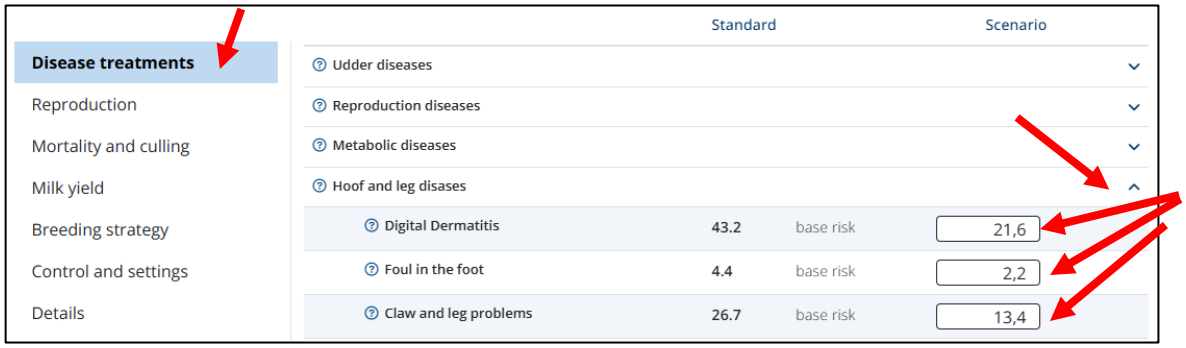
Digital dermatitis, foul in the foot and other claw and leg problems causes lameness.

- Click ”Create scenario”

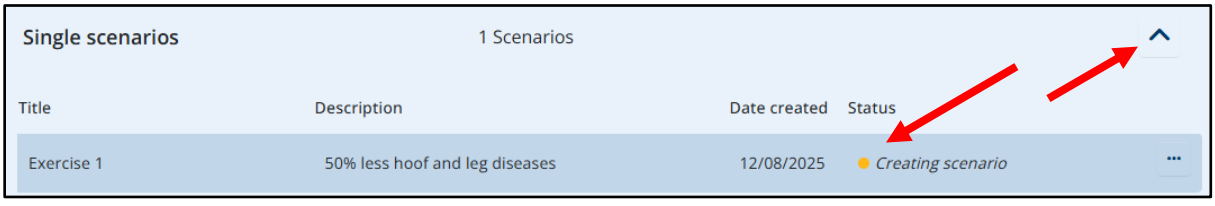


A box pops up, where you can adjust model input parameters according to your scenario.

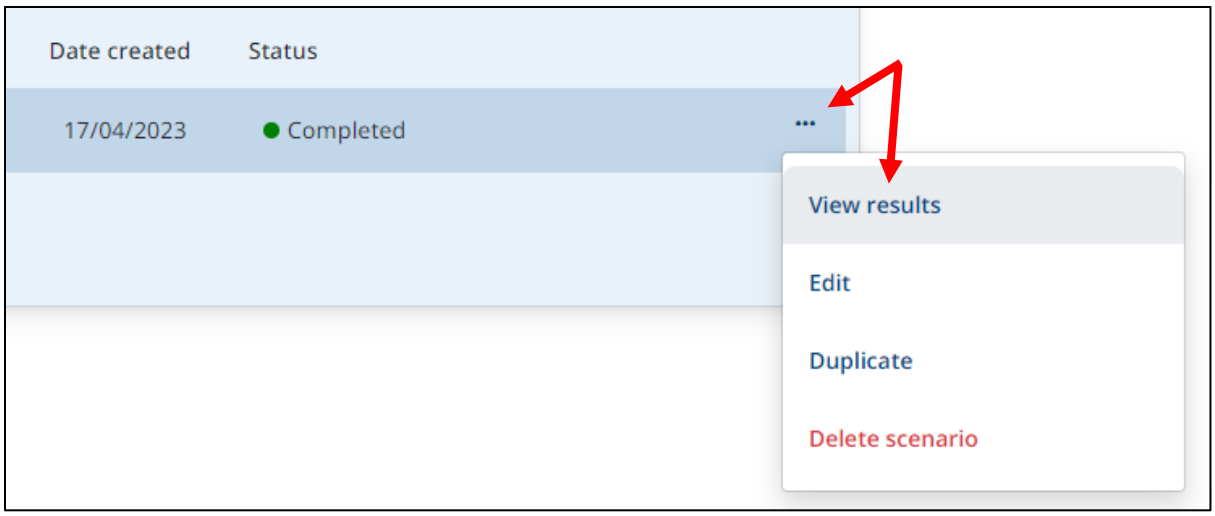
- Click ”Disease treatments” and unfold the category ”Hoof and leg diseases”
- Reduce the base risks of all three diseases by 50% (i.e. divide all risks by two)



