

# Parnell Fertility Management

*Get more cows pregnant  
the first time*





# Parnell

## Our focus is on fertility

Working hard and smart—that's how you run your farm. At Parnell, we work hard to develop innovative technology that helps improve your dairy herd fertility, which means more milk in the tank.

Over the past two decades, Parnell has led the Dairy industry in clinical research. Parnell has undertaken studies in more than 18,000 dairy cows on commercial dairy farms around the world. We invest our research dollars in helping producers and veterinarians continue to improve fertility management in dairy cows.

### The Parnell Fertility Package: Practical technology, precision timing, proven products

In partnership with dairy producers and veterinarians, we have found that the greatest gains come from maximizing the effectiveness of breeding programs. Flawless execution of well-defined, fertility protocols using proven fertility hormones can now be easily achieved with our innovative digital management tool: mySYNCH™ delivers greater precision in breeding program management to enhance fertility and help you work smarter, so your business can flourish and grow.



## Parnell's Proven Products

Parnell's GONAbreed® and estroPLAN® are time-tested, proven fertility hormones of choice for today's dairy farmer and they are all made in our world-class, FDA-accredited manufacturing facility.

### GONAbreed:

#### The highest concentration of gonadorelin available

- GONAbreed was the first FDA-approved GnRH for use with cloprostenol sodium to synchronize estrous cycles in both lactating dairy and beef cows<sup>1</sup>
- GONAbreed contains gonadorelin acetate, which has demonstrated superior ovulation and pregnancy outcomes when compared to gonadorelin hydrochloride<sup>2</sup>
- When combined with estroPLAN in Parnell PROcept breeding protocol (patent pending), conception rates demonstrated a relative increase of 14% in second and third lactation cows<sup>3</sup>
- GONAbreed is available in the highest concentration of gonadorelin available (100mcg/mL)<sup>4,5</sup>
- Provides more doses per vial, with a 1 mL dose, for fewer vial switch-outs<sup>1</sup>

### estroPLAN:

#### The tried and tested prostaglandin

estroPLAN is FDA-approved to induce luteolysis in dairy cattle.<sup>4</sup>

- estroPLAN—as part of Parnell's PROcept breeding protocol (patent pending)—is the only prostaglandin proven to deliver a relative increase in pregnancy rates of 14% in second and third lactation cows<sup>5</sup>
- Sold worldwide in over 14 countries
- Convenient 2 mL dose



PRECAUTIONS: FOR ANIMAL USE ONLY, NOT FOR HUMAN USE. KEEP OUT OF REACH OF CHILDREN. Women of child-bearing age, asthmatics and persons with bronchial and other respiratory problems should exercise extreme caution when handling this product. In the early stages, women may be unaware of their pregnancies. estroPLAN is readily absorbed through the skin and may cause abortion and/or bronchospasms. Direct contact with the skin should therefore be avoided. Accidental spillage on the skin should be washed off immediately with soap and water.



# Discover mySYNCH

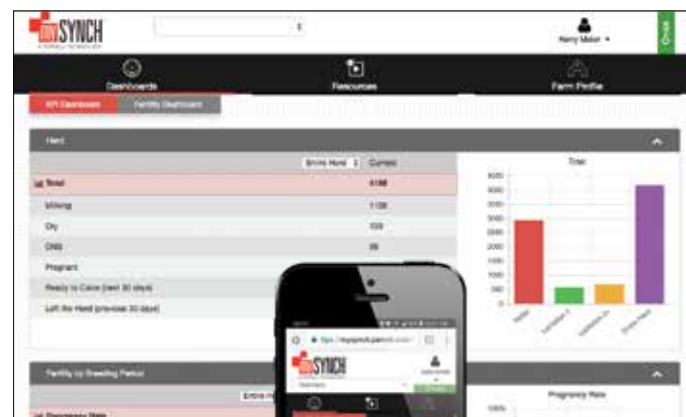
## mySYNCH™ gives you real time access to your dairy's fertility performance

mySYNCH securely links with your existing Dairy Herd Management System (DHMS) and seamlessly shares the data to create simple and easy to use fertility reports that saves you time. It also enables you to connect your veterinarian and other allied dairy staff to review and analyze your farms fertility data with easy-to-read graphical reports on their desktop, laptop, and mobile device. The mySYNCH application can also generate detailed fertility analytics and comprehensive educational content in Spanish and English.

### View herd data in real-time

**The Key Performance Indicator (KPI) Dashboard** provides access to over 22 DHMS reports in one dashboard. Simple and easy to use charts and graphs give you up-to-date metrics on your operation, including insemination rates, conception rates and cumulative pregnancy tracking. You can also view the other important KPIs to help you manage your operation from overall herd fertility metrics to milk data and calving and culling performance.

**The Fertility Dashboard** provides deeper analysis into the breeding week (cohort). View trends for conception and pregnancy rates in real-time and drill down by service type and breeder. These graphics allow you to watch performance trends for results based on actual events for early intervention. mySYNCH also has the ability to compare your results with other like-for-like operations with simple benchmarking tools and tracking of industry trends.



