Second parity syndrome, yesterday's problem, and today's problem too...

This syndrome is widespread on every high-production farm all over the world and is mainly observed in sows whose first farrowing was very productive.

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It is well known that pig production has developed in a spectacular way all over the world in recent years, reaching production levels that were unthinkable not many years ago. This has been made possible by the progress made in the main pillars supporting pig production.

Together with new management guidelines for working with the new genetic lines of hyperprolific sows (whose use has also exploded in recent years), these technological advances have caused the reappearance of some of the traditional reproductive problems the past whose incidence had sharply dropped off and this is now causing serious disruption to producers. However, it is also true that we now have tools that allow us to minimise the impact of these problems.

One of the main reproductive problems is second parity syndrome, whose root cause is a poor condition of sows at the time of their first weaning.

Second parity syndrome and body condition at weaning

Any farm with a correct annual renewal rate of 40–50% gilts, and 17–20% sows that have farrowed once or who are returning to their second farrowing.

The key principals of swine production

Genetics | Environment | Management | Nutrition | Health | Administration

Therefore, we must get good productive results from gilts so that overall, the farm obtains optimal technical and economic results.

On current highly technified farms and with the genetic lines they now work with, it is very common to obtain excellent reproductive performance (fertility at farrowing and number of piglets born) at the first farrowing.

Figure 1 shows that sows moving from their first to their second farrowing have a mean weaning–heat interval of 9.3 days; in other words, an abnormally long interval. This interval drops to 6.6 days in weaned sows that move from their second to third farrowing and, after this, the figure normalises to around 5 to 6 days.

Figure 2 shows that slightly more than 21% of the sows that go from their first to their second farrowing have an anestrus, that is, they cycle for more than 10 days after weaning. This percentage of anestrus decreases to 9.82% in sows that go from their second to their third farrowing, and continues to drop in the sows with the highest number of cycles until they reach their 6th farrowing, at which point, it increases slightly again for 'old' females.

