如何降低非生产天数
How to reduce non-productive days

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一、为什么要重视 NPD? Why should we pay attention to NPD?

什么是NPD（Non-Productive Days）？ What is NPD (Non-Productive Days)?

➢ **定义 definition**

✓ 统计期内平均每头经产母猪在繁殖周期中未参与有效生产的天数 The number of days per sow with parity that did not participate in effective production during the reproductive cycle per average during the period

✓ 既不在哺乳也不在妊娠的天数（**包括无效妊娠天数**）Days of neither breastfeeding nor pregnancy (including days of ineffective pregnancy)

✓ 未计算后备母猪 Gilts were not calculated

➢ **本质 Essence**

✓ NPD直接影响LSY，进而影响PSY NPD directly affects LSY, which in turn affects PSY

✓ 猪场繁殖效率的代表指标之一，直接反映配种、妊娠、分娩等环节的管理漏洞 One of the representative indicators of breeding efficiency in pig farms, which directly reflects the management loopholes in breeding, pregnancy and delivery

一、为什么要重视 NPD？ Why should we pay attention to NPD?

NPD造成的直接损失？ What are the direct losses caused by NPD?

➢ **母猪成本 Cost of sows**

✓ 饲料成本约**10**元/头.天 The feed cost is about 10 yuan per head.day

✓ 间接成本**5~10**元/头.天（固折、人工和水电、环保等）Indirect cost 5~10 yuan per head.day (fortification, Human resources and water and electricity, environmental protection, etc.)

合计：15元/头.天以上 Total: 15 yuan per head per day

✓ 1头母猪的NPD多30天/胎，对应窝的仔猪单头成本高36元。The NPD of a sow is more than 30 days per litter, and the single head cost of corresponding piglets per litter is 36 yuan higher.

✓ 5000头母猪场每年NPD增加1天，浪费成本7.5万元；**10天则达75万元**。For a sow farm of 5,000 head, an increase of 1 day in NPD per year costs 75,000 yuan in waste; 10 days costs 750,000 yuan.

➢ **效益 Benefit**

✓ NPD增加1天，按窝均断奶12.5，PSY减少0.1头，10天则为1头。NPD increased by 1 day, weaned 12.5 per nest, PSY decreased by 0.1 head, and 1 head per 10 days.

✓ 5000头母猪场每年NPD增加10天，每年仔猪产出减少5000头，价值5000*300=**150万元**。For a sow farm of 5,000 head, the annual NPD increases by 10 days and the annual piglet output decreases by 5,000 head, valued at 5,000*300= 1.5 million yuan.

二、NPD的构成与计算II. Composition and calculation of NPD

**NPD的统计Statistics of NPD**

- **群体母猪Sow group**

  ✓ 个体NPD=每头母猪处于哺乳和妊娠以外的天数之和+回算的无效妊娠天数）/经产母猪平均存栏 Individual NPD= sum of days per sow outside of lactation and gestation + calculated number of null pregnancies)/ average sow inventory

  ✓ 群体NPD是平均到每头母猪的数据，**个体母猪**的NPD实际**差异很大 The group NPD is the average per sow data and individual sow NPD actually varies greatly**

单胎NPD	繁殖周期	LSY	年均NPD	PSY	窝均断奶
5	144	2.53	12.67	31.68	12.5
10	149	2.45	24.50	30.62	12.5
15	154	2.37	**35.55**	29.63	12.5
20	159	2.30	45.91	28.69	12.5
25	164	2.23	55.64	27.82	12.5
30	169	2.16	64.79	27.00	12.5

