



Herd Assessment Pack

Heat detection tool

Year-round calving herds

What is this tool?

This is a **risk assessment** tool. It assesses heat detection and the risk that missed heats may reduce herd reproductive performance.

Why use this tool?

In a year-round calving herd, two useful indicators of heat detection are the % of mature cows inseminated by 80 days after calving, and the % of cows that return to heat 18–24 days after insemination.

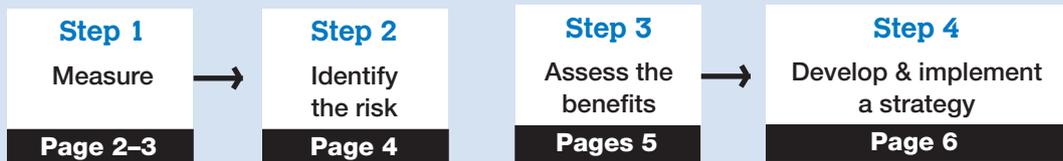
This tool uses these two indicators to enable you to identify the risk of missed heats in your herd and assess the potential \$ benefits of improved herd reproductive performance if this can be achieved by lowering your risk for missed heats.

For more information, see *The InCalf Book*, Chapter 10: Heat detection, and the *InCalf Fertility Focus Report*.

How to use this tool

Work through this tool's four basic steps.

To assess past and present / future performance



When you see this symbol  , this means you need to fill in some information or do some calculations before continuing.

Assess past performance

Step 1: Measure

Option 1: (preferred) If you have an *InCalf Fertility Focus Report*

If you do have an *InCalf Fertility Focus Report* assess your Star rating for Heat Detection.

Here's the place to look on your *InCalf Fertility Focus Report* (See page 80):



Go to Tables 1 and 2 on page 4 to identify your risk level and what you should do.

Option 2: If you do not have an *InCalf Fertility Focus Report*

If you do not have an *InCalf Fertility Focus Report*, you can still calculate the two heat detection indicators for your herd and make this comparison.

a) Mature cow submission rate

You will need birth dates, calving dates and insemination dates to do these calculations.

Part 1: Calculate the number of mature cows that you intended to mate

- Obtain a list of all cows that calved 3 to 15 months ago and that were intended for mating. This list should include the age of the cows and their calving date.
- Put a line through and exclude all the cows that are under 4 years of age.

The cows remaining on this list are the mature cows eligible for inclusion in the analysis.

The number of mature cows you intended to mate was: (A)

Part 2: Using your mating records (wall chart, docket book, pocket book or computer program), calculate the number of mature cows actually inseminated in the first 80 days after calving

- Put a circle around each cow in this list that was inseminated within 80 days of calving
- Count the number of cows that have been circled.

The number of mature cows inseminated within 80 days of calving was: (B)

Part 3: Calculate the mature cow 80-day submission rate

- Divide the number of cows that were mated (B) by the number of cows that were intended to be mated (A) to calculate the 80-day submission rate for these cows.



No. of cows mated	<input type="text"/> (B)	x 100 =	<input type="text"/> % (C)
No. of cows intended to be mated	<input type="text"/> (A)		80-day submission rate for mature cows

Go to **Table 1 on page 4** to assess your risk level and what you should do.

b) Return intervals

Using your mating records (wall chart, docket book, pocket book or computer program), calculate the percentage of return intervals that were 18–24 days in length. This is called the 18–24 day return %. You will need dates for all inseminations performed in the past 14 months.

Part 1: Calculate the interval between successive services for inseminations performed between 2 and 14 months ago

- Obtain a list of all cows that were inseminated between 2 and 14 months ago and in a separate column list all their services in the past 14 months.
- Put a line through and exclude all cows with only one service.
- Exclude intervals starting with a service in the last 2 months.
- For each pair of successive services calculate the interval between the two services.

Part 2: Add up the number of intervals between services that are between 18 days and 24 days in length (including intervals that are 18 days and 24 days)

The number of intervals between 18 and 24 days = (D)

Part 3: Add the total number of intervals but exclude intervals of only one day and more than 72 days in length

Total number of intervals = (E)

Part 4: Calculate the 18–24 day return %

Divide the number of 18–24 day intervals (D) by the total number of intervals (E) to calculate the 18–24 day return %



No. of intervals between 18 and 24 days	<input type="text"/> (D)	x 100 =	<input type="text"/> % (F)
Total no. of intervals	<input type="text"/> (E)		18–24 day return %

Go to **Table 2 on page 4** to assess your risk level and what you should do

Step 2: Identify the risk

Use the information below to assess your risk level and what you should do.

Table 1: Heat detection risk assessment based on the 80-day submission rate for mature cows.
(Note: only use this assessment if the Voluntary Waiting Period was 60 days or less.)