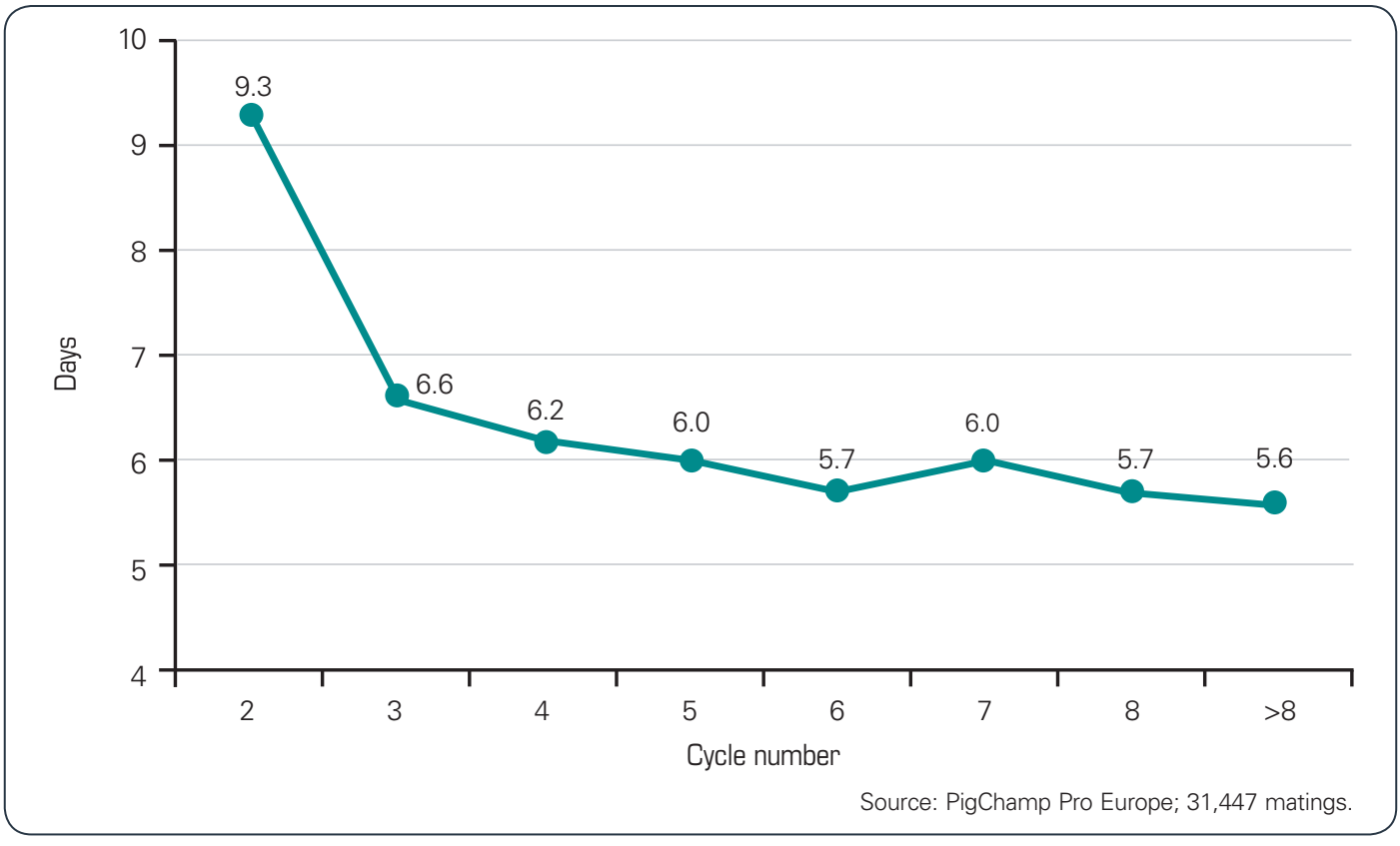
Second parity syndrome

On many occasions, the excellent results obtained at the first farrowing are poorer at the second farrowing because of the appearance of second parity syndrome, a reproductive disorder that manifests itself in the following ways:

1. Postweaning anestrus: lengthening of the weaning-heat interval, > 7 days (*figures 1* and *2*).
2. Infertility: farrowing rate < 85%. On many occasions, this rate does not even reach 80%.
3. A decrease in the total number of piglets born: < 11 piglets.

In addition, as a consequence of the above there is:

- An increase the sacrifice of young sows.
- The cost of replacement gilts increases.



Source: PigChamp Pro Europe; 31,447 matings.

Figure 1. The influence of the cycle number on the weaning–heat interval (WEI).

