DOES YOUR REPRODUCTIVE PROGRAM REFLECT REALITY?

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A well-designed reproductive program is foundational to dairy success, but even the best-laid plans require continuous validation. While long-term performance metrics like conception risk are important, they're lagging indicators. To truly drive improvement, producers must look upstream – assessing real-time compliance to the plan *before* the next pregnancy check.

Whether your program centers on timed artificial insemination (TAI), heat detection, or a hybrid approach, early insights into how the plan is being implemented can save time, improve outcomes, and uncover hidden opportunities for efficiency.

STEP 1

Plot Days in Milk (DIM) at First Insemination

A simple yet powerful tool to begin evaluating compliance is a scatter plot of **days in milk at first insemination**. This visual gives a clear picture of:

▶ Adherence to the voluntary waiting period (VWP)

▶ The range (or distribution) of DIM at first service

▶ The consistency of intervals between breedings

In Figure 1, we compare two example farms where each dot is DIM at first service – both achieving strong reproductive performance, yet with very different reproductive strategies. This illustrates a critical point: **Defining your plan is essential before evaluating execution**.

FIGURE 1 | Example data from two anonymous herds in the mySYNCH database
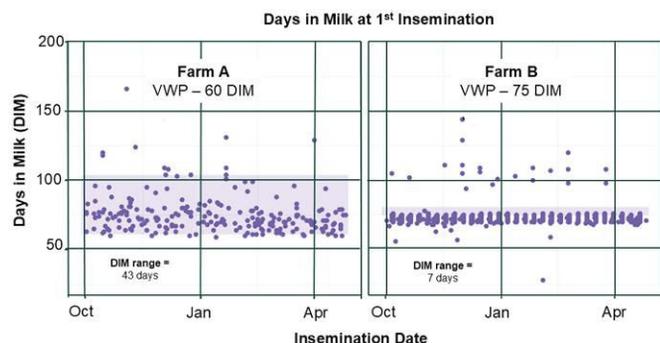
STEP 2

Evaluate Adherence to the Voluntary Waiting Period (VWP)

Farm A follows a 60-day VWP, while Farm B uses 75 days. In both cases, very few cows are bred before those respective targets – indicating excellent compliance.

According to researchers Michael Overton and Victor Cabrera, less than **3% of cows** should be inseminated before the planned VWP. While evaluating this metric is straightforward, selecting the optimal VWP requires careful consideration of factors such as postpartum health, parity, milk yield, lactation persistency, and seasonality – as highlighted in recent work by Ariette van Knegsel.

Ask yourself: What is your intended VWP, and how many cows are bred before reaching it? If cows are getting bred early, are you aware these decisions are being made?

STEP 3

Evaluate the Range of DIM at First Insemination

Understanding the shape of your DIM distribution helps interpret how consistently your plan is being applied.

▶ **Farm A**, using a heat detection approach from day 61–110, displays a broader "shotgun blast" distribution – but this still reflects good compliance with their plan.

▶ **Farm B**, which uses 100% TAI, shows a "narrow strip" pattern – tight clustering of insemination dates (75–81 DIM).

The scatter graph of days in milk at first breeding for herds with excellent implementation is often incredibly "boring." However, in this case boring is beautiful; it means the plan is being executed precisely.

This reinforces an important point: **the scatter graph interpretation must be aligned with your specific reproductive strategy**. A wide distribution may be appropriate for a heat detection program but is a red flag for a protocol that has TAI for first service.

It is critical to monitor how your repro team executes from week to week. This scatter graph also provides great insight into how consistently your team implements the intended plan. Problems with execution around holidays or vacations can easily be spotted. Provide the proper training and put plans in place to avoid these costly failures in implementation.

Additionally, remember to look for cows that are missing entirely from the graph – those who should have been bred but were not. These unserviced cows are just as important in evaluating plan compliance.

TABLE 1	Benchmarks for execution of the first and subsequent services according to your reproduction plan

Variable	Target
Planned first service insemination window[1]:	
100% TAI with weekly enrollment	> 95% within 7 days
Combined estrus detection and TAI	> 95% within 30 days
100% estrus detection	> 85% within 42 days
First service insemination efficiency[1]:	
% of cows before planned service window	< 3%
% of cows inseminated after planned service window	< 3%
Estrus detection accuracy[2]:	
% of repeated inseminations 4-17 days post A.I.	< 8%

Source: Benchmarks for assessing compliance to the reproductive plan adapted from [1](MW Overton and VE Cabrera, 2017) and [2](JM Schefers et al., 2010).

STEP 4
Evaluate the Interval Between Services

Once the first services are well-executed, assess the **intervals between inseminations** for first and second services, as shown in Figure 2.

▶ **Farm A** (heat detection): Median interval = 25 days

▶ **Farm B** (TAI-based): Median interval = 35 days

FIGURE 2	Example data from two anonymous herds in the mySYNCH database demonstrating the intervals between the first and second services (Purple = first insemination, Pink = second insemination)
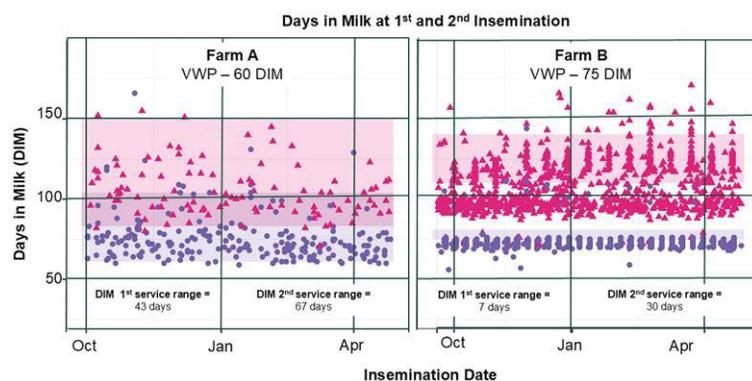
Intervals vary depending on the use of pregnancy detection, resynchronization protocols, and heat expression. When 100% TAI programs are used, the interval between services is highly dependent on the date of the pregnancy detection. When heat detection is utilized, often the interval between services may be shorter than the time required to be able to detect pregnancy. Again, both strategies can be successful – but deviations from your **intended interval** may indicate missed heats or inefficiencies.

TABLE 2	Evaluate the interval between services		
Herd	**Median**	**5th percentile**	**95th percentile**
Farm A	25 days	19 days	68 days
Farm B	35 days	35 days	68 days

REALITY CHECK
Does Your Plan Match Execution?

It's not enough to have a plan – you need to verify it's being carried out as intended. And that verification should happen **long before pregnancy checks**.

Tracking DIM at first and second inseminations allows for **early intervention**. If cows are bred outside your target window or skipped entirely, course correction can begin immediately – saving weeks and protecting performance.

All too often dairy managers wait at the end of the pipeline, hoping the result that comes out, like conception rate, meets expectations. Start with a plan grounded in solid science and monitor execution of the plan on a weekly basis to ensure it's being followed.

FINAL THOUGHT

Every dairy – regardless of size or strategy – can benefit from evaluating how closely their reproductive program aligns with reality. Whether your goal is earlier conception, fewer days open, or more consistent protocol execution, **early, ongoing compliance tracking** is key.

Because success isn't just about the plan – it's about how well the plan is executed, cow by cow, day by day. ■

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