1

Getting Cows Pregnant

2

Reproductive management options

- Natural service
- Estrus (heat) detection and AI
- Estrus detection aids, manual and electronic
- Hormonal synchronization programs
- Embryo transfer, including IVF

3

General guidelines

- No one “right way”
- All farms must have a plan to:
  - Submit cows for first AI in a timely manner
  - Identify non-pregnant cows to return to service

4

Natural Service

- Con’s
  - Safety: bulls are dangerous
  - Unknown performance and fertility
  - Slower genetic progress
  - Unknown date of conception

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Estrus (heat) detection

- Pro’s
  - Little to no hormone cost and administration
  - High estrus detection rate herds can rapidly submit cows to AI
- Con’s
  - Poor estrus expression and detection is common
  - Not all cows receive their first AI by a timely Days In Milk (DIM)
  - 20-30% aren’t cycling by the end of the Voluntary Waiting Period (VWP)

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Hormonal synchronization

- Pro's
  - All cows receive their first AI by a set DIM
  - Synchronization of ovulation programs do not require estrus detection
- Con's
  - Requires attentive staff and record keeping to maintain program compliance and success

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Synchronization Overview

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Synchronization

Use of reproductive hormones to manipulate the estrous cycle for a more predictable timing of estrus and ovulation

9

Synchronization of estrus (heat)

- Concentrates the timing of estrus for a group into a 2-7 day window
- Improves estrus detection and expression

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Synchronization of ovulation

Allows for timed AI of a group without estrus

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Synchronization of ovulation (Timed AI)

- Pre-Synchronization
- Synchronization
- Re-Synchronization

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Hormonal manipulation of ovarian function in heifers*

- Progestin
  - CIDR® Intravaginal Insert (Zoetis)
- Prostaglandin $F_{2\alpha}$
  - Lutylase® (Zoetis)
  - Estrumate® (Merck)
  - estroPLAN® (Parnell)
- Gonadotrophin Release Hormone
  - Factrel® (Zoetis)
  - Fertagyl® (Merck)
  - Cystorelin® (Boehringer Ingelheim)
  - GONAbreed® (Parnell)

*FDA approved drugs for synchronizing estrous cycles in cows or heifers. Must be prescribed through a Veterinarian-Client-Patient Relationship (VCPR).

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Hormones of the estrous cycle

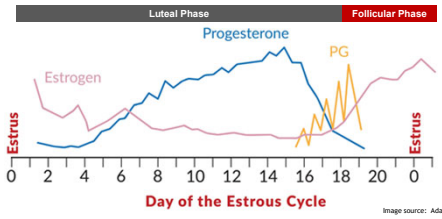

Image source: Adapted from Paul Fricke

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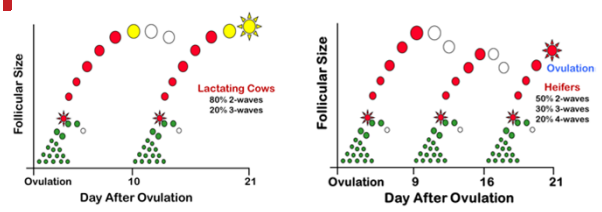
Follicular waves



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Synchronization of Estrus

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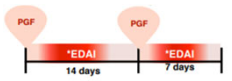
AI to observed heat: Prostaglandin program



Two PGF injections followed by heat detection

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	PGF treatment	Breed on visual heat	Breed on visual heat	Breed on visual heat	Breed on visual heat	Breed on visual heat
Breed on visual heat	Breed on visual heat	Breed on visual heat	Breed on visual heat	Breed on visual heat	Breed on visual heat	Breed on visual heat
Breed on visual heat	PGF treatment	Breed on visual heat	Breed on visual heat	Breed on visual heat	Breed on visual heat	Breed on visual heat
Breed on visual heat	Breed on visual heat					

Source: Dairy Cattle Reproduction Council, 2018

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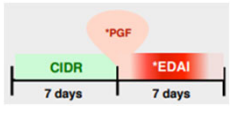
AI to observed heat: Progesterone + CIDR