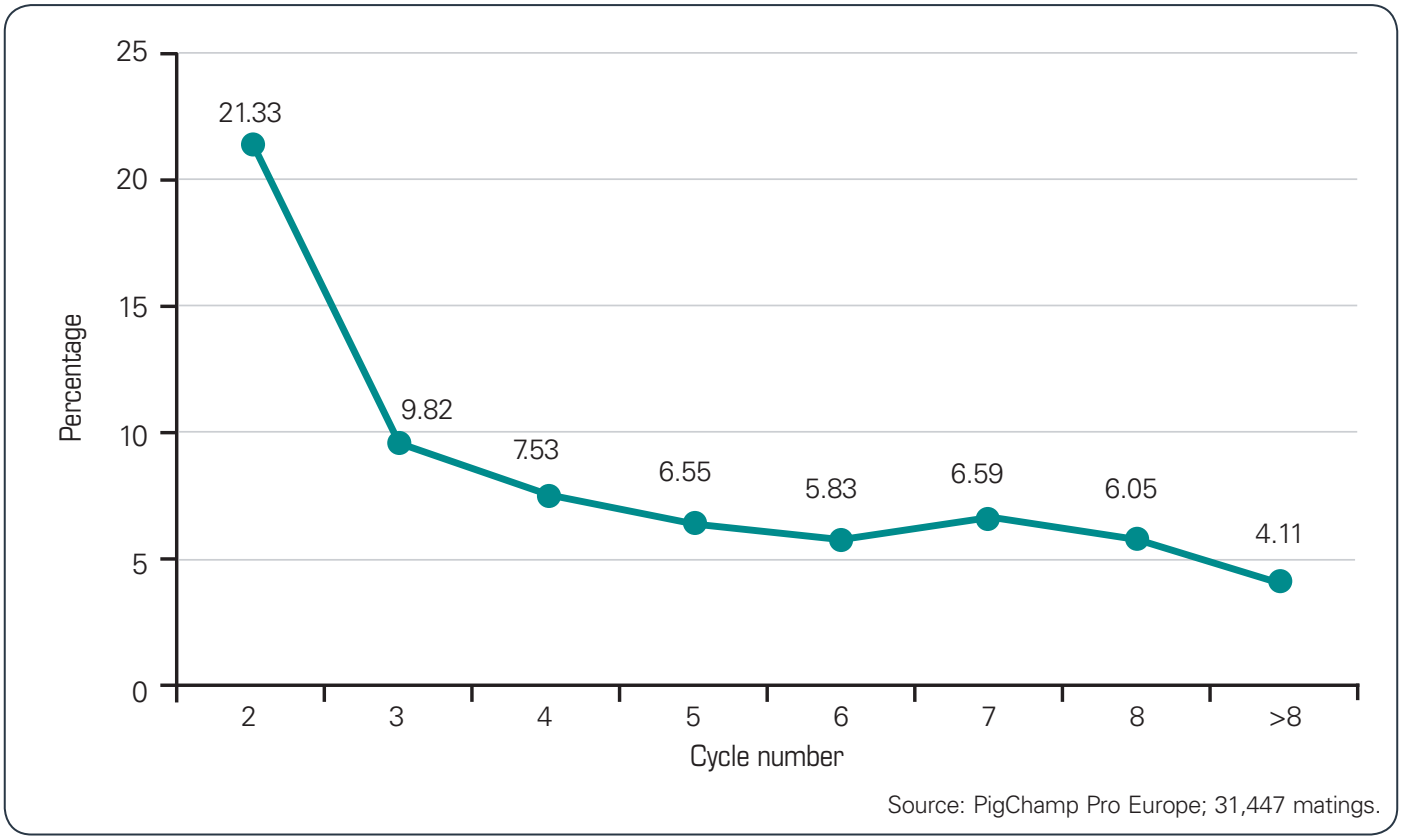


Figure 2. The influence of the cycle number on the percentage of anestruses (WEI > 10 days).

In both cases, a lengthening of the weaning-to-heat interval can be observed. This is one of the main signs of second parity syndrome and occurs mainly in younger females, that is, those that go from their first to their second farrowing.

What is the origin of this syndrome?

This syndrome is widespread on every high-production farm around the world, with at least one of its warning signs appearing in 80% of farms, two being present in 40%, and with 10% of farms with animals with the complete syndrome with all three of the aforementioned signs.

Figure 3 shows this problem clearly: the sows in their first farrowing with a high productivity rate (green line) are those which suffer the problem, while the syndrome does not appear in those with medium (blue line) or low-level productivity (red line) in their first farrowing.

At the origin of this clinical case is the relatively high weight loss that occurs during the first lactation, reaching the females at the destination with poor body condition.

