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# Implementing Sow Feeding Procedure to Help Farms Increase Efficiency and Reduce Costs

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The 12<sup>th</sup> Leman China Swine Conference  
Oct. 20, 2023

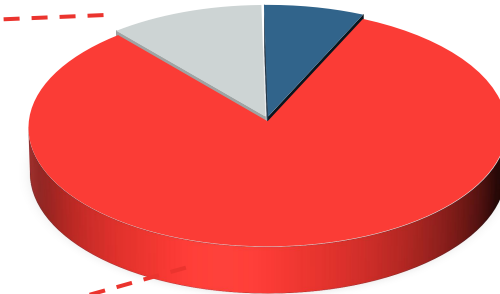
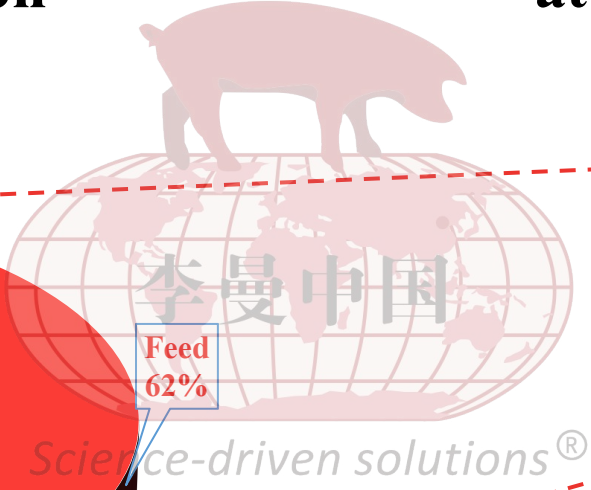
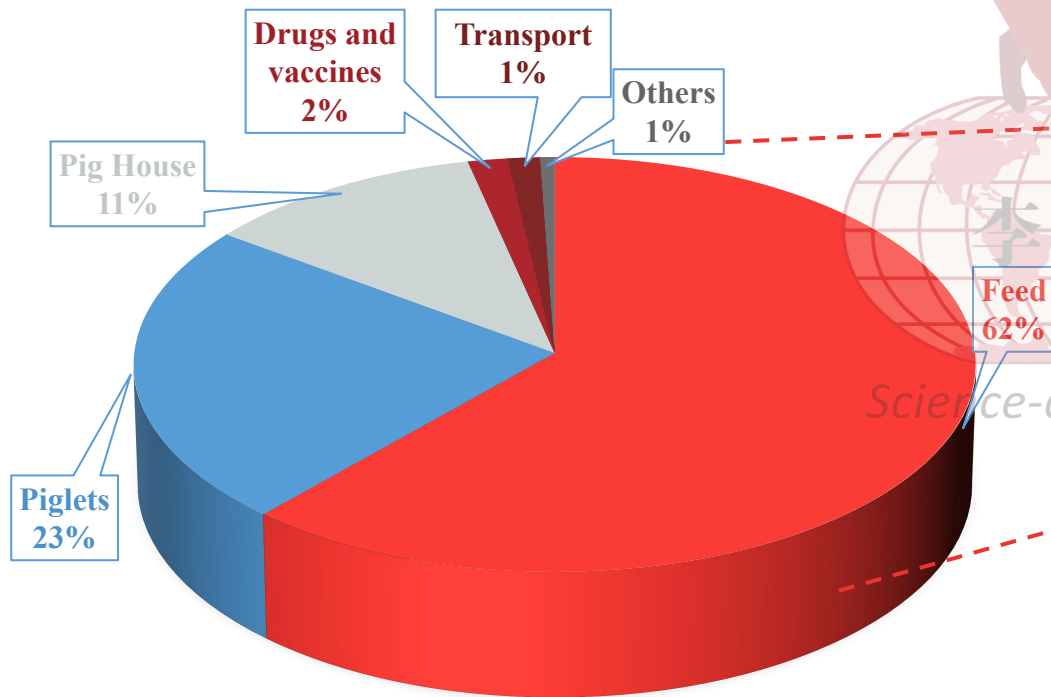
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# The Decisive Impact of Feed Fost on Breeding Cost

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## Distribution of Cost in Commercial Pigs Production\*

## Distribution of Feed Consumption at 135kg Market Weight



- Feed Consumption in growth and finishing : ~297 kg** ~82%
- Feed Consumption in Sows: ~40 kg** ~11%
- Feed Consumption in Nursing: ~26 kg** ~7%

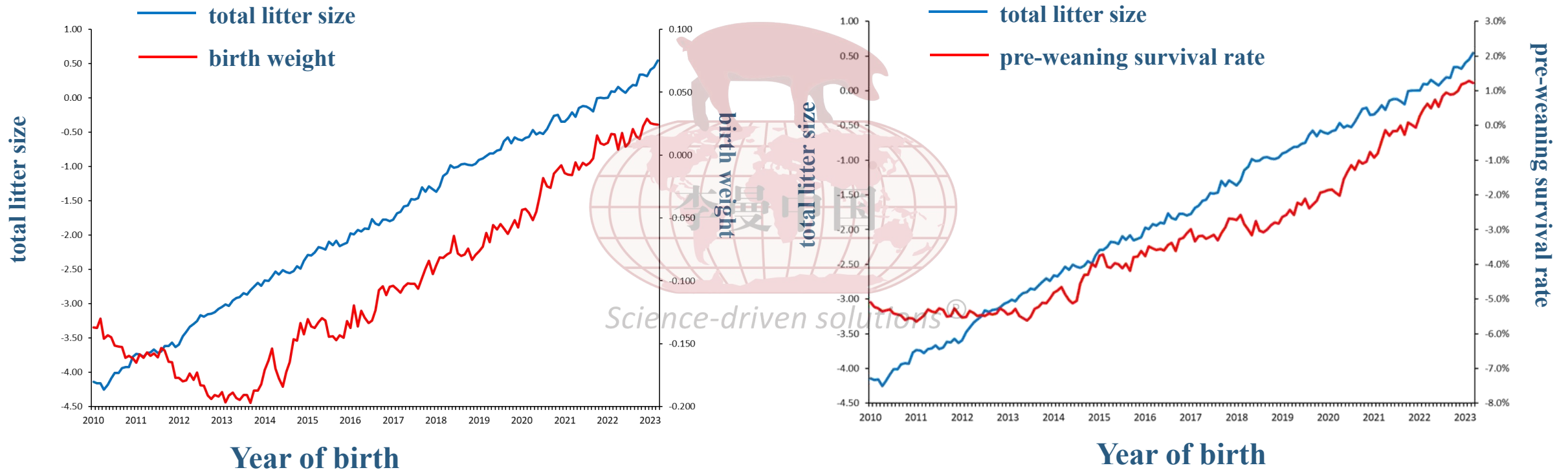


\*Data from February to April 2023 in the United States

# Recent Years' Progress of PIC in Genetics



Reproductive Traits: total litter size, birth weight, pre-weaning survival rate