Cohort Week	Days in Milk	Cows	Cows Inseminated	Avg. # Inseminations / Cow	Pregnancy	Conception Rate	Pregnancy Rate
28 7/17 - 7/23/17	1-7	20	10	1.0	10	50%	50%
28 7/18 - 7/24/17	2-8	20	10	1.0	10	50%	50%
28 7/19 - 7/25/17	3-9	20	10	1.0	10	50%	50%
28 7/20 - 7/26/17	4-10	20	10	1.0	10	50%	50%
28 7/21 - 7/27/17	5-11	20	10	1.0	10	50%	50%
28 7/22 - 7/28/17	6-12	20	10	1.0	10	50%	50%
28 7/23 - 7/29/17	7-13	20	10	1.0	10	50%	50%
28 7/24 - 7/30/17	8-14	20	10	1.0	10	50%	50%
28 7/25 - 7/31/17	9-15	20	10	1.0	10	50%	50%
28 7/26 - 8/1/17	10-16	20	10	1.0	10	50%	50%
28 7/27 - 8/2/17	11-17	20	10	1.0	10	50%	50%
28 7/28 - 8/3/17	12-18	20	10	1.0	10	50%	50%
28 7/29 - 8/4/17	13-19	20	10	1.0	10	50%	50%
28 7/30 - 8/5/17	14-20	20	10	1.0	10	50%	50%
28 7/31 - 8/6/17	15-21	20	10	1.0	10	50%	50%
28 8/1 - 8/7/17	16-22	20	10	1.0	10	50%	50%
28 8/2 - 8/8/17	17-23	20	10	1.0	10	50%	50%
28 8/3 - 8/9/17	18-24	20	10	1.0	10	50%	50%
28 8/4 - 8/10/17	19-25	20	10	1.0	10	50%	50%
28 8/5 - 8/11/17	20-26	20	10	1.0	10	50%	50%
28 8/6 - 8/12/17	21-27	20	10	1.0	10	50%	50%
28 8/7 - 8/13/17	22-28	20	10	1.0	10	50%	50%
28 8/8 - 8/14/17	23-29	20	10	1.0	10	50%	50%
28 8/9 - 8/15/17	24-30	20	10	1.0	10	50%	50%
28 8/10 - 8/16/17	25-31	20	10	1.0	10	50%	50%
28 8/11 - 8/17/17	26-32	20	10	1.0	10	50%	50%
28 8/12 - 8/18/17	27-33	20	10	1.0	10	50%	50%
28 8/13 - 8/19/17	28-34	20	10	1.0	10	50%	50%
28 8/14 - 8/20/17	29-35	20	10	1.0	10	50%	50%
28 8/15 - 8/21/17	30-36	20	10	1.0	10	50%	50%
28 8/16 - 8/22/17	31-37	20	10	1.0	10	50%	50%
28 8/17 - 8/23/17	32-38	20	10	1.0	10	50%	50%
28 8/18 - 8/24/17	33-39	20	10	1.0	10	50%	50%
28 8/19 - 8/25/17	34-40	20	10	1.0	10	50%	50%
28 8/20 - 8/26/17	35-41	20	10	1.0	10	50%	50%
28 8/21 - 8/27/17	36-42	20	10	1.0	10	50%	50%
28 8/22 - 8/28/17	37-43	20	10	1.0	10	50%	50%
28 8/23 - 8/29/17	38-44	20	10	1.0	10	50%	50%
28 8/24 - 8/30/17	39-45	20	10	1.0	10	50%	50%
28 8/25 - 8/31/17	40-46	20	10	1.0	10	50%	50%
28 8/26 - 9/1/17	41-47	20	10	1.0	10	50%	50%
28 8/27 - 9/2/17	42-48	20	10	1.0	10	50%	50%
28 8/28 - 9/3/17	43-49	20	10	1.0	10	50%	50%
28 8/29 - 9/4/17	44-50	20	10	1.0	10	50%	50%
28 8/30 - 9/5/17	45-51	20	10	1.0	10	50%	50%
28 8/31 - 9/6/17	46-52	20	10	1.0	10	50%	50%
28 9/1 - 9/7/17	47-53	20	10	1.0	10	50%	50%
28 9/2 - 9/8/17	48-54	20	10	1.0	10	50%	50%
28 9/3 - 9/9/17	49-55	20	10	1.0	10	50%	50%
28 9/4 - 9/10/17	50-56	20	10	1.0	10	50%	50%
28 9/5 - 9/11/17	51-57	20	10	1.0	10	50%	50%
28 9/6 - 9/12/17	52-58	20	10	1.0	10	50%	50%
28 9/7 - 9/13/17	53-59	20	10	1.0	10	50%	50%
28 9/8 - 9/14/17	54-60	20	10	1.0	10	50%	50%
28 9/9 - 9/15/17	55-61	20	10	1.0	10	50%	50%
28 9/10 - 9/16/17	56-62	20	10	1.0	10	50%	50%
28 9/11 - 9/17/17	57-63	20	10	1.0	10	50%	50%
28 9/12 - 9/18/17	58-64	20	10	1.0	10	50%	50%
28 9/13 - 9/19/17	59-65	20	10	1.0	10	50%	50%
28 9/14 - 9/20/17	60-66	20	10	1.0	10	50%	50%
28 9/15 - 9/21/17	61-67	20	10	1.0	10	50%	50%
28 9/16 - 9/22/17	62-68	20	10	1.0	10	50%	50%
28 9/17 - 9/23/17	63-69	20	10	1.0	10	50%	50%
28 9/18 - 9/24/17	64-70	20	10	1.0	10	50%	50%
28 9/19 - 9/25/17	65-71	20	10	1.0	10	50%	50%
28 9/20 - 9/26/17	66-72	20	10	1.0	10	50%	50%
28 9/21 - 9/27/17	67-73	20	10	1.0	10	50%	50%
28 9/22 - 9/28/17	68-74	20	10	1.0	10	50%	50%
28 9/23 - 9/29/17	69-75	20	10	1.0	10	50%	50%
28 9/24 - 9/30/17	70-76	20	10	1.0	10	50%	50%
28 9/25 - 10/1/17	71-77	20	10	1.0	10	50%	50%
28 9/26 - 10/2/17	72-78	20	10	1.0	10	50%	50%
28 9/27 - 10/3/17	73-79	20	10	1.0	10	50%	50%
28 9/28 - 10/4/17	74-80	20	10	1.0	10	50%	50%
28 9/29 - 10/5/17	75-81	20	10	1.0	10	50%	50%
28 9/30 - 10/6/17	76-82	20	10	1.0	10	50%	50%
28 10/1 - 10/7/17	77-83	20	10	1.0	10	50%	50%
28 10/2 - 10/8/17	78-84	20	10	1.0	10	50%	50%
28 10/3 - 10/9/17	79-85	20	10	1.0	10	50%	50%
28 10/4 - 10/10/17	80-86	20	10	1.0	10	50%	50%
28 10/5 - 10/11/17	81-87	20	10	1.0	10	50%	50%
28 10/6 - 10/12/17	82-88	20	10	1.0	10	50%	50%
28 10/7 - 10/13/17	83-89	20	10	1.0	10	50%	50%
28 10/8 - 10/14/17	84-90	20	10	1.0	10	50%	50%
28 10/9 - 10/15/17	85-91	20	10	1.0	10	50%	50%
28 10/10 - 10/16/17	86-92	20	10	1.0	10	50%	50%
28 10/11 - 10/17/17	87-93	20	10	1.0	10	50%	50%
28 10/12 - 10/18/17	88-94	20	10	1.0	10	50%	50%
28 10/13 - 10/19/17	89-95	20	10	1.0	10	50%	50%
28 10/14 - 10/20/17	90-96	20	10	1.0	10	50%	50%
28 10/15 - 10/21/17	91-97	20	10	1.0	10	50%	50%
28 10/16 - 10/22/17	92-98	20	10	1.0	10	50%	50%
28 10/17 - 10/23/17	93-99	20	10	1.0	10	50%	50%
28 10/18 - 10/24/17	94-100	20	10	1.0	10	50%	50%
28 10/19 - 10/25/17	95-101	20	10	1.0	10	50%	50%
28 10/20 - 10/26/17	96-102	20	10	1.0	10	50%	50%
28 10/21 - 10/27/17	97-103	20	10	1.0	10	50%	50%
28 10/22 - 10/28/17	98-104	20	10	1.0	10	50%	50%
28 10/23 - 10/29/17	99-105	20	10	1.0	10	50%	50%
28 10/24 - 10/30/17	100-106	20	10	1.0	10	50%	50%