- Click ”Create scenario” in the bottom of the box. You will be asked to name your scenario and make a description (optional).
- Click ”Save” and the scenario will be simulated.
- Unfold the category “Single scenarios” and find your scenario. You may see a yellow dot indicating the scenario being simulated. It usually takes less than a minute for it to complete.



- Once the dot turns green, the scenario has completed, and you can view the results by clicking the three dots (…) by the scenario and then ”View results”.



- Have a look at the results

Answer the following questions:

a) How much does the milk yield change?

b) Is it mostly older cows or first parity cows that increases milk yield when lameness is reduced? (you will find the answer in the table ***Milk yield, feeding and methane production***) – why?

c) The cows can be culled voluntary or involuntary (incl. cow mortality). Find the numbers in the table ***Herd dynamics***)

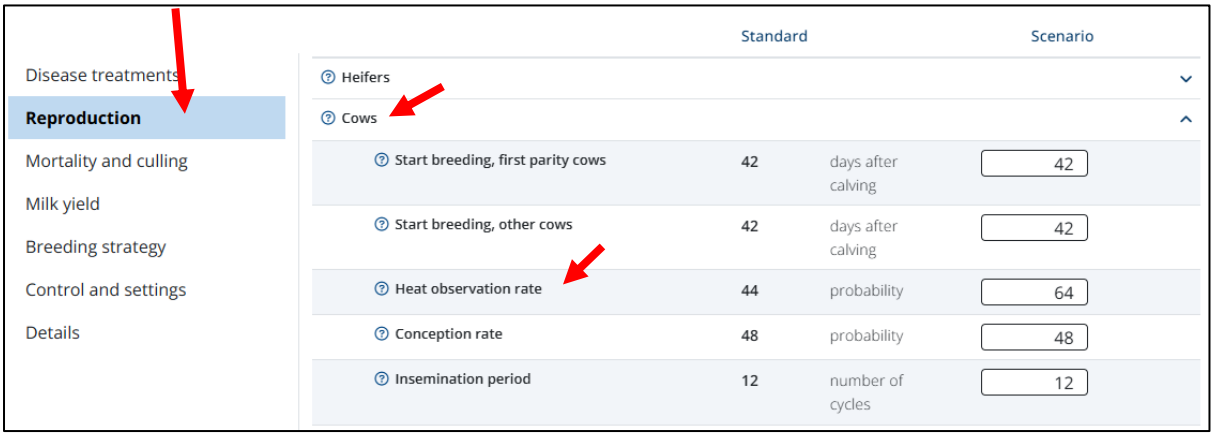
1. How many cows are involuntarily culled in the standard vs scenario?
2. How many cows are voluntarily culled in the standard vs scenario?
3. Explain the difference between the two types of culling and why they change when the lameness occurences changes

d) What happened to the occurence of mastitis (the table ***Disease treatments per 100 cow-years***)? Why?
Hint: check the figures in the table ***Herd dynamics***

e) How much does the contribution margin change?

Exercise 2: What if the heat observation rate increases?

