**Anoestrus cows pregnant within the first 28 days of mating?**

**ProSynch™ protocols for dairy cattle**

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**Table 1: Comparison of the Ovsynch and ProSynch protocols to Synchronization with prostaglandin F2\alpha and oestrus detection or just natural oestrus observation.**

<table>
<thead>
<tr>
<th>Ovsynch and Ovsynch Plus</th>
<th>Prosynch and Prosynch Plus</th>
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<tbody>
<tr>
<td><strong>Pros:</strong></td>
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<tr>
<td>- Allows AI of a large group of females per day without oestrus detection in good facilities.</td>
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<tr>
<td>- The addition of eCG (Ovsynch Plus Program) has been shown to increase pregnancy rates in older cows and those in poor body condition.</td>
<td>- Has the potential to produce more pregnancies early in the mating season than oestrus detection programs, multiplying effects of genetic gain.</td>
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<td>- Has the potential to produce more pregnancies than oestrus detection programs, multiplying effects of genetic gain.</td>
<td>- Can induce cyclicity in postpartum anoestrous cows.</td>
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<td>- Economically justify using experienced AI technicians as AI occurs on one day.</td>
<td>- Pregnancy rates are higher than with Ovsynch when high numbers of anoestrous cows are present in the herd.</td>
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<tr>
<td>- Normally associated with less labour.</td>
<td>- Furthermore, the addition of eCG (ProSynch Plus Program) has been shown to be beneficial in cows in postpartum anoestrus and cows in poor body condition.</td>
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<tr>
<td>- Production of high genetic merit daughters to be retained as replacement females.</td>
<td>- Economically justify using experienced AI technicians as AI occurs on one day.</td>
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**Cons:**

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<th>Ovsynch and Ovsynch Plus</th>
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<td>- Cost of treatment for Ovsynch programs are normally higher than oestrus detection programs.</td>
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<td>- Requires use of a semen straw for every animal submitted to the AI program.</td>
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<td>- Pregnancy rate per semen straw used can be lower than oestrus detection programs.</td>
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<td>- Lower pregnancy rates than ProSynch when treating cows in postpartum anoestrus or heifers.</td>
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**Synchronisation with PGF2\alpha only, Oestrus Detection and AI**

**Pros:**

- tropical females inseminated on one day is dependent on the proportion cycling in the group and what is detected on that given day.
- Normally the cost of synchrony treatments is less than the Ovsynch and ProSynch programs.
- Semen straws are only used in females that are detected on heat reducing expense of semen used.
- Production of high genetic merit daughters to be retained as replacement females.

**Cons:**

- All females must have a CL or be cycling to be submitted to AI.
- It does not work in cows in post partum anoestrus.
- Pregnancy rates are highly dependent on oestrus detection expertise.
- Normally labour intensive requiring a minimum of two observations per day.
- Requires trained labour to detect heats and good facilities to draft females.
- Fewer pregnancies can be generated than from a FTAI program the multiplication of genetic gain is not as high.
- Often does not economically justify use of experienced AI technicians as females are detected on heat over a number of days.

**Natural Oestrus Observation and AI**

**Pros:**

- Tropical females inseminated on one day is dependent on the proportion cycling in the group and what is detected on that given day.
- Normally the cost of synchrony treatments is less than the Ovsynch and ProSynch programs.
- Semen straws are only used in females that are detected on heat reducing expense of semen used.
- Production of high genetic merit daughters to be retained as replacement females.

**Cons:**

- All females must be cycling to be submitted to AI.
- It does not work in cows in post partum anoestrus.
- Pregnancy rates are highly dependent on oestrus detection expertise.
- Normally labour intensive requiring a minimum of two observations per day.
- Requires trained labour to detect heats and good facilities to draft females.
- Fewer pregnancies can be generated than from a FTAI program the multiplication of genetic gain is not as high.
- Often does not economically justify use of experienced AI technicians as females are detected on heat over a number of days.
Save time and increase your pregnancy rates through fixed-time artificial insemination

Prostaglandin F₂α (Ovuprost®) treatments

Prostaglandin F₂α (PGF) has been the most commonly used treatment for synchronisation of oestrus in cattle (reviewed in Odke, 1995). Although the interval from treatment to oestrus and ovulation (between 2 to 7 days; Kastelic and Ginther, 1991), the dependence of oestrus observation and the fact the PGF will only work in cows that are not in postpartum anoestrus (i.e. only works in cows with a Corpus Luteum (CL)), makes this treatment difficult to apply successfully in many dairy operations (Bo et al., 2007).