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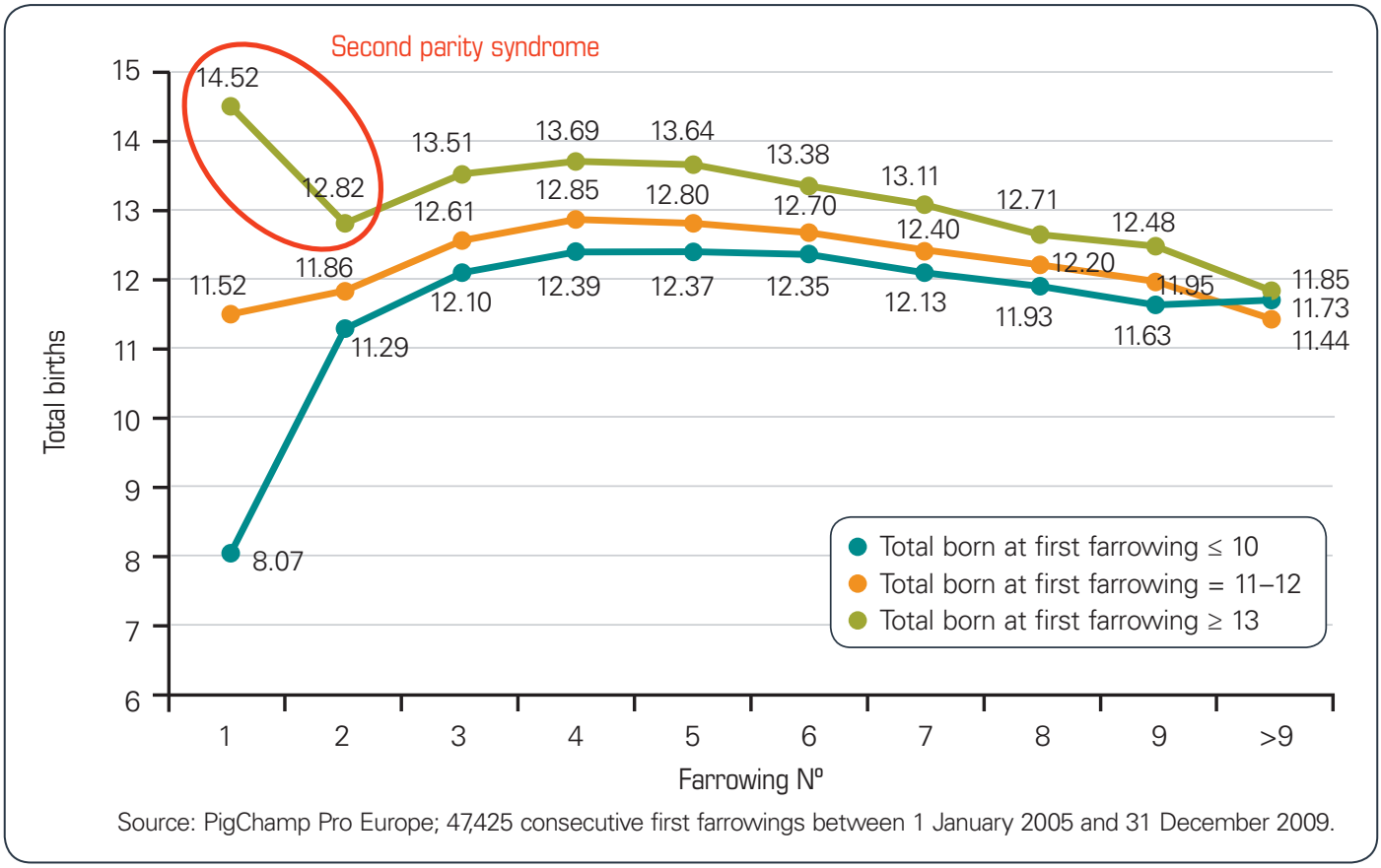

Source: PigChamp Pro Europe; 47,425 consecutive first farrowings between 1 January 2005 and 31 December 2009.

Figure 3. Influence of the number of piglets born in the first farrowing has on the entire productive life of the sow.

A sow in her first farrowing must eat to maintain, grow, and produce milk for the litter but the problem is that they often do not consume enough feed during lactation to cover all these needs.

One current approach to increase the size of piglets at birth is to improve the body condition of the sows weaned in the previous cycle. This aims to have only good quality oocytes released by the sow and which will have an even growth rate, in order to increase the uniformity of the next litter..

Consequences of a feed consumption deficit

A first-time lactating sow should eat 7.5–8 kg of feed daily; however, the average feed intake of sows after their first farrowing rarely exceeds 6–7 kg/day and sometimes does not even reach 6 kg/day.

This energy deficit disrupts hormonal function at the time of weaning. This generates a delayed and lower than normal LH peak that leads to infertility, caused by:

- A late return to heat.
- Delayed ovulation.
- Levels of progesterone that are lower than normal

Furthermore, the ovulation rate of this type of female is lower and, more importantly, the oocytes they release are of lower quality.

As a consequence of all the above, the following problems appear:

- Reduced embryonic viability.
- Increased embryonic mortality.
- Small litters.
- More heterogeneous piglets at birth.

How can its effect be minimised?

To reduce the consequences of second parity syndrome, there are two alternatives:

Traditional

To solve this reproductive problem, strategies have traditionally been used to:

- Encourage sows to eat more during lactation.
- Skip the first heat after weaning.

This allows sows to recover their body condition and, most importantly, causes their metabolic status to change from a catabolic to an anabolic. In addition, this delay in mating the sows allows sufficient time to pass to guarantee good uterine involution.

The problem is that skipping a heat has a significant cost because it entails at least 21 non-productive days, at a cost of €2.5–3.0/day, meaning that this practice costs €52.5–63.0 per sow.

Altrenogest

A new working tool has been available for a few years now: altrenogest. Although its use was initially restricted to the synchronisation of nulliparous females, it now also has important applications for weaning.