CIDR program with PGF injection at removal followed by heat detection

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	CIDR insertion	CIDR	CIDR	CIDR	CIDR	CIDR
CIDR	CIDR removal PGF treatmtn	Breed on visual heat	Breed on visual heat	Breed on visual heat	Breed on visual heat	Breed on visual heat
Breed on visual heat	Breed on visual heat					

Source: Dairy Cattle Reproduction Council, 2018

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Estrus detection followed by Timed AI

- Combination of estrus detection and timed AI
- Cows not detected in estrus by a specified DIM are placed on a timed AI synchronization program

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Pre-Synchronization

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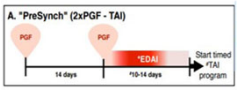
PreSynch



Sun	Mon	Tue	Wed	Thu	Fri	Sat
			PGF treatment			
			PGF treatment	Breed on visual heat	Breed on visual heat	Breed on visual heat
Breed on visual heat	Breed on visual heat	Breed on visual heat	Breed on visual heat	Breed on visual heat	Breed on visual heat	Breed on visual heat
Breed on visual heat	**Start Timed AI Program**					

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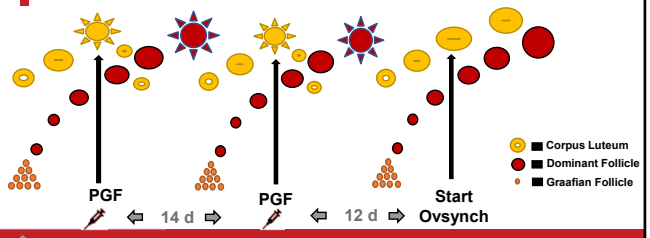
Treatment action PreSynch



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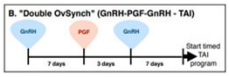
Double OvSynch



Sun	Mon	Tue	Wed	Thu	Fri	Sat
					GnRH treatment	
					PGF treatment	
	GnRH treatment					
	Start Ovsynch Program					

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Reproductive Skills Module

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Synchronization

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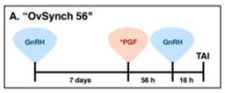
OvSynch 56



Sun	Mon	Tue	Wed	Thu	Fri	Sat
	GnRH injection					
	PGF injection		PM 56 Hrs GnRH injection	16 Hrs Timed AI		

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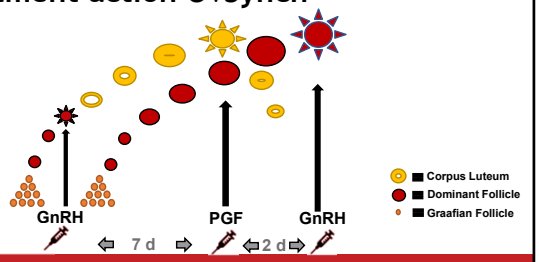
Treatment action OvSynch



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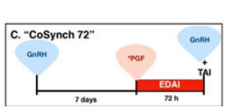
CoSynch 72



Sun	Mon	Tue	Wed	Thu	Fri	Sat
	GnRH treatment					
	PGF treatment			GnRH treatment Timed AI		

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Resynchronization

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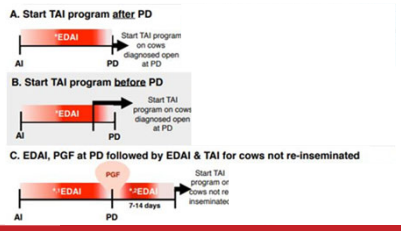
Three resynchcronization options



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Start ReSynch AFTER pregnancy check

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	Preg Check  GnRH treatment					
	PGF treatment		GnRH treatment	TAI		

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Reproductive Skills Module

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Start ReSynch BEFORE pregnancy check

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	GnRH treatment					
	Preg Check  PGF treatment		GnRH treatment	TAI		

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Combined PGF & estrus detection

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	Preg Check  PGF AM	Heat detection	Heat detection	Heat detection	Heat detection	Heat detection
Heat detection	GnRH treatment					
	PGF treatment		GnRH treatment	TAI		

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Compliance

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When is good…*Good enough*?