Fixed-time AI protocols: The OvSynch protocol

This protocol with some local variations is widely used for inseminating dairy cows during the first weeks of the breeding season (Lucy et al., 2004). However, reproductive performance has been progressively declining which is mainly due to a decrease in fertility in the modern dairy cow and inefficient oestrous detection in most of the management systems (Lucy et al., 2004; Wilbank et al., 2006). To minimise both calving and the induction of parturition to manage late calving cows, the window for conception is 90 days postpartum (Bryan et al., 2010). It has been shown that cows that show behavioural oestrus at the beginning of this period are more likely to conceive than cows that are anoestrous at that time (Rhodes et al., 2003, Westwood et al., 2002). One of the most useful alternatives to increase the number of cows inseminated in a short period of time is the use of protocols that synchronise oestrus and allow for systematic insemination without the need for oestrus detection, usually called Fixed-Time AI (FTA) protocols. The ProSynch protocol and its various derivatives avoids the work and trouble related to oestrous observation and minimises the risk of reproductive failure due to poor oestrous detection. These protocols for cows in postpartum anoestrous increases the chances of anoestrous cows becoming pregnant within the first 28 days of the mating season (Bryan et al., 2010). One approach that producers sometimes take is to use hormonal treatments to induce cyclicity in cows that are in postpartum anoestrous and then timed-inseminate these cows, whereas cycling cows are not treated and inseminated on oestrus observation. However, if oestrus detection is not adequate, pregnancy rates during the first weeks of the breeding season may be lower than that obtained in the non-cycling cows that were treated and inseminated at a fixed time (Figure 1).

The OvSynch Plus Protocol

The OvSynch Plus Protocol is a variation of the OvSynch protocol that was developed in Australia to be used in whole herd synchrony programs (Beggs and Kelly, 2010). This treatment incorporates the use of Pregeneol® which is equine chorionic gonadotropin (eCG), which is a hormone injected to stimulate follicle growth (Murphy and Martinuk, 1991). A large study recently conducted in Australia involving 2596 cows during a seasonal calving southern Australia dairy herds (Beggs and Kelly, 2012) showed a significant increase in first service conception rates in cows aged 6 years and over compared to the traditional OvSynch protocol (19.9% vs 24.6%, P=0.03). Therefore, the OvSynch Plus program will improve pregnancy rates in older cows, and is consistent with other work suggesting the effect of eCG may be greater in cows with higher ovulation rates. The OvSynch Plus protocol has shown a significant improvement in pregnancy rates when compared to the traditional OvSynch protocol in 24, 26 and 28% of the first service in heifers and cows aged 2, 3 and 4 years respectively (Lucy et al., 2004; Bo et al., 2007, Souza et al., 2009). In a recent study performed in New Zealand with 1991 anoestrous dairy cows in fifteen commercial dairy farms, cows treated with the inclusion of Pregeneol® (eCG) to the ProSynch program not only increased the number of cows pregnant after 7 days (36.0% vs 30.6%, P=0.046) but also the number of cows pregnant after 28 days of the mating season (58.6% vs 52.3%, P=0.008).

These results confirm that the addition of Pregeneol® to synchronisation protocols has a significant value to get more cows pregnant at the beginning of the breeding season.

The ProSynch® Protocol

The ProSynch® protocol is a modification of the ProSynch protocol that includes the administration of Ovuprost® in conjunction with a FTAI protocol to stimulate follicle growth, ovulation and the resulting CL in heifers (Martinez et al., 2000). In the ProSynch protocol Cue-Mate devices are inserted at the same time as the first injection of Ovuprost® (GnRH) and are removed at the time of Ovuprost® (GnRH) treatment.

In the study performed in New Zealand pregnancy rates improved from 33.9% to 47.5% when progesterone-releasing devices were used in the ProSynch protocol (McDougal, 2010).

The ProSynch Plus protocol

The ProSynch Plus is a variation of the ProSynch protocol that involves the administration 400 IU of Pregeneol® (eCG) at the time of removal of the Cue-Mate device. The addition of eCG to a FTAI protocol has been shown to result in increased plasma progesterone concentrations and pregnancy rates in suckled beef cows (Bauersell et al., 2004; Bo et al., 2007), dairy cows in poor body condition (< 75% in the 115 scale, Souza et al., 2009) and improved pregnancy rates in anoestrous dairy cows in New Zealand (Bryan et al., 2009, 2010).

The BoSynch 3 synchrony system is the most commonly used synchronisation programme in countries where oestradiol is available for its use in synchronisation treatments. An injection of Bomerol (oestradiol benzoate) in conjunction with insertion of a Cue-Mate, resets the follicular wave by inducing any antral follicle that is present to become atretic (Bo et al., 2002; Martinez et al., 2005). Upon removal of the Cue-Mate device (normally 8 days later), an injection of Ovuprost is administered to induce the regression of the CL. Approximately 24 h after removal of the Cue-Mate device, a second injection of Bomerol is administered to induce an LH surge and subsequently inducing a synchronous ovulation, allowing FTAI. Ovulation synchronisation with the BoSynch 4 program allows for 100% of the heifers to be submitted to FTAI, which in turn can generate more pregnancies than a synchrony program that only uses Ovuprost and oestrus detection (Martinez et al., 2000).

Pregeneol® may be administered at the time of Cue-Mate removal, to stimulate follicle growth, ovulation and the resulting CL in heifers in fair to poor body condition.

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Pregeneol® may be administered at the time of Cue-Mate removal, to stimulate follicle growth, ovulation and the resulting CL in heifers in fair to poor body condition.

For maximum results treat heifers on day 0 and inseminate between 12 NOON to 4pm.

ProSynch® protocols for dairy cattle.

For Veterinarian use only.

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