One of its main functions is to minimise the effect of second parity syndrome.

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What is altrenogest?

Altrenogest is an orally active progestogen whose action is similar to that of natural progesterone; that is, it prevents sows from going into heat.

The oral administration of altrenogest suppresses the oestrous cycle and eliminates the signs of heat and ovulation. Once administration is discontinued, the release of natural hormones resumes. Gonadotropin-releasing hormone (GnRH) is released by the hypothalamus and follicle-stimulating hormone (FSH) and luteinising hormone (LH) are released by the pituitary gland and, consequently, the females return to heat.

It is important to make clear that altrenogest does not cause the female to go into heat, rather, it blocks the appearance of heat while this drug is being administered; therefore, the sexual cycle starts again once the administration of altrenogest is discontinued.

How is altrenogest used?

The use of altrenogest at weaning is valid both for sows that have just finished their first lactation and for those that have a poor body condition at weaning, regardless of the number of farrowings they have had. Altrenogest allows:

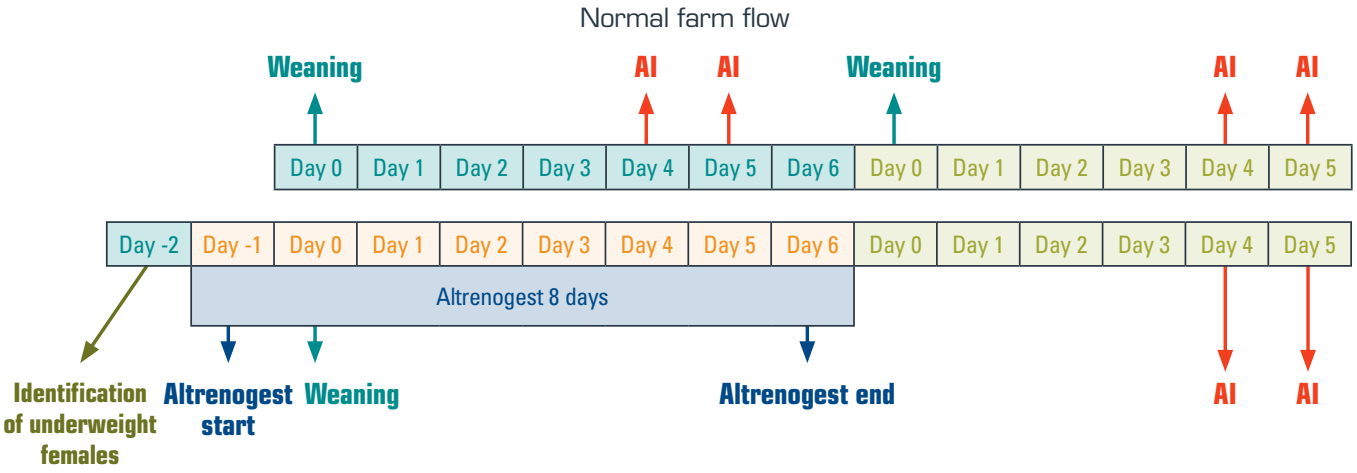
- The presentation of heat to be delayed for a few days to allow the female to recover.
- The sow to change her physiological state from catabolic to anabolic.
- Correct and complete uterine involution to take place.
- A decrease in the percentage of anestrus.
- Improvement of the productive parameters of the following cycle.

Administration protocol

Although previous work has started administering altrenogest on the same day as weaning, it is more advisable to start its use the day before weaning—never the day after. The recommended working protocol is explained in the *box*.

If we compare this way of working with the traditional method of skipping the first heat after weaning, we can see that the new protocol results in a reduction of around 15 non-productive days: 11 or 12 days with the application of altrenogest, compared to the 26 days required to skip the first heat.

Altrenogest application protocol in underweight sows after their 1st farrowing.



Two days before weaning, the sows that will be used for a second farrowing will be identified from among those whose body condition is poor, regardless of the number of farrowings they have had.

The next day—the day before weaning—altrenogest administration begins.

Altrenogest is also administered on the day of weaning and these sows are weaned in the same way as the rest of their group. They will be accompanied to the farm weaning-mating area where they will receive the same nutritional management as the other sows housed there, including *flushing*, feeding with lactation feed, etc.