### Upskill your staff with rich multimedia resources in English and Spanish

mySYNCH hosts multilingual educational videos for continued education for all your staff. These engaging modular format videos can assist your breeding team by increasing their knowledge of topics such as:

- The physiology of fertility in dairy cows
- The pharmacology of fertility programs
- The importance of compliance and its effect on fertility outcomes

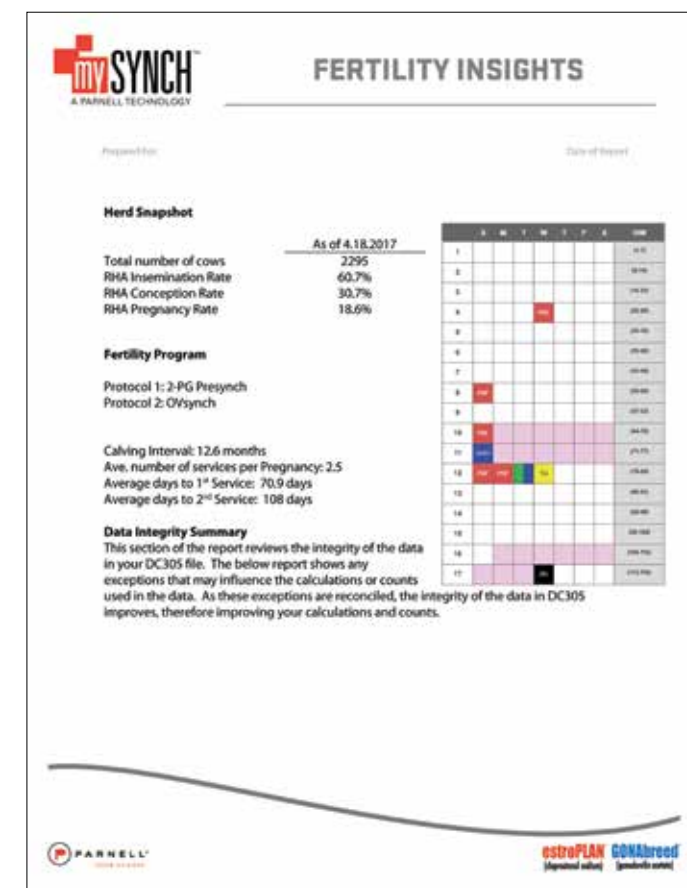
### Data Integrity is paramount for precise fertility metrics

Good data is fundamental to running a successful and profitable operation. You use your dairy herd management system to make decisions every day. However, if you have poor quality data or data that contains multiple outliers, tracking your herd's performance with confidence will become challenging, if not impossible.