二、NPD的构成与计算II. Composition and calculation of NPD

NPD的分解Decomposition of NPD
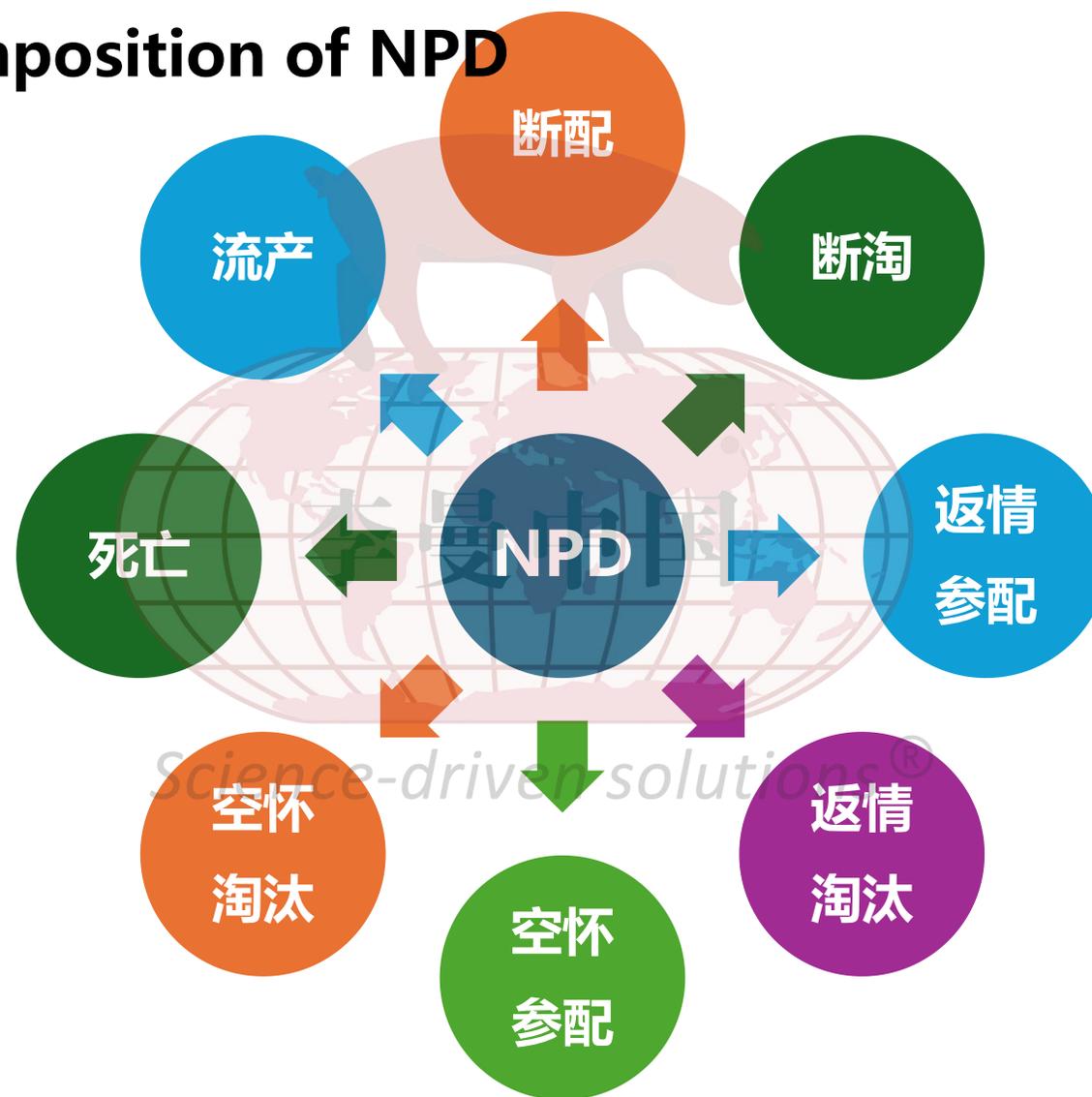
三、降低NPD的核心策略3. Core strategies to reduce NPD

群体策略管控个体Group strategies control individuals

Eliminate invalid sows in time

	单胎NPD	繁殖周期	LSY	年均NPD	PSY	窝均断奶
正常断配	5	144	2.53	12.67	31.68	12.5
	10	149	2.45	24.50	30.62	12.5
返情1次	20	159	**2.30**	**45.91**	28.69	12.5
	30	169	2.16	64.79	27.00	12.5
	40	179	**2.04**	**81.56**	25.49	12.5
空怀1次	50	189	1.93	96.56	24.14	12.5

三、降低NPD的核心策略3. Core strategies to reduce NPD

后备猪更新率 Gilt replacement rate

- 支撑：基础产量（配种数、断奶数）和无效猪淘汰 Support: basic output (number of breeding, number of weaning) and cull of ineffective pigs

➢ 性能：维持群体高繁殖性能。 Performance: Maintain high reproductive performance in the population.