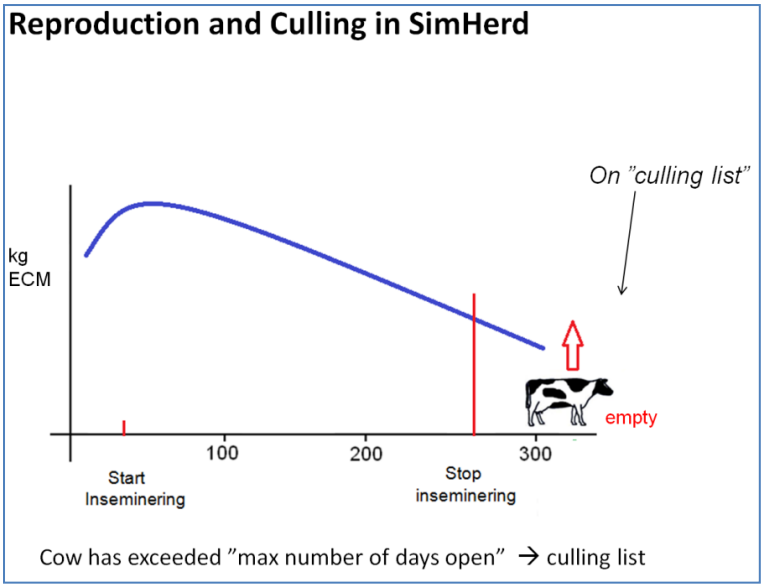
- Create a new scenario
- Find ”cows” under the ”reproduction” tab.
- Increase the heat observation rate with +20 % units (i.e., +20 and not x1.2)



- Check the results

Answer the following questions:

a) What happens with the replacement rate (table ***Herd dynamics***)? and why? Use the illustration below.



b) Try to explain why the number of dry cows increases (table ***Animals in different categories***). NOTE it is **NOT** because the cows get a longer dry period!!

c) Increasing the heat observation rate can have multiple effects on milk yield – some positive and some negative. The results present you with the *overall effect,* reflecting the combined influence of both the positive and negative effects. Look at the figures

in the tables **Herd dynamics, Disease treatments per 100 cow-years** and ***Animals in different categories:***

1) Identify 2 aspects (differences between the *scenario* and the *standard*) that you think have a **positive effect** on milk yield.
2) Identify 2 aspects that you think have a **negative effect** on milk yield.
   Hint: question b contains the key to one of the mechanisms.

d) How much does Gross Margin change per year? Positively or negatively? (in the first table of the report, **Change in contribution margin per year**)

e) What are the most relevant changes in revenues and expenses? (tables **Revenues** and **Expenses**). Can you pinpoint some prices/costs that will have large impact on the results?

Exercise 3: What if we inseminate all the heifers with sexed semen?

Sexed semen increases the chance of a heifer calf by 92%, but the chance of conception is 90% relative to conventional semen.

- Create a new scenario
- Click on ”Breeding strategy” tab
- Unfold the “Sexed semen” category
- Set ” Sexed semen use, heifers” to 1, indicating 100% of heifers are inseminated with sexed semen
- Set ”Number of inseminations with sexed semen on heifers” to 2, thus we give the heifers 2 chances to become pregnant with sexed semen, whereafter she is inseminated with conventional semen
- Check the results

Answer the following questions:

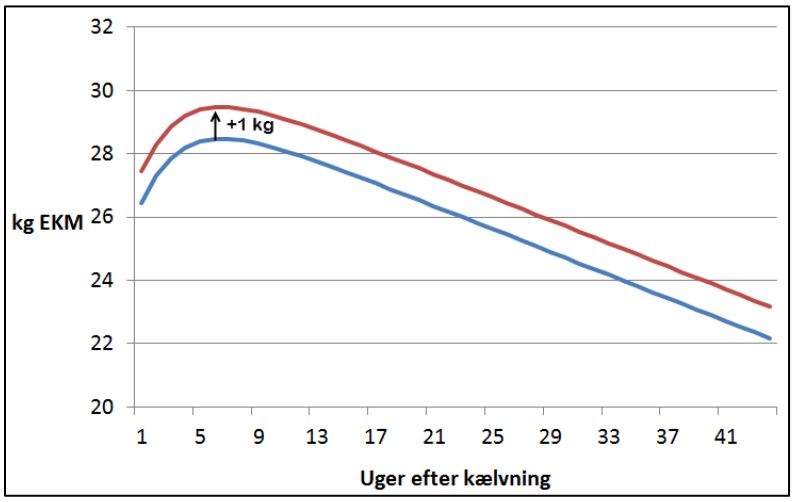
a) What happens with the replacement rate (table ***Herd dynamics***) and why?
Hint! Check the table ***Animals in different categories***