- mySYNCH is the industry's first independent auditing tool for Dairy Herd Management Systems (DHMS) that is designed to identify data anomalies that could be costing your business thousands of dollars each year
- When you start using mySYNCH, you will receive a free data integrity check of your dairy herd management system and the ability to conduct ongoing assessments to keep you on track
- mySYNCH provides a visual summary and description of the farms fertility program

### Join the mySYNCH community

When you download mySYNCH you will also join a community of hundreds of other dairy herds from across the USA in a anonymous, confidential data pool. The mySYNCH community provides further fertility insights by sharing group trends and leading indicators to producers that have signed up for this free service. Over time, the benchmarking data from the mySYNCH community will become invaluable in enhancing your dairy operation performance by allowing you to compare to other like-for-like dairy's. Importantly, you will have the confidence of comparing to large data sets or **BIG DATA** to reduce statistical variance, thus identifying real and meaningful trends.



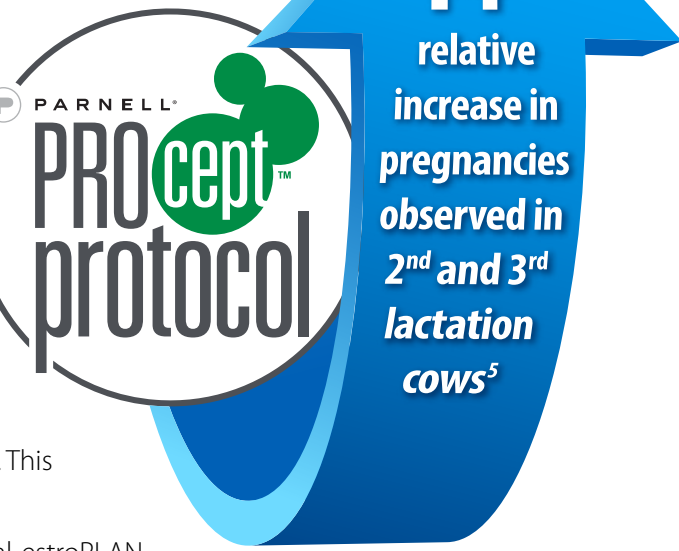
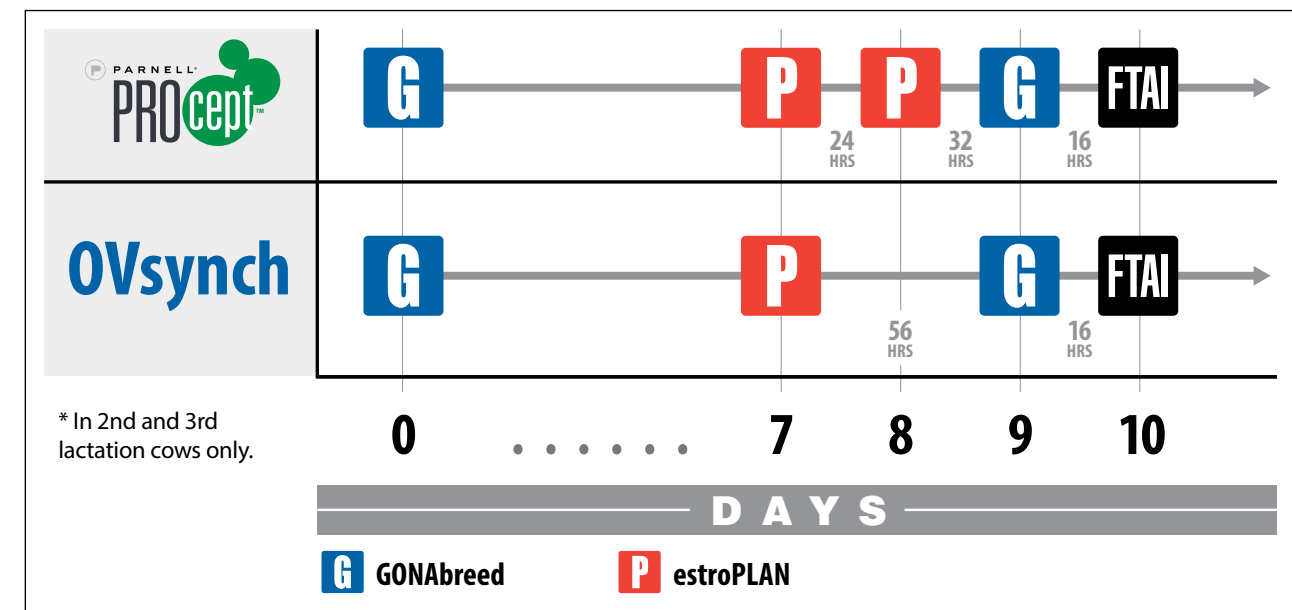


# Get More Cows Pregnant the First Time with Parnell PROcept™ Protocol

An additional injection of estroPLAN 24 hours after the first has shown a 14% relative increase in pregnancies was observed in second and third lactation cows. This protocol – PROcept – is a patent-pending breeding protocol developed by Dr. Milo Wiltbank at the University of Wisconsin-Madison.<sup>5</sup>

Two large-scale clinical trials using PROcept have demonstrated that adding a second dose of estroPLAN to Ovsynch-type protocols can significantly improve pregnancy rates in multiparous cows. Cows that received the PROcept protocol had a conception rate of 37.4% vs 32.7% for those cows on a typical Ovsynch protocol (with a single injection of estroPLAN). This finding was observed in second and third lactation cows.

PROcept delivers superior conception rates because the additional estroPLAN injection causes the Corpus Luteum (CL) regression rates to increase to 97% compared to only 83% when using a typical Ovsynch protocol. Regardless of circulating progesterone levels, cows treated with Parnell PROcept protocol had higher rates of complete CL regression.