- 体系内生产数据显示，0胎产仔数高的，后续胎次产仔也高。Production data within the system showed that the number of litters per 0th litter was high, and the number of litters per subsequent litter was also high.

- 提高1~2胎淘汰标准，增加主动淘汰数量，保证3~5胎的高繁殖性能。Raise the elimination standard for 1-2 fetuses, increase the number of actively eliminated fetuses, and ensure high reproductive performance for 3-5 fetuses.

胎次		1胎	2胎	3胎	4胎	5胎	6胎	总计
A母猪场	总仔	15.79	16.96	17.15	17.33	17.34	16.32	16.79
	活仔	14.17	15.55	15.74	15.28	15.29	14.58	15.11
	窝数	802	994	558	312	906	522	4094
B母猪场	总仔	13.87	15.25	14.68	15.03	14.21	13.86	14.62
	活仔	12.66	13.82	13.55	13.21	12.82	12.16	13.17
	窝数	654	620	307	727	421	56	2785
C母猪场	总仔	14.40	15.69	16.20				14.97
	活仔	13.18	14.50	14.89				13.75
	窝数	2060	1137	290				3487

窝均总仔

A场 B场 C场
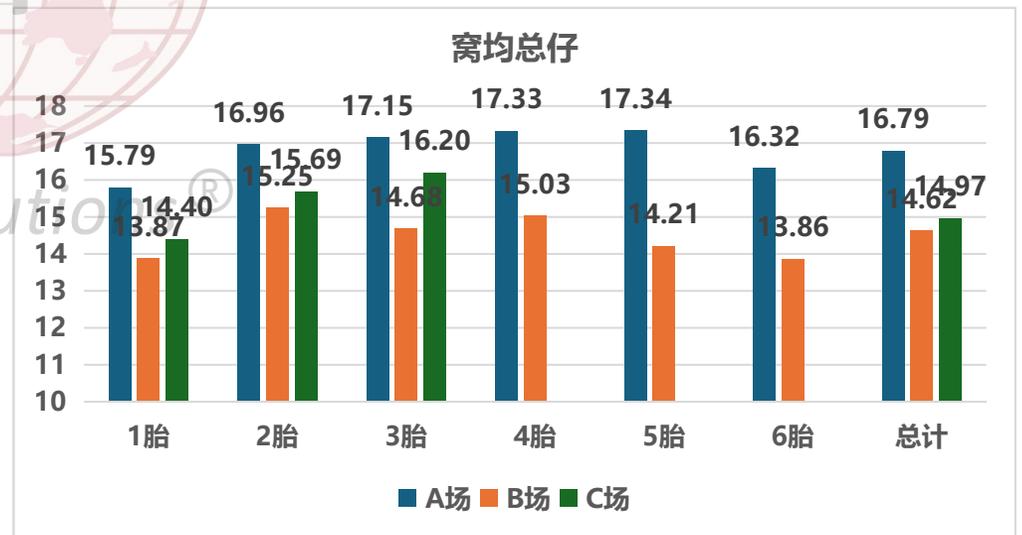
三、降低NPD的核心策略3. Core strategies to reduce NPD

各胎次淘汰率 Culling rate per parity

➢ 1胎淘汰率更多受体况损失、发情参配情况影响。The elimination rate of first parity is more affected by the loss of receptor status and estrus mating.

➢ 2胎淘汰率按1/2胎的繁殖性能（提高产仔数和断奶数双标准），增加主动淘汰。The elimination rate of second parity is based on the reproductive performance of 1/2 parity (increasing both litter size and weaning rate), and active cull is increased.

➢ GP和PS场推荐更新率50%。GP and PS farm recommendation update rate 50%.

更新率	60%		50%		40%	
胎次	胎次占比	淘汰率	胎次占比	淘汰率	胎次占比	淘汰率
0胎	25%	**14%**	21%	**12%**	17%	**8%**
1胎	22%	**30%**	19%	**25%**	16%	**10%**
2胎	15%	12%	14%	8%	14%	7%
3胎	13%	12%	13%	8%	13%	7%
4胎	12%	15%	12%	8%	12%	7%
5胎	10%	80%	11%	35%	11%	15%
6胎	2%	100%	7%	45%	10%	20%
7胎	0%		4%	100%	8%	100%

7天断配率 7-day weaning mating rate

➢ 根据7天断配率设计批次后备猪参配数。The number of batch gilts was designed according to the 7-day weaning mating rate.

