

CASE STUDY IN SWINE REPRODUCTION

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THE PROBLEM

The telephone call came the end of October. “I’ve got really low conception rates: lots of the pigs I bred in late September are coming back into heat. I sort of expect this kind of thing in August – but not now! What’s going on and what can I do?”

My response is to assume that my immediate first guess might be wrong, and therefore find out as much as I can about the situation before making any conclusions. So I ask many questions: these are given below with a summary of the answers and the reasons the questions are important.

QUESTIONS

1. Are you on a record keeping system?
2. How many pigs do you breed per week?
3. What are your conception rates now?
4. What were your conception rates in late September/early October? In April? Overall for last year?

Reasons: These questions confirmed that there really *was* a problem. Valid computer records detailed the breeding of over 25 females per week. More than 22% of females bred in mid-late September and early October had come back into heat, compared to 10% overall last year and 8% in April: breeding in early-mid September had about 15% returns, but varied week to week. We explored this variability a bit further, in addition to continuing on with the usual run of questions.

QUESTIONS

5. What were your weekly conception rates through August and September?
6. What were your rates for August of last year?
7. What breeding system do you use, natural or AI?
8. Is the problem in gilts or sows or both?
9. What breeds do you have? Purebreds? Crossbreds? Are they all affected?

Reasons: These answers were most informative. The producer uses a mixture of AI and natural breeding (hand mating, all breedings observed), with AI for his purebred lines and sometimes for production of replacement crossbred females, and natural breeding for

his three-way cross market pigs. Conception rates for breedings done in the second and third weeks of August were low (giving 18% returns) and very low rates for breedings in the fourth week of August (25% returns). These involved all females regardless of age or breed, although AI in purebreds was perhaps a wee bit better. He noted that August was hot, with an extreme heat wave through the entire fourth week of August. Breedings done in early to mid September had generally improving conception rates, but these then started to drop again (temperatures were definitely cooling), which was when he called. Interestingly, this later decline in breeding rates was only in his market pigs, not his purebreds. And finally, last year's August breedings also had low pregnancy rates: "That's why I said I expect this in August! It's this new crash after they'd started to climb again that worries me."

QUESTIONS

10. Have you changed anything since April or since last year?
- Staff doing the reproductive work
 - Heat detection method? Time from observed in heat to first breeding?
 - Breeding method
 - Age or breed of female or male (boars at home, or providing AI semen)
 - Semen supplier for AI, semen storage on farm
 - Feed or feed supplier
 - Housing
 - Weaning
 - Gilt / sow replacement
 - Health status (that is, any major disease issues)
 - Health procedures
 - Record keeping system

Reason: Staff, particularly those who check heat and breed the females, are crucially important. Despite some staff turnover and holidays, the new people were experienced, were familiar with the farm's methods, and appeared to be performing well – although the record keeping system didn't specifically allow checking for who did what breedings. Heat checking was done twice a day using a boar, morning (after feeding) and late afternoon, with the only change being that in the hottest part of the summer they checked for heat the very first thing in the morning when it was coolest. They bred sows twice, and gilts approximately every 12 hours until they would no longer stand. There was a feeling that fewer females than usual stood for a second breeding through August, but no records were available. Age, breed and semen supplier were unchanged.

Feed is prepared on site, using home-grown or contracted corn and soy. New crop started to be available through September. Housing didn't change, although ventilation fans were going full speed through most of August, with some "usual problems": these 'usual problems' included a fan motor burning out on the hottest night, periodic poor functioning due to power fluctuations and brownouts, etc. There were no major changes in disease status or standard health measures, which obviously could have

caused reproductive problems. The record-keeping system was unchanged. It of course won't change any situation, but can affect detection and visibility of existing situations.

With no other obvious causes, August seemed to hold the key. For each boar, the number of breedings and conception rate in mid-late September was compared to its records for June, July and August breedings. Three boars, each used excessively, had very poor pregnancy rates in the late September breedings. Fresh semen I examined from several of his boars and from his AI supplier was of excellent quality; the semen from only one of the three problem boars had low sperm concentrations and many immature sperm.

THE CONCLUSION

The poor pregnancy rates in the early August breedings likely resulted from the inherently lower summer fertility in pigs (particularly females), made worse at month end by heat stress. Semen was only a minor factor then. Pregnancy rates improved in early September breedings as the females recovered from the heat stress and were bred by sperm whose production was basically complete prior to the heat wave. The heat wave did devastate sperm that were being produced at that time, so once the last good sperm were used up, there were not enough good sperm in the on-farm boars to get the market pigs pregnant. The AI semen was quality checked before being sold, so was fine. The semen quality I observed meant 2 of the 3 problem boars had recovered.

THE SOLUTION

Sperm production takes 6 weeks in pigs, so sperm production should be returning to normal, as seen in two boars. Watching the individual boars' records closely and not overusing any boar promotes steady, good pregnancy rates. Supplement boars with AI using pooled semen or cross-bred semen on market gilts when extra boar power is needed, particularly during and after heat waves. Breed more females to compensate for the natural decline in fertility in late summer.