# Producer Incentive Program

## Introducing the first Producer Incentive Program backed by a Fertility Protocol Guarantee

The Parnell Producer Incentive Program (PIP) is designed to make trying Parnell hormones simple. Purchase 3 weeks of product for up to 10% of your herd and you will receive matching product free of charge.

We will work with you during the 6 week program to monitor your pregnancy rates using mySYNCH so you will know that Parnell fertility products are right for your operation.

### PROcept PIP: Guaranteed conception results

If you want to trial PROcept on your operation, you can now do it risk-free! You can use the Parnell PIP program to try Parnell hormones - GONAbreed® and estroPLAN® and implement the PROcept fertility protocol by purchasing 3 weeks of product and receiving 3 weeks of product free of charge for up to 10% of your herd.

The guarantee applies to multiparous dairy cows that were not previously bred using the PROcept protocol and only to first and second service fixed time artificial inseminations.\*

Contact your Parnell Territory Manager or email [mysynch@parnell.com](mailto:mysynch@parnell.com) for further details.

\*Terms and conditions apply



## GONAbreed® (gonadorelin acetate)

Equivalent to 100 mcg gonadorelin/ml Sterile solution

### For the treatment of cystic ovaries in dairy cattle.

For use with doprostenol sodium to synchronize estrous cycles to allow for fixed time artificial insemination (FTAI) in lactating dairy cows and beef cows.

**CAUTION:** Federal (U.S.A.) law restricts this drug to use by or on the order of a licensed veterinarian.

**DESCRIPTION:**  
GONAbreed is a sterile solution containing 100 micrograms of gonadorelin (GnRH) as gonadorelin acetate per milliliter suitable for intramuscular or intravenous administration according to the indication. Gonadorelin is a decapeptide composed of the sequence of amino acids –

5-*α*-pro-His-Trp-Ser-Tyr-Gly-Leu-Arg-Pro-Gly-NH<sub>2</sub> – a molecular weight of 1182.32 and empirical formula C<sub>54</sub>H<sub>81</sub>N<sub>13</sub>O<sub>10</sub>. The acetate salt has a molecular weight of 60.05 and an empirical formula C<sub>10</sub>H<sub>11</sub>N<sub>2</sub>O<sub>4</sub>.

Gonadorelin is the hypothalamic releasing factor responsible for the release of gonadotropins (e.g., LH, FSH) from the anterior pituitary. Synthetic gonadorelin is physiologically and chemically identical to the endogenous bovine hypothalamic releasing factor.

**PHARMACOLOGY AND TOXICOLOGY:**  
Endogenous gonadorelin is synthesized and/or released from the hypothalamus during various stages of the bovine estrous cycle following appropriate neurogenic stimuli. It passes via the hypophyseal portal vessels, to the anterior pituitary to effect the release of gonadotropins (e.g., LH, FSH). Synthetic gonadorelin administered intravenously or intramuscularly also causes the release of endogenous LH or FSH from the anterior pituitary.

Gonadorelin acetate has been shown to be safe. The LD<sub>50</sub> for mice and rats is greater than 60 mg/kg, and for dogs, greater than 600 mg/kg, respectively. No untoward effects were noted among rats or dogs administered 120 mcg/kg/day or 72 mcg/kg/day intravenously for 15 days.

The intravenous administration of 60 mcg/kg/day of gonadorelin acetate to pregnant rats and rabbits during organogenesis did not cause embryotoxic or teratogenic effects.

The intramuscular administration of 1,000 mcg to normally cycling dairy cattle had no effect on hematology or blood chemistry.

Further, gonadorelin acetate does not cause irritation at the site of intramuscular administration in dogs. The dosage administered was 7.2 mcg/kg/day for seven (7) days.

**INDICATIONS AND DOSAGE:**  
**Cystic Ovaries**  
GONAbreed is indicated for the treatment of ovarian follicular cysts in dairy cattle. Ovarian cysts are non-ovulated follicles with incomplete luteinization which result in nymphomania or irregular estrus.

Historically, cystic ovaries have responded to an exogenous source of luteinizing hormone (LH) such as human chorionic gonadotropin. GONAbreed initiates release of endogenous LH to cause ovulation and luteinization.

The recommended intravenous or intramuscular dosage of GONAbreed is 100 mcg (1 mL) per cow.

**Reproductive Synchrony**  
GONAbreed is indicated for use with doprostenol sodium to synchronize estrous cycles to allow for fixed time artificial insemination (FTAI) in lactating dairy cows and beef cows.

The recommended intramuscular dosage of GONAbreed is 100 mcg (1 mL) per cow, used in reproductive synchrony programs similar to the following:

Administer the first GONAbreed injection (1 mL) at Time 0. Administer 500 mcg doprostenol (as doprostenol sodium) by intramuscular injection 6 to 8 days after the first GONAbreed injection. Administer the second GONAbreed injection (1 mL) 30 to 72 hours after the doprostenol sodium injection. Perform FTAI 0 to 24 hours after the second GONAbreed injection, or inseminate cows on detected estrus using standard herd practices.

**TARGET ANIMAL SAFETY:**  
In addition to the target animal safety information presented in the section addressing pharmacology and toxicology, target animal safety of, and injection site reactions to, GONAbreed when used with doprostenol sodium were evaluated during the conduct of the effectiveness field studies. The incidence of health abnormalities was not significantly greater in cows administered GONAbreed than cows administered a placebo injection.