• 7天断配率90%，复配率3~5%，断奶母猪80%+复配4%+后备16% The 7-day weaning mating rate was 90%, and the re-breeding rate was 3~5%. The weaned sows were 80%+ re-breeding rate 4%+ gilt 16%

• 不低于40%更新率 Replace rate of no less than 40%

➢ 假定受胎率、分娩率、后备补充数一致，7天断配率每差异5%，每胎NPD差异1.8天。

➢ Assuming that the conception rate, delivery rate and gilt supplementation number are consistent, the 7-day weaning mating rate varies by 5%, and the NPD varies by 1.8 days per pregnancy.

	配种数	7天断配	复配	后备配种	断奶淘汰	异常参配	返情参配	返情未配	空怀参配	空怀未配	死亡	流产	每胎NPD
头数	1000	810	50	140	90	0	30	10	20	10	15	15	
NPD		4050			1260	0	630	400	900	500	1050	1275	**10.07**
头数	1000	765	95	140	90	45	30	10	20	10	15	15	
NPD		3825			1260	2025	630	400	900	500	1050	1275	**11.87**
头数	1000	720	140	140	90	90	30	10	20	10	15	15	
NPD		3600			1260	4050	630	400	900	500	1050	1275	**13.67**

三、降低NPD的核心策略3. Core strategies to reduce NPD

7天断配率 7-day weaning mating rate

复配率不变，7天断配率每5%，每胎NPD仅差异0.4天。When the re-breeding rate was unchanged, the 7-day weaning mating rate was 5%, and the NPD only differed by 0.4 days per pregnancy.

（二元种猪入群成本1700，残值1500。生物资产折旧200元/30个月，更新率的差异对断奶成本影响可控）(The cost of two lines breeding pigs entering the group is 1700, and the residual value is 1500. The depreciation of biological assets is 200 yuan /30 months, and the impact of different renewal rates on the cost of weaning is controllable)

	配种数	7天断配	复配	后备配种	断奶淘汰	返情参配	返情未配	空怀参配	空怀未配	死亡	流产	每胎NPD
头数	1000	810	50	140	90	30	10	20	10	15	15	
NPD		4050			1260	630	400	900	500	1050	1275	**10.07**
头数	1000	765	50	185	135	30	10	20	10	15	15	
NPD		3825			1890	630	400	900	500	1050	1275	**10.47**
头数	1000	720	50	230	180	30	10	20	10	15	15	
NPD		3600			2520	630	400	900	500	1050	1275	**10.88**

综合生产管理Integrated production management

- 7天断配率
- 断配间隔
- 复配率
- 受胎率
- 返情鉴定
- 猪群健康
- 淘汰时间

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综合生产管理Integrated production management

生产操作关键	Key to production operations	生产基础	Production basis
哺乳期体况管理	Lactation period body condition management	高健康	High Health
哺乳天数和寄养管理	Lactation days and foster care management	种猪性能	Breeding stock performance
断奶前开始优饲（能量和微营养）	Start optimal feeding before weaning (Energy and Micro Nutrition)	胎次设计	Parity planning
高品质精液	High quality semen	小单元激励	Mini-Unit Incentives
光照时间和强度	Lighting time and intensity	生产团队技能	Production team skills
人工刺激	Artificial stimulation	经营团队支持	Operational support

四、取得的成果与总结IV. Achievements and Summary

- **NPD成绩 NPD performance**

✓ 可以控制在25~30天；Can be controlled in 25 to 30 days;

✓ 6个场Q2、Q3不同程度下降5~15天。The 6 farms decreased to varying degrees in Q2 and Q3 for 5 to 15 days.

✓ 每个场有不同的生产指标短板，需进一步优化提升来降低NPD。Each farm has different shortcomings in production indicators, which need to be further optimized and improved to reduce NPD.

