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There is value in leaving facilities empty

Dave Wade

Why is there variation in pork production? Why don't sows produce the same number of pigs, at the same weight, day in and day out? If we could answer these questions, it would take all the challenge out of raising pigs. Much, if not most, of the variation in reproduction (in a healthy system) is associated with seasonal infertility. Seasonal infertility in sows has really affected this industry only since we started farrowing continuously and adopted multi-site production. Multi-site production requirements are to fill nursery or wean-to-finish sites with the same number of pigs every week. No more and no less! Older technology, such as twice per year farrowing of sows and continuous-flow operations, was very forgiving as to the number of pigs produced. You either accelerated or decelerated the through-put based on the number of sows farrowed or pigs produced. With today's larger, multi-site systems, nursery or wean-to-finish operators want the same number of pigs every week in order to match the flow of their barns.

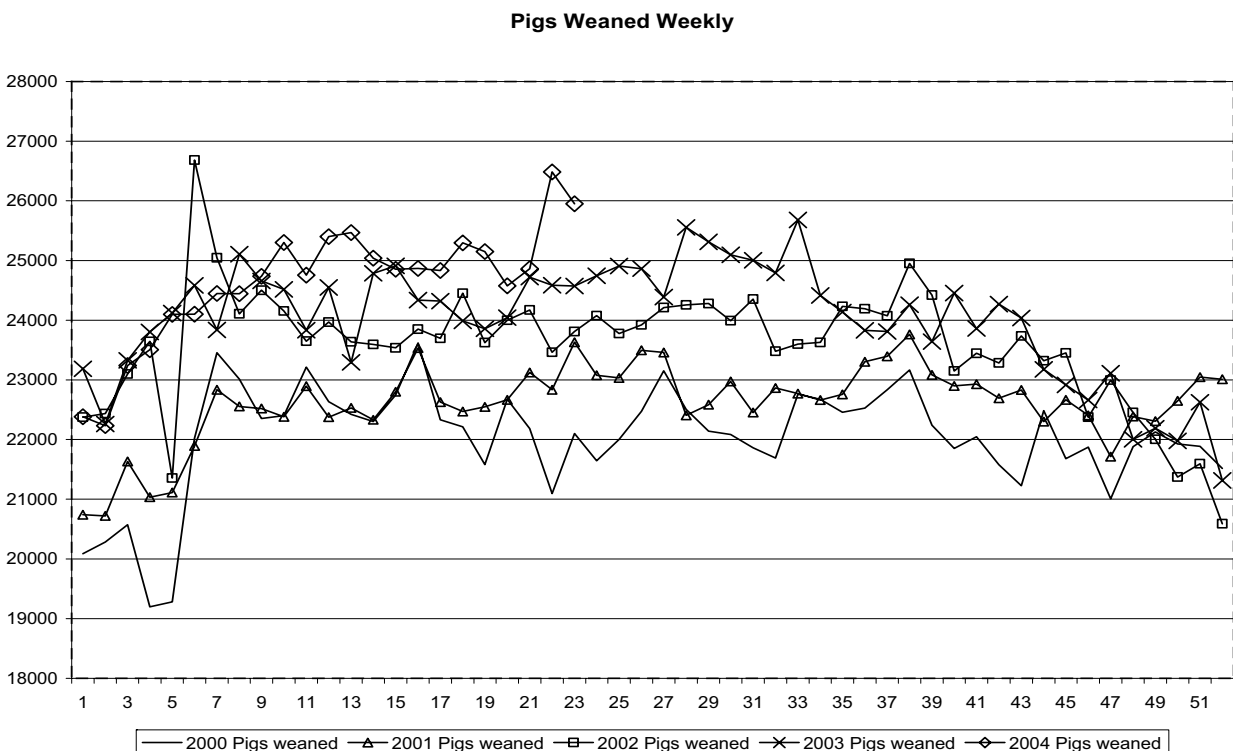
Seasonal infertility

Consider seasonal infertility (**Figure 1**). Seasonal infertility, in our experience, is very predictable. It seems that Mother Nature is telling the sow that her piglets won't survive if they are born in the winter, so she takes one of three options:

- She doesn't cycle after weaning.
- She fails to conceive.
- She terminates the pregnancy.

One can speculate that natural selection has produced this phenomenon. Offspring that were born in the winter didn't survive and, hence, couldn't reproduce. The heat of summer may contribute to infertility issues, but based on our experience and our ability to control the sows' environment, heat is not the sole factor in summer infertility.