**EFFECTIVENESS:**  
The effectiveness of GONAbreed (gonadorelin acetate) for use with doprostenol sodium to synchronize estrous cycles to allow for FTAI in lactating dairy cows was demonstrated in a field study at 10 different locations in the U.S. Four of the locations represented conditions that would typically cause heat stress in lactating cows. A total of 1607 healthy, non-pregnant, primiparous or multiparous lactating dairy cows within 40-150 days postpartum were enrolled in the study. A total of 805 cows were administered GONAbreed (1 mL, 100 mcg gonadorelin as the acetate salt) and 802 cows were administered an equivalent volume of water for injection as an intramuscular injection twice in the following regimen:

Day 0: 1 mL GONAbreed or sterile water for injection  
Day 7-500 mcg doprostenol (as doprostenol sodium)  
Day 9: 1 mL GONAbreed or sterile water for injection

Fixed time AI was performed on Day 10, approximately 11-31 hours after the Day 9 injection. Cows were evaluated for pregnancy on Day 65 ± 5 days by trans-rectal ultrasound or rectal palpation. Pregnancy rate to FTAI was significantly higher (P < 0.0001) in cows treated with GONAbreed (33.4%) than the pregnancy rate to FTAI in cows treated with water (13.6%). The environmental condition (heat stress or not heat stress) did not affect the conclusion of effectiveness.

The effectiveness of GONAbreed (gonadorelin acetate) for use with doprostenol sodium to synchronize estrous cycles to allow for FTAI in beef cows was demonstrated in a field study at 10 different locations in the U.S. A total of 706 healthy, non-pregnant, primiparous or multiparous beef cows within 40-150 days postpartum were enrolled in the study. A total of 364 cows were administered GONAbreed (1 mL, 100 mcg gonadorelin as the acetate salt) and 342 cows were administered an equivalent volume of water for injection as an intramuscular injection twice in the following regimen:

Day 0: 1 mL GONAbreed or sterile water for injection  
Day 7-500 mcg doprostenol (as doprostenol sodium)  
Day 9: 1 mL GONAbreed or sterile water for injection

Fixed time AI was performed immediately after the Day 9 injection. Cows were evaluated for pregnancy on Day 55 ± 5 days by trans-rectal ultrasound. Pregnancy rate to FTAI was significantly higher (P = 0.0006) in cows treated with GONAbreed (21.7%) than the pregnancy rate to FTAI in cows treated with water (7.4%).

Each mL of GONAbreed contains:  
Gonadorelin (as gonadorelin acetate) 100 mcg  
Benzyl alcohol 10 mg  
Sodium chloride 7.47 mg  
Sodium phosphate monobasic 8.3 mg  
Sodium phosphate dibasic 4.8 mg  
Water for injection, USP, q.s.  
pH adjusted with hydrochloric acid or sodium hydroxide

**PRECAUTIONS:**  
**Not for use in humans.**  
**Keep this and all drugs out of reach of children.**

The Material Safety Data Sheet (MSDS) contains more detailed occupational safety information. To obtain an MSDS or for technical assistance, contact Parnell at 1-800-88-PARNELL (1-800-887-2763). To report suspected adverse drug experiences, contact Parnell at 1-800-88-PARNELL (1-800-887-2763). For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDA-VETS, or <http://www.fda.gov/AnimalVeterinary>.

Discard remaining product 180 days after first use. Once opened, product may be stored at temperatures up to 25°C (77°F).

**KEEP UNOPENED VIALS REFRIGERATED: 2°-8°C (36°-46°F).**

**HOW SUPPLIED:**  
GONAbreed is available in a concentration of 100 mcg gonadorelin/mL as gonadorelin acetate. GONAbreed is supplied in multidose vials containing 20 mL and 100 mL of sterile solution.

Manufactured by: **PARNELL TECHNOLOGIES PTY. LTD.**  
4/476 Gardeners Road  
Alexandria NSW 2015 Australia  
Owner of the trademark GONAbreed

Distributed by: **PARNELL U.S. 1, Inc.**  
7015 College Boulevard, Level 6  
Overland Park, KS 66211

ANADA 200-541. Approved by FDA  
20 mL: 50297b-05-November 14  
100 mL: 50303b-03-November 14

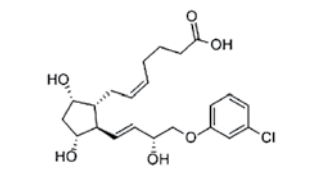
ANADA 200-310. Approved by FDA estroPLAN  
20 mL: 50297b-05-November 14  
100 mL: 50303b-03-November 14

## estroPLAN® (doprostenol sodium)

Prostaglandin Analogue for Cattle  
Equivalent to 250 mcg doprostenol/mL

**CAUTION:** Federal law restricts this drug to use by or on the order of a licensed veterinarian.

**DESCRIPTION:**  
estroPLAN (doprostenol sodium) is a synthetic prostaglandin analogue structurally related to prostaglandin F<sub>2</sub> α (PGF<sub>2</sub> α). Each mL of the colorless aqueous solution contains 263 mcg of doprostenol sodium (equivalent to 250 mcg of doprostenol), chlorocresol 1.0 mg as a bactericide, citric acid anhydrous 0.66 mg, sodium citrate 5.03 mg, sodium chloride 6.76 mg. The pH is adjusted, as necessary, with sodium hydroxide or citric acid.



**ACTION:**  
estroPLAN causes functional and morphological regression of the corpus luteum (luteolysis) in cattle. In normal, nonpregnant cycling animals this effect on the life span of the corpus luteum usually results in estrus 2 to 5 days after treatment. In animals with prolonged luteal function (pyometra, mummified fetus, and luteal cysts), the induced luteolysis usually results in resolution of the condition and return to cyclicity. Pregnant animals may abort depending on the stage of gestation.