b) How does the replacement rate affect the number of productive years per cow (tables ***Herd dynamics*** and ***Animals in different categories***) and why?

c) How does the methane emissions change (tables ***Milk yield, feeding and methane production*** and ***Animals in different categories***) and why?

Exercise 4: What if the milk yield increases?

By increasing the peak yield by 1 kg, the lactation curve is moved upwards by 1 kg (figure below). In other words, the daily milk yield will increase by 1 kg.



"Weeks after calving" on the x-axis and "kg ECM" on the y-axis.

- Create a new scenario as instructed before
- Click on the "Milk yield" tab

- Increase the three parameters for peak yield in parities 1, 2, and 3+, respectively, with 1 kg

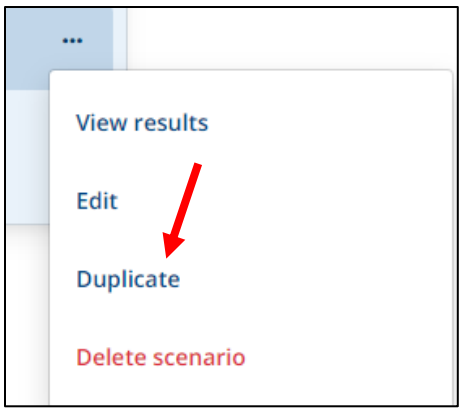
Answer the following questions:

a) **Before you check the results!** How much do you think the milk yield increases på cow-year, when the peak yield is increased by 1 kg? Check the results – how much does the milk yield actually increase?

b) How much does the gross margin increase?

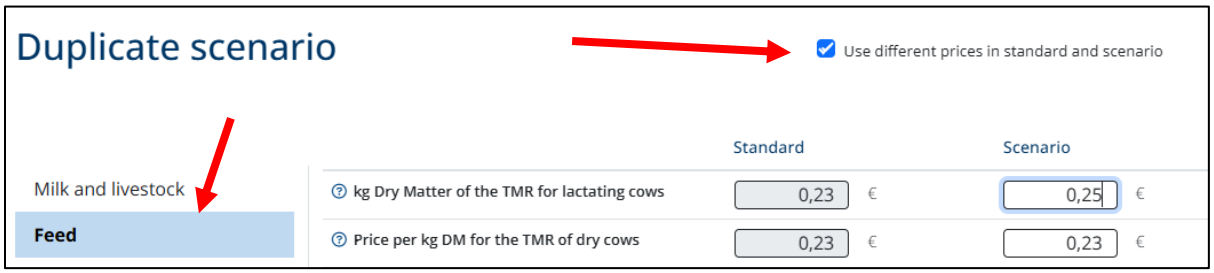
SimHerd does not automatically include the cost of improving herd performance. For example, in this exercise, increasing milk yield may for example require a more expensive feed ration.

- Duplicate the latest scenario, by clicking the three dots (…) next to the scenario, and then click "duplicate" – in that way, you can create a new scenario with the same input as the scenario you duplicated



- Click ”check prices” in the bottom of the pop-up window

- Click ”Feed” and then check the box in the top ”Use different prices in standard and scenario”



- Now, change the price for ”kg Dry Matter of the TMR for lactating cows” in the scenario from 0.23 to 0.25 €
- Check the results

Answer the following question:

c) Is a 1 kg increase still beneficial when it requires a higher feed cost?