Altrenogest will be administered for 6 more days after weaning, bringing the total number of days the product is applied up to 8 days (one day prior to weaning, the day of weaning, and six more days). With this practice, the last day the product is administered is the day prior to the day of the next weaning of the sows that are following the normal flow of the farm. Because females given altrenogest spontaneously start cycling again 4 or 5 days after its administration is stopped, they will go into heat at the same time as the other sows from the following week which will themselves now be weaning. Thus, the altrenogest-treated sows will now form part of the next production band.

If this way of working is continuously applied, there will be no decrease in the weekly mating quota (except for the first time it is carried out) because every week, some sows will pass from one production band to the next, but this group itself will receive other sows from the previous group. Therefore, the number of weekly matings remains practically constant and the production flow does not suffer.

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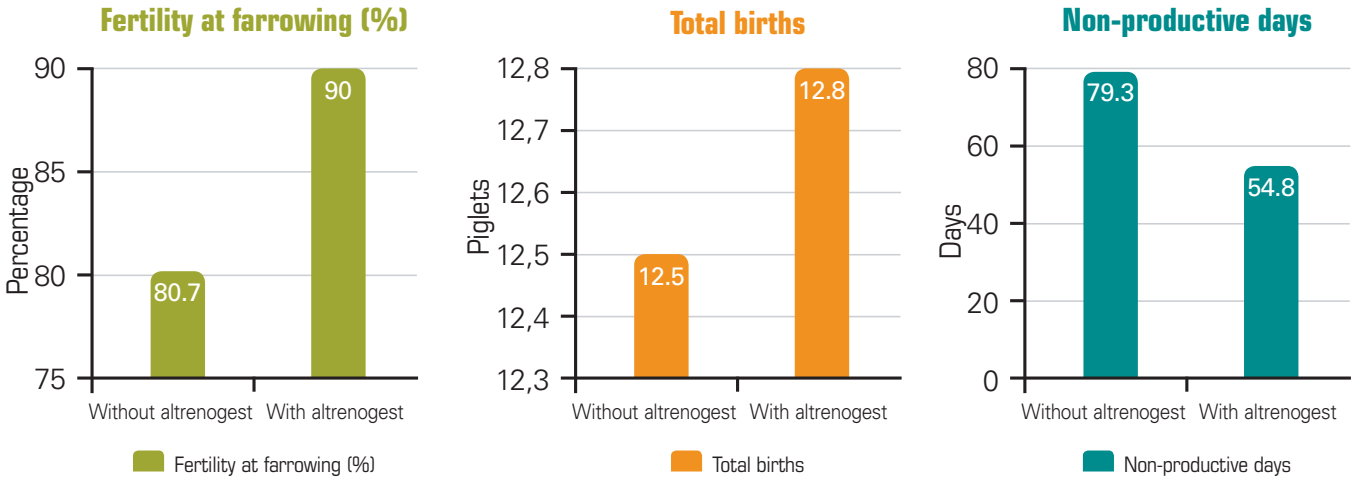
Study

It is worth mentioning the work by Pereida *et al.* presented at the 2012 IPVS, on how the use of altrenogest in sows for 7 days from the day of weaning their first litter affects their second farrowing, the results of which are shown in *Figures 4–6*. As shown:

- Farrowing fertility in this group of females rose from 80.7% to 90.0%.
- There was an average 0.3 increase in the total number of piglets.
- The mean number of non-productive days decreased from 79.3 to 54.8 days, representing a reduction of 24.5 days per sow.

This reduction in non-productive days and improvements in productivity (both in the farrowing rate and in prolificacy) strongly offset the investment made in implementing the altrenogest protocol.



Source: C. Pereida *et al.* IPVS Cancún (Mexico) 2012. Test carried out on a farm with 1,850 sows.

Figures 4–6. Results of applying altrenogest for 7 days in second-farrowing females.

The importance of the weaning–heat interval

Lengthening the weaning–heat interval is one of the factors that most influences the productive results of farms (*figures 7* and *8*), so that the sows that cycle between:

- 3 and 6 days after weaning always have the best productive results, both in terms of fertility at farrowing and in prolificacy.
- 7–10 days after weaning usually have the worst results of all the sows on the farm.

To reduce the weaning-heat interval, there is no better strategy than intensely working with several boars at the same time, from the day of weaning.