Any controlled breeding program recommended should be completed by either:  
• Observing animals (especially during the third week after injection) and inseminating or hand mating any animals returning to estrus, or

**INDICATIONS:**  
For intramuscular use to induce luteolysis in beef and dairy cattle. The luteolytic action of estroPLAN can be utilized to manipulate the estrous cycle to better fit certain management practices, to terminate pregnancies resulting from mismatings, and to treat certain conditions associated with prolonged luteal function.

**RECOMMENDED USES:**  
**Unobserved or Non-detected Estrus**  
Cows which are not detected in estrus, although ovarian cyclicity continues, can be treated with estroPLAN if a mature corpus luteum is present. Estrus is expected to occur 2 to 5 days following injection, at which time animals may be inseminated. Treated cattle should be inseminated at the usual time following detection of estrus. If estrus detection is not desirable or possible, treated animals may be inseminated twice at about 72 and 96 hours postinjection.

**Pyometra Or Chronic Endometritis**  
Damage to the reproductive tract at calving or postpartum retention of the placenta often leads to infection and inflammation of the uterus (endometritis). Under certain circumstances, this may progress into chronic endometritis with the uterus becoming distended with purulent material. This condition, commonly referred to as pyometra, is characterized by a lack of cyclical estrus behavior and the presence of a persistent corpus luteum. Induction of luteolysis with estroPLAN usually results in evacuation of the uterus and a return to normal cyclical activity within 14 days after treatment. After 14 days post-treatment, recovery rate of treated animals will not be different than that of untreated cattle.

**Mummified Fetus**  
Death of the conceptus during gestation may be followed by its degeneration and dehydration. Induction of luteolysis with estroPLAN usually results in expulsion of the mummified fetus from the uterus. Manual assistance may be necessary to remove the fetus from the vagina. Normal cyclical activity usually follows.

**Luteal Cysts**  
A cow may be noncyclic due to the presence of a luteal cyst (a single, anovulatory follicle with a thickened wall which does not regress) and/or no changes in palpable consistency of the uterus). Treatment with estroPLAN can restore normal ovarian activity by causing regression of the luteal cyst.

**Pregnancies From Mismating**  
Unwanted pregnancies can be safely and efficiently terminated from 1 week after mating until about 5 months of gestation. The induced abortion is normally uncomplicated and the fetus and placenta are usually expelled about 4 to 5 days after the injection with the reproductive tract returning to normal soon after the abortion. The ability of estroPLAN to induce abortion decreases beyond the fifth month of gestation while the risk of dystocia as a consequence increases. estroPLAN has not been sufficiently tested under feedlot conditions; therefore recommendations cannot be made for its use in heifers placed in feedlots.

**Controlled Breeding**  
The luteolytic action of estroPLAN can be utilized to schedule estrus and ovulation on an individual cycling animal or group of animals. This allows control of the time at which cycling cows or heifers can be bred. estroPLAN can be incorporated into a controlled breeding program by the following methods:

1. Single estroPLAN Injection Only animals with a mature corpus luteum should be observed to obtain maximum response to the single injection. However, not all cycling cattle should be treated since a mature corpus luteum is present for only 11 to 12 days of the 21-day cycle.

Prior to treatment, cattle should be examined rectally and found to be anatomically normal, be non-pregnant and have a mature corpus luteum. If these criteria are met, estrus is expected to occur 2 to 5 days following injection, at which time animals may be inseminated. Treated cattle should be inseminated at the usual time following detection of estrus. If estrus detection is not desirable or possible, treated animals may be inseminated either once at about 72 hours or twice at about 72 and 96 hours postinjection.

With a single injection program, it may be desirable to assess the cyclicity status of the herd before estroPLAN treatment. This can be accomplished by heat detecting and breeding at the usual time following detection of estrus for a 6-day period, all prior to injection. If by the sixth day the cyclicity status appears normal (approximately 25-30% detected in estrus), all cattle not already inseminated should be palpated for normality, non-pregnancy, and cyclicity, then injected with estroPLAN. Breeding should then be continued at the usual time following signs of estrus on the seventh and eighth day.

On the ninth and tenth day breeding may continue at the usual time following detection of estrus or all cattle not already inseminated may be bred either once on the ninth day (at about 72 hours post injection) or on both the ninth and tenth day (at about 72 and 96 hours postinjection).

2. Double estroPLAN Injections  
Prior to treatment, cattle should be examined rectally and found to be anatomically normal, non-pregnant, and cycling (the presence of a mature corpus luteum is not necessary when the first injection of a double injection regimen is given). A second injection should be given 11 days after the first injection. In normal, cycling cattle, estrus is expected 2 to 5 days following the second injection. Treated cattle should be inseminated at the usual time following detection of estrus. If estrus detection is not desirable or possible, treated animals may be inseminated either once at about 72 hours or twice at about 72 and 96 hours following the second estroPLAN injection.

Many animals will come into estrus following the first injection; these animals can be inseminated at the usual time following detected estrus. Animals not inseminated should receive a second injection 11 days after the first injection. Animals receiving both injections may be inseminated at the usual time following detection of estrus or may be inseminated either once at about 72 hours or twice at about 72 and 96 hours post second injection.

Any controlled breeding program recommended should be completed by either:  
• Observing animals (especially during the third week after injection) and inseminating or hand mating any animals returning to estrus, or

• Turning in clean-up bull(s) 5 to 7 days after the last injection of estroPLAN to cover any animals returning to estrus.