80-day submission rate for mature cows	Risk assessment	What you should do
70% or more	Low: There is only a low chance that missed heats in the first 80 days after calving reduced herd reproductive performance. However, increases in herd reproductive performance may occur with increased heat detection. It is possible to achieve above 76% for this indicator.	Check for opportunities to further increase heat detection.
61–69%	Moderate: There is a moderate chance that missed heats in the first 80 days after calving reduced herd reproductive performance.	Review heat detection practices.
Less than 61%	High: There is a strong chance that missed heats in the first 80 days after calving reduced herd reproductive performance by a substantial amount.	Urgently review heat detection practices. Unless you are confident your strategies to improve heat detection will be effective, consult an adviser.



Risk level: Low / Moderate / High (circle identified level)

For another possible cause of a low 80-day submission rate in mature cows, see page 6.

Table 2: Heat detection risk assessment based on the 18–24 day return %.

18–24 day return %	Risk assessment	What you should do
47% or more	Low: There is only a low chance that missed heats reduced herd reproductive performance. However, increases in herd reproductive performance may occur with increased heat detection. It is possible to achieve 60% for this indicator.	Check for opportunities to further increase heat detection.
43–46%	Moderate: There is a moderate chance that missed heats have reduced herd reproductive performance.	Review heat detection practices.
Less than 43%	High: There is a strong chance that missed heats have reduced herd reproductive performance by a substantial amount.	Urgently review heat detection practices as a high priority. Unless you are confident that your strategies to improve heat detection will be effective, consult an adviser.



Risk level: Low / Moderate / High (circle identified level)

Step 3: Assess the benefits*

Now assess the potential benefits of improving your herd's reproductive performance if this can be achieved by lowering your risk for missed heats. These can be estimated by considering the likely \$ results from changes in reproductive performance.

Moving to optimal heat detection performance (as indicated by an improved 80-day submission rate for mature cows and increased 18–24 day return %) can increase in-calf rates substantially, resulting in important possible benefits for herd profitability. This is indicated below.

Table 3: An indication of how increases in heat detection performance might affect in-calf rates and economic performance.

Risk assessments				
80-day submission rate for mature cows (C) Risk	18–24 day return % (F) Risk	Possible increase in 100-day in-calf rate	Possible decrease in 200-day not-in-calf rate	Possible economic benefit (\$/100 cows/ year)
Low (70% or more)	Low (47% or more)	0%	0%	\$0
	Moderate (43–46%)	2–6%	3–11%	\$4,000–\$10,000
	High (less than 43%)	7% or more	12% or more	\$10,000 or more
Moderate (61–69%)	Low (47% or more)	0–3%	0–4%	\$0–\$5,000
	Moderate (43–46%)	4–9%	4–12%	\$5,000–\$11,000
	High (less than 43%)	10% or more	13% or more	\$11,000 or more
High (less than 61%)	Low (47% or more)	4–8%	0–4%	\$400–\$5,000
	Moderate (43–46%)	8–13%	4–14%	\$5,000–\$13,000
	High (less than 43%)	14% or more	15% or more	\$13,000 or more

Note: The 80-day Submission Rate for mature cows and the 18-24 day return % are very practical indicators of heat detection. However, because they do not precisely measure the actual heat detection rate (which is very difficult in practice in commercial, year-round calving herds), the possible reproductive effects and economic benefits as shown in this table should only be considered as very approximate. For some herds, the actual effects and benefits will be well outside the range shown.

* Based on use of standard herd figures in the InCalf economic benefits models (2004).

Step 4: Develop & implement a strategy

If low risk identified in Step 2)

If Step 2) of this tool (page 4) has identified a low risk that missed heats in the first 80 days after calving reduced your past or present herd reproductive performance, no changes are necessary.

If moderate or high risk identified in Step 2)

If Step 2) of this tool (page 4) has identified a moderate or high risk that missed heats in the first 80 days after calving reduced your past or present herd reproductive performance, and Step 3) (page 5) indicates significant potential benefits if improvements can be achieved by lowering your risk for missed heats:

- Work closely with your adviser to develop your own personal farm strategy to improve your heat detection program.
- Use the InCalf Body condition at calving Tool, the InCalf Body condition loss in early lactation Tool, and the Individual cow health Tool. Consider consulting an appropriate adviser if these indicate a problem.

Apart from missed heats, another possible cause of a low 80-day submission rate in mature cows is a high rate of non-cycling cows. This may be due to nutritional factors such as low body condition at calving and/or excessive loss of body condition in early lactation, or other factors such as cow health problems.

- Refer to *The InCalf Book*, Chapter 10, starting on page 77, for further information on heat detection and strategies to improve your heat detection program.

Key issues to consider:

- Whether to record heats before mating begins (See *The InCalf Book*, pages 82–83)
- Use of paddock observations and detection aids (See *The InCalf Book*, pages 84–92)
- Heat synchronization (See *The InCalf Book*, pages 93–97 and pages 189–192)
- Managing cows not detected on heat (See *The InCalf Book*, pages 98–101 and pages 185–188)



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