Of course, to avoid deterioration in sow body condition, strategies must also be implemented to increase consumption during lactation:

- Make sows get up several times a day.
- Daily cleaning of the feeders.
- Supply fresh feed several times a day and use concentrated diets.
- Monitor feed fermentation: the high temperatures in farrowing rooms can very quickly cause feed to ferment.
- Provide an ad libitum supply of water.
- The minimum water flow rate should be 3.0–3.5 litters/minute. Supplement the water.
- Cool down the farrowing rooms.

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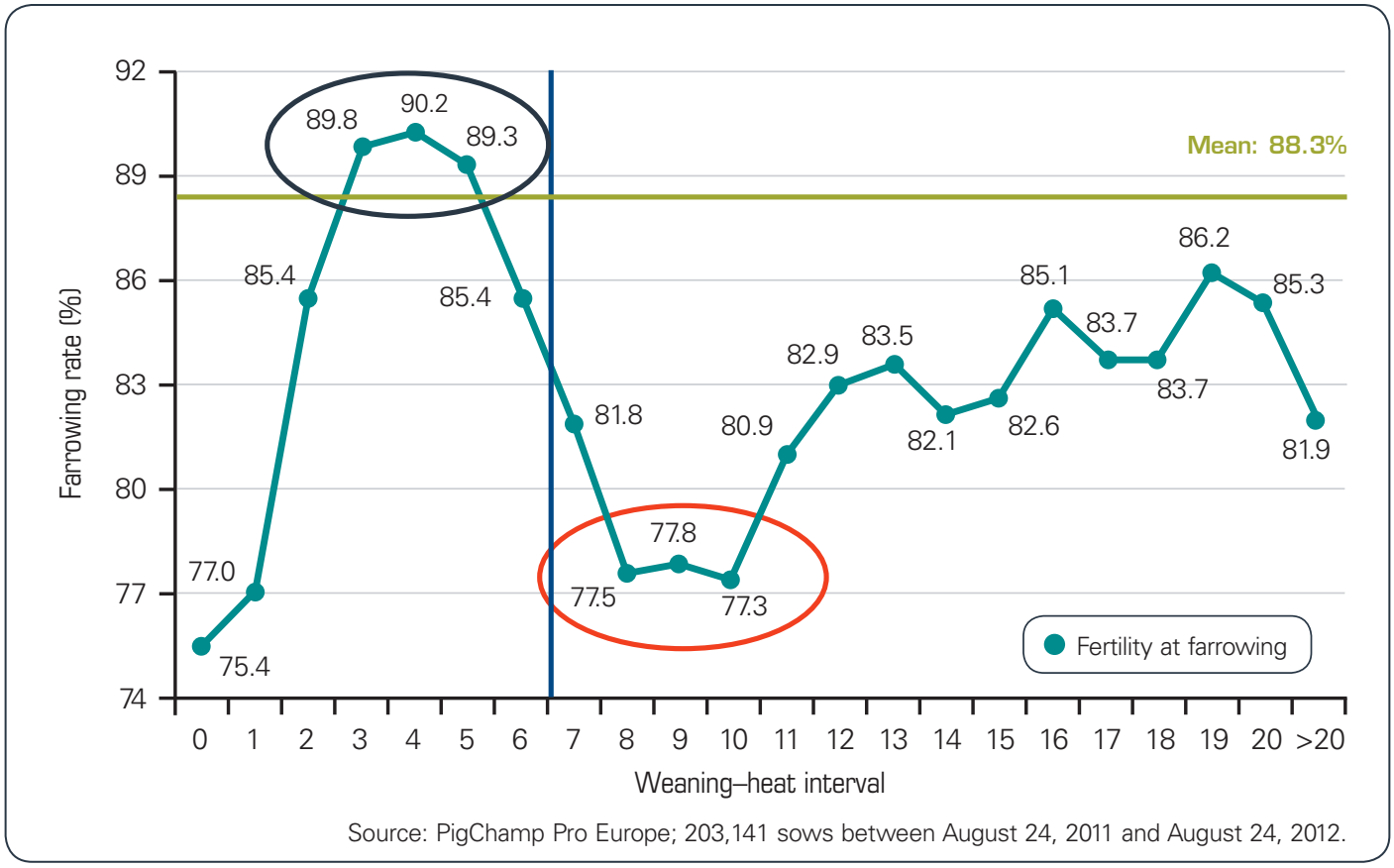
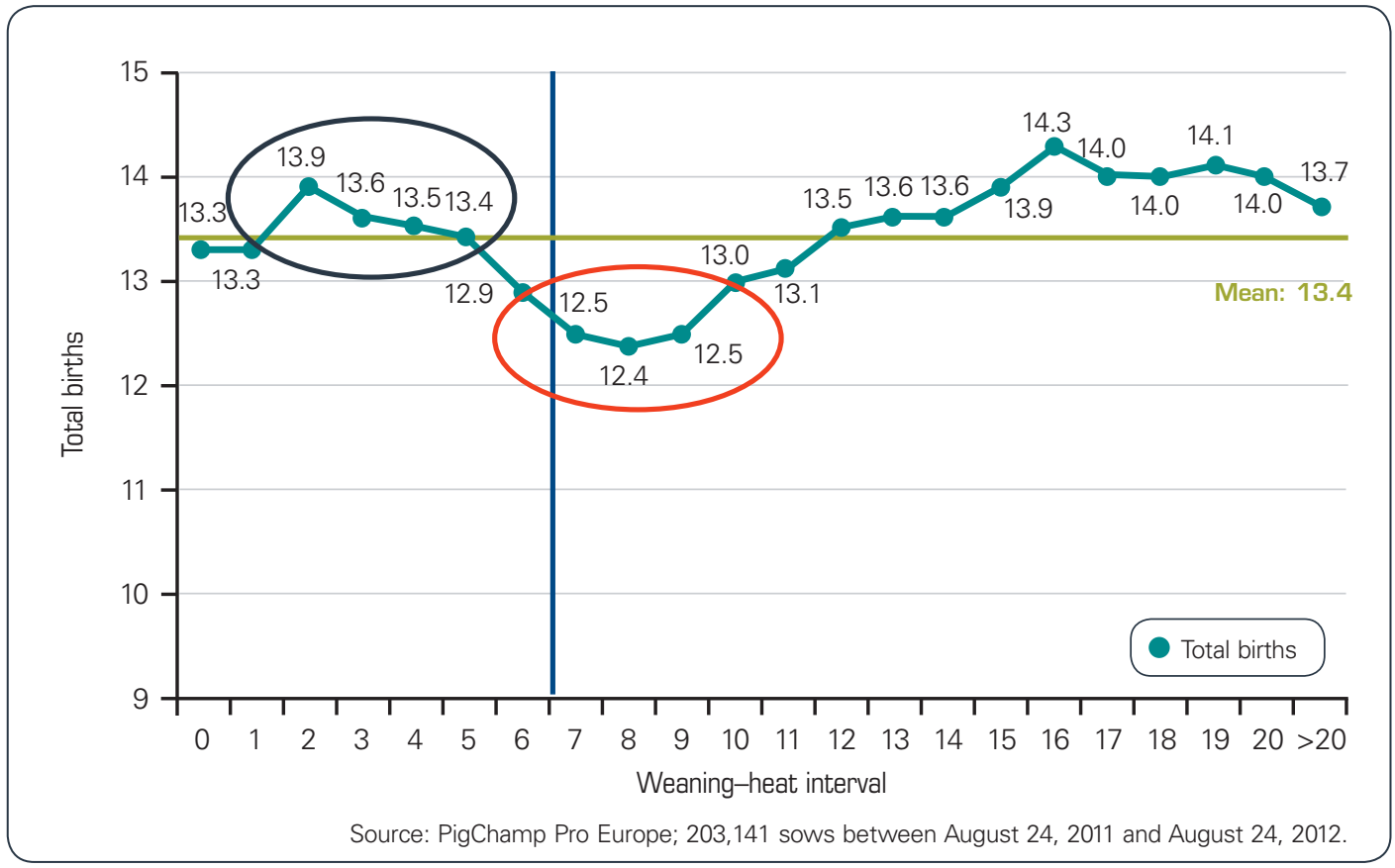


Source: PigChamp Pro Europe; 203,141 sows between August 24, 2011 and August 24, 2012.

Figure 7. The influence of the weaning-heat interval on fertility at farrowing.



Source: PigChamp Pro Europe; 203,141 sows between August 24, 2011 and August 24, 2012.

Figure 8. The influence of the weaning-heat interval on total births.

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