**REQUIREMENTS FOR CONTROLLED BREEDING PROGRAMS:**  
Before a controlled breeding program is planned, the producer's objectives must be examined and he must be made aware of the projected results and limitations. The producer and his consulting veterinarian should review the operator's breeding history, herd health and nutritional status and agree that a controlled breeding program is practical in the producer's specific situation. For any successful controlled breeding program:

- cows and heifers must be normal, nonpregnant, and cycling (rectal palpation should be performed);
- cattle must be in a fit and thrifty breeding condition and on an adequate or increasing plane of nutrition;
- proper program planning and record keeping are essential;
- if artificial insemination is used, it must be performed by competent inseminators using high quality semen.

It is important to understand that estroPLAN is effective only in animals with a mature corpus luteum (ovulation must have occurred at least 5 days prior to treatment). This must be considered when breeding is intended following a single estroPLAN injection.

**SAFETY AND TOXICITY:**  
At 50 and 100 times the recommended dose, mild side effects may be detected in some cattle. These include increased uneasiness, slight frothing, and milk let-down.

**CONTRAINDICATIONS:**  
estroPLAN should not be administered to a pregnant animal whose calf is not to be aborted.

**WARNINGS:**  
For animal use only.  
Women of child-bearing age, asthmatics, and persons with bronchial and other respiratory problems should exercise extreme caution when handling this product. In the early stages women may be unaware of their pregnancies.

estroPLAN injection is readily absorbed through the skin and may cause abortion and/or bronchospasms; direct contact with the skin should therefore be avoided. Accidental spillage on the skin should be washed off immediately with soap and water.

**PRECAUTIONS:**  
There is no effect on fertility following the single or double dosage regimen when breeding occurs at induced estrus or at 72 and 96 hours post treatment. Conception rates may be lower than expected in those fixed time breeding programs which omit the second insemination (i.e. the insemination at or near 96 hours). This is especially true if a fixed time insemination is used following a single estroPLAN injection.

As with all parenteral products, careful aseptic techniques should be employed to decrease the possibility of postinjection bacterial infection. Antibiotic therapy should be employed at the first sign of infection.

The Material Safety Data Sheet (MSDS) contains more detailed occupational safety information. To obtain an MSDS or for technical assistance, contact Parnell at 1-800-88-PARNELL (1-800-887-2763). To report suspected adverse drug experiences, contact Parnell at 1-800-88-PARNELL (1-800-887-2763). For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDA-VETS, or <http://www.fda.gov/AnimalVeterinary>.

**DOSAGE AND ADMINISTRATION:**  
Two mL of estroPLAN injection (500 mcg of doprostenol) should be administered by INTRAMUSCULAR INJECTION for all indications in both beef and dairy cattle.

Discard remaining product 180 days after first use.

**STORAGE CONDITIONS:**  
1. Protect from light.  
2. Store in carton.  
3. Store at controlled room temperature 20°-25°C (68°-77°F).

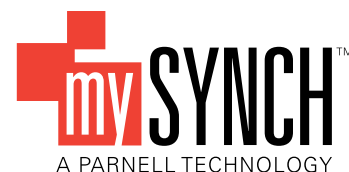
**HOW SUPPLIED:**  
20 mL and 100 mL multidose vials

Made in Australia  
Manufactured by: **PARNELL TECHNOLOGIES PTY. LTD.**  
4/476 Gardeners Road  
Alexandria NSW 2015 Australia  
Owner of the trademark GONAbreed

Distributed by: **PARNELL U.S. 1, Inc.**  
7015 College Boulevard, Level 6  
Overland Park, KS 66211

ANADA 200-310. Approved by FDA  
20mL: 50297b-04-November 14  
100mL: 50303b-03-November 14





## ***Parnell is committed to helping you transform your farm for the future***

- mySYNCH—practical technology to manage your trusted fertility management process
- Parnell PROcept Protocol—precise science that can help increase fertility rates<sup>5</sup>
- GONAbreed—the first FDA-approved GnRH for use with cloprostenol sodium to synchronize estrous cycles in both lactating dairy and beef cows<sup>1</sup>
- estroPLAN—as part of the Parnell PROcept Protocol—is the only PGF proven to deliver a relative increase in pregnancies of 14% in second and third lactation cows<sup>5</sup>



## ***Working Hard and Smart***

That's how you run your farm. At Parnell, we work hard to develop innovative technology that helps you improve your dairy herd fertility. Over the past two decades, Parnell has been focused on fertility. We have studied more than 18,000 dairy cows in commercial dairy farms around the world and invested our research dollars in helping dairy producers and veterinarians improve fertility management in dairy cows.

References: 1. U.S. Food and Drug Administration. GONAbreed product safety information. 2015. <http://www.fda.gov/AnimalVeterinary/SafetyHealth/ProductSafetyInformation/ucm353640.htm>. 2. GONAbreed [Product Information]. Parnell Technologies Pty. Ltd. Australia. January 2002. 3. Souza AH, Cunha AP, Silva EPB, et al. (2009). Comparison of gonadorelin products in lactating dairy cows; Efficiency based on induction of ovulation of an of an accessory follicle and circulator luteinizing hormone profiles. Theriogenology. 2009;72(2):271-279. 4. estroPLAN [Product Information]. Parnell Technologies Pty. Ltd. Australia. January 2002. 5. Wiltbank M, Baez G, Cochrane F, Barletta R, Trayford C, Joseph R. Effect of second treatment with prostaglandin F2a during the Ovsynch protocol on luteolysis and pregnancy in dairy cows. J Dairy Sci. 2015;98:8644-8654.

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