Compliance at each dose	3-shot protocol *i.e. Ovsynch*	5-shot protocol *i.e. Pre-Synch/Ovsynch*	7-shot protocol *i.e. Double Ovsynch*
	--percentage compliance across the program--		
100%	100%	100%	100%
95%	86%	77%	70%
90%	73%	59%	48%

Source: Dairy Cattle Reproductive Council

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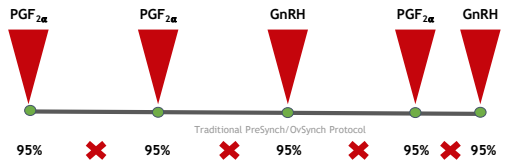
Good enough is not acceptable



= 77% compliance across the program

Source: P. Fricke, UW-Madison Department of Dairy Science

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Cost factor of compliance

Considerations:

- GnRH = $3.20 per dose
- Prostaglandin = $2.50 per dose
- Cow handling = $1 per cow
- CIDR application = $9 to $10 per cow

Protocols (excluding semen):

- Presynch (2 PGF protocol) = $5.00 per cow *(two treatments)*
- Ovsynch = $8.90 per cow *(three treatments)*
- Double Ovsynch = $17.80 per cow *(six treatments)*

Source: adapted from J.Petrow, University of Minnesota College of Veterinary Medicine

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To achieve compliance

Correct injections | Correct cow | Correct days

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Worker safety

- Do not work alone
- Identify exit route
- Properly restrain animals
- Use all products according to label under the supervision of VCPR
- Handle loaded syringes with care
- Keep needles properly covered
- Never carry loaded syringes in pockets
- Properly dispose of used needles and bottles

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Hormone use and administration

Use hormones with caution

- Prostaglandin should not be used by pregnant females
- Progesterone can increase symptoms of pregnancy

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To ensure breeding success

1. **Use** 18- to 20-guage, 1-1/2" needles for deep muscle injections
2. **Choose** correct size of syringe based on the volume of injection
3. **Handle and store** hormones according to instructions
4. **Include** health and cycling status of cows as part of the decision to use a timed AI protocol
5. **Ensure** the correct hormone is administered to the right cow at the prescribed time
6. **Double-check** ear tag IDs of cows before each treatment. Prostaglandin will lyse the corpus luteum and induce abortion

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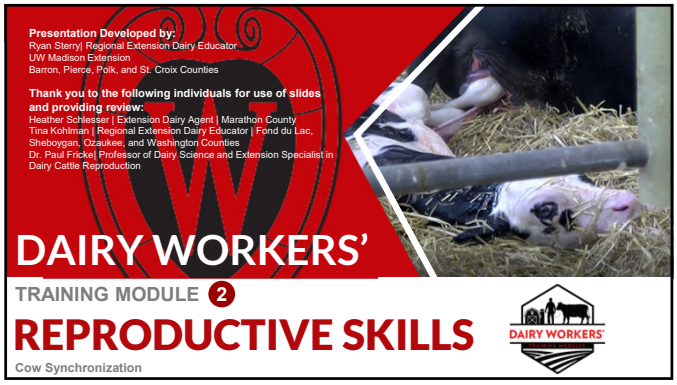

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Resources:

Senger, P.L. Pathways to Pregnancy and Parturition, Second Edition
Dairy Cattle Reproduction Council, Reproductive Management Strategies for Dairy Heifers-Synchronization Protocols, https://www.dcrcouncil.org/protocols/, 2018.
Fricke, P. Strategies for Optimizing Reproductive Management of Dairy Heifers, DAIREXNET, https://dairy-cattle.extension.org/strategies-for-optimizing-reproductive-management-of-dairy-heifers/, 2019.
Fricke, P., Evolution of Timed AI Protocols and Overview of the 2018 DCRC Reproductive Management Strategies Protocol Sheet for Dairy Cows

DAIRY WORKERS'

TRAINING MODULE 2

REPRODUCTIVE SKILLS

Cow Synchronization

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DAIRY WORKERS'

TRAINING MODULE 2

REPRODUCTIVE SKILLS

Cow Synchronization

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