NPD	1月	2月	3月	4月	5月	6月	7月	8月	1~8月
A	35.8	34.1	28.3	40.8	49.2	39.4	25.0	22.0	**34.4**
B	56.8	54.5	42.7	35.9	25.7	35.5	25.7	22.7	**36.2**
C	40.8	46.7	45.7	41.2	40.9	31.8	34.9	33.3	**39.3**
D	40.1	45.1	40.9	37.3	29.1	25.7	23.7	22.6	**33.0**
E	30.1	33.4	28.0	28.8	25.2	21.0	21.8	21.5	**26.0**
F	25.1	25.7	26.2	28.4	25.8	25.2	36.1	35.4	**29.1**
合计	**36.3**	**39.1**	**34.3**	**34.3**	**31.2**	**27.8**	**27.5**	**26.3**	**31.6**

四、取得的成果与总结IV. Achievements and Summary

- **窝均断奶**：A场淘汰低效母猪，减少问题母猪参配，窝均断奶提升0.5头。

- **Weaning per litter: A farm cull inefficient sows, reduced the number of problematic sows, and increased the average weaning per litter by 0.5.**

- **LSY**：C场NPD 25.5天，因扩群影响LSY仅2.16。后续可达2.4。

- **LSY: C farm NPD 25.5 days, only LSY 2.16 due to expand the pig herd. Later, it can reach 2.4.**

- **未来预期**：预计在哺乳24天前提下，可以做到LSY 2.42。

- **Future expectations: It is expected that LSY 2.42 can be achieved under the condition of 24 days of lactation.**

A场	1月	2月	3月	4月	5月	6月	7月	8月	1~8月
窝均断奶	12.23	12.63	12.25	12.66	12.72	12.85	13.04	12.81	12.66
哺乳天数	25.69	26.02	21.9	22.9	23.75	23.66	23.54	22.93	23.77
LSY	2.47	1.96	2.60	2.41	1.93	2.33	2.59	2.73	2.38
NPD	40.1	45.1	40.9	37.3	29.1	25.7	23.7	22.6	33.0
PSY	23.43	35.08	27.64	34.02	28.81	25.33	30.37	32.93	29.63

B场	1月	2月	3月	4月	5月	6月	7月	8月	1~8月
窝均断奶	12.89	12.84	13.11	12.76	12.73	12.83	13.08	12.58	12.85
哺乳天数	26.79	27.44	25.29	25.04	24.23	24.37	24.44	24.75	25.26
LSY	2.34	1.99	2.62	1.96	1.97	2.96	2.26	2.79	2.37
NPD	30.1	33.4	28.0	28.8	25.2	21.0	21.8	21.5	26.0
PSY	27.97	35.12	28.33	31.53	24.44	28.33	33.58	34.28	30.38

C场	1月	2月	3月	4月	5月	6月	7月	8月	1~8月
窝均断奶	12.72	12.90	12.75	12.69	12.67	12.68	12.10	12.37	12.52
哺乳天数	25.11	25.42	25.18	24.94	23.64	25.74	23.42	23.51	24.42
LSY	1.83	2.57	1.99	1.59	1.59	2.83	2.79	1.94	2.16
NPD	25.1	25.7	26.2	28.4	25.8	25.2	36.1	35.4	29.1
PSY	34.20	25.54	32.71	17.01	16.26	21.75	38.21	26.20	26.38

四、取得的成果与总结IV. Achievements and Summary

- **总结Summary**

✓ **"125"原则**：向前看12个月，回看5个月。至少12个月的生产规划、策略和准备。

✓ **The "125" principle: Look forward 12 months and look back 5 months. At least 12 months of production planning, strategy and preparation.**

✓ **充足的后备猪**：从GGP开始，定向生产自留后备猪、计划配种数、猪群流转、驯化、情期管理。

✓ **Adequate gilts: from GGP, targeted production of gilts, planned number of breeding, herd transfer, domestication, estrus management.**

✓ **空流返管理**：发现空流返母猪的30天内必须处理完毕

✓ **Empty fetus, miscarriage, and return to estrus management: These sows must be treated within 30 days after discovery**

✓ **断奶管理**：断奶母猪30天内处理完毕Weaning management: weaned sows should be treated within 30 days

通过NPD控制的实施，以点带面，综合优化猪场成绩成本表达。Through the implementation of NPD control, we aim to comprehensively optimize the performance and cost expression of pig farms from point to area.

致 谢

本课题研究内容由富之源集团养殖事业部生产技术总监杨树青主持完成！
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