Figure 1: Seasonal infertility. Pigs weaned weekly from 2000 to 2004



Regardless of the reason for seasonal infertility, it has the ability to impact production and profitability. We feel that this variation is predictable, based on previous site history. Therefore, it is manageable. It is critical to make decisions on matings needed to compensate for lower reproductive performance. Our approach has included tracking farrowing rates by week-mated (**Figure 2**), pigs weaned each week from a sow farm, or weekly fills of nurseries and wean-to-finish barns (**Table 1**).

The problem first surfaced for me in 1994 when we were starting a multi-site system. The system was symmetrical four sow farms, eight nurseries, and 16 finishers. A week's worth of piglets weaned fit into one nursery, and after seven weeks of growth, they were moved to a finisher. Sounds simple, right? One of three things then happens: you have exactly the right number of pigs for the farm, not enough pigs, or too many pigs. If you don't have enough pigs, square footage is under utilized, too many pigs and they're crowded.

One of the most critical factors in producing the same number of weaned pigs each week is the number of sows farrowed. Sow mating targets are then set based on averages or predictions of farrowing rates. These averages or predictions usually don't reflect the needs of the grow/finish system. The problem with most production-oriented people is that they always believe more is better. Placing more sows in spaces we don't have . . . so we can crowd more pigs into tighter spaces . . . so we can run facilities over capacity to achieve that marginal profitability from those extra pigs!

The other scenario is when the sow farms breed sows like crazy for 16 weeks but then run out of gestation spaces. This creates a shortage of matings for four weeks until the farms are forced to wean large numbers of sows again. At this point, the sow farms breed sows like crazy, and the vicious cycle begins.

Disciplined production

Producers must have the discipline to have a set number of acceptable pigs weaned each week from the sow farms to match the flow of the facilities. This can be accomplished by working backwards from this objective. Based on facility size, pregnancy check, farrowing rates, live pigs born per litter, and pre-weaning death loss, calculations can be made as to the number of matings that need to occur each week. This is only one step of many in understanding the system's needs. Thorough record analysis must be done in order to understand the impact of seasonal infertility; armed with this information, managers can plan for the number of matings needed each week. It's almost impossible to know the severity of effects of an individual year's seasonal infertility, but planning for the worst would allow one to reduce the impact.

Possible options for minimizing the effect of seasonal infertility might involve bringing in extra gilts and doing off-site or on-site breeding projects, etc., to fill "holes" in production. An argument against this option is that it may be very devastating to the health status of the farm and the pig flow. Another option might be to buy or sell weaners or feeder pigs, depending on whether facilities are

Figure 2: Four-year average farrowing rate as a function of week bred.

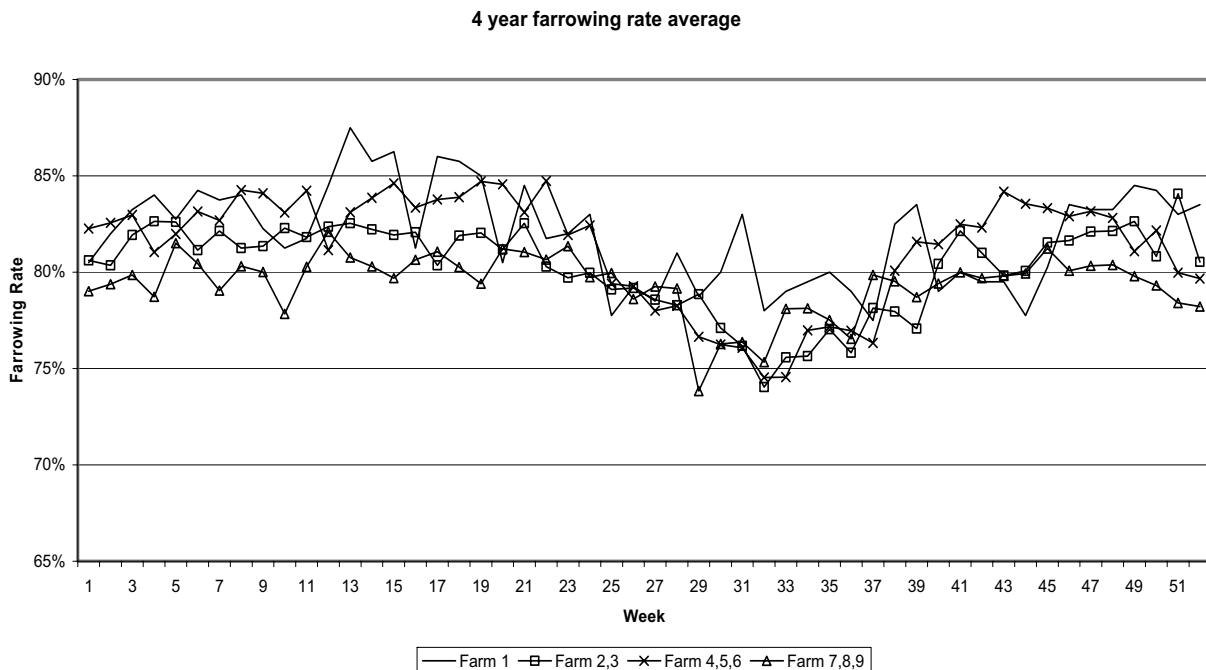


Table 1: Coefficients of variation

Matings	Target	Ave	Stdev	COV	13	12	11	10	9	8	7	6	5	4	3	2	1
Farm 1	154	151	7	4.5%	150	140	150	160	150	165	150	150	154	150	150	154	140
Farm 2	420	420	4	0.9%	421	423	417	421	429	420	418	418	422	415	419	423	415
Farm 3	328	327	15	4.6%	300	310	320	315	330	350	345	320	336	315	342	340	330
Farm 4	317	312	9	2.8%	305	306	306	306	306	326	323	320	320	320	310	306	300
Farm 5	147	142	16	11.0%	174	165	147	150	137	147	134	151	132	119	125	129	138
Farm 6	147	159	19	12.0%	165	165	151	165	165	165	165	171	168	126	172	173	110
	1513	1511	37	2.4%	1515	1509	1491	1517	1517	1573	1535	1530	1532	1445	1518	1525	1433

Matings	Target	Ave	Stdev	COV	13	12	11	10	9	8	7	6	5	4	3	2	1
Farm 7	614	612	26	4.2%	590	631	638	618	627	607	626	626	612	619	626	587	543
Farm 8	614	588	22	3.8%	608	565	617	599	617	554	607	583	585	566	557	582	600
Farm 9	234	234	12	4.9%	243	233	220	220	217	250	250	230	238	246	234	235	222
	1462	1433	31	2.2%	1441	1429	1475	1437	1461	1411	1483	1439	1435	1431	1417	1404	1365

Weanings	Target	Ave	Stdev	COV	13	12	11	10	9	8	7	6	5	4	3	2	1
Farm 1	1185	1153	101	8.8%	1137	1292	1172	1120	1263	1136	1274	1246	1155	1107	1127	930	1034
Farm 2	3323	3097	105	3.4%	3234	3205	3163	3235	3116	3162	3147	2959	2994	3075	2931	2987	3055
Farm 3	2455	2277	221	9.7%	2430	2267	2311	2694	2373	2334	2500	2474	2094	2066	1945	2032	2078
Farm 4	2389	2237	190	8.5%	2633	2340	2316	2263	2280	2305	2286	2210	2288	2210	2175	1901	1877
Farm 5	1106	934	145	15.5%	908	1098	1153	990	1111	898	978	902	997	830	852	812	615
Farm 6	1106	1162	76	6.6%	1189	1139	1245	1325	1194	1225	1190	1109	1117	1132	1061	1051	1133
	11564	10861	667	6.1%	11531	11341	11360	11627	11337	11060	11375	10900	10645	10420	10091	9713	9792

Weanings	Target	Ave	Stdev	COV	13	12	11	10	9	8	7	6	5	4	3	2	1
Farm 7	4715	4743	194	4.1%	4858	4707	4765	4990	4866	4844	4811	4792	4802	4727	4681	4638	4173
Farm 8	4715	4544	287	6.3%	4992	5023	4584	4560	4744	4666	4170	4426	4704	4359	4375	4051	4424
Farm 9	1712	1784	101	5.7%	1921	1947	1840	1740	1665	1626	1736	1736	1737	1881	1817	1859	1685
	11142	11071	416	3.8%	11771	11677	11189	11290	11275	11136	10717	10954	11243	10967	10873	10548	10282

constructed and operated to either match maximum or minimum production. A third option is to have more sow capacity for a particular flow of pigs. This allows producers to keep the primary flow of pigs full, but it does create the need to deal with the “overflow” pigs. These overflow pigs can become a challenge because of an inconsistent number of pigs being weaned each week and/or having to mix sources in order to assemble some sort of pig flow. The last option is constructing or setting aside additional gestation crates for holding the additional sows that need to be mated during seasonal infertility.

In conclusion, multi-site systems demand a new level of discipline for production. This discipline is not consistent with the normal variation found in pig production. Seasonal variation, while a major source of variation in pig production, is predictable and thus allows producers to plan and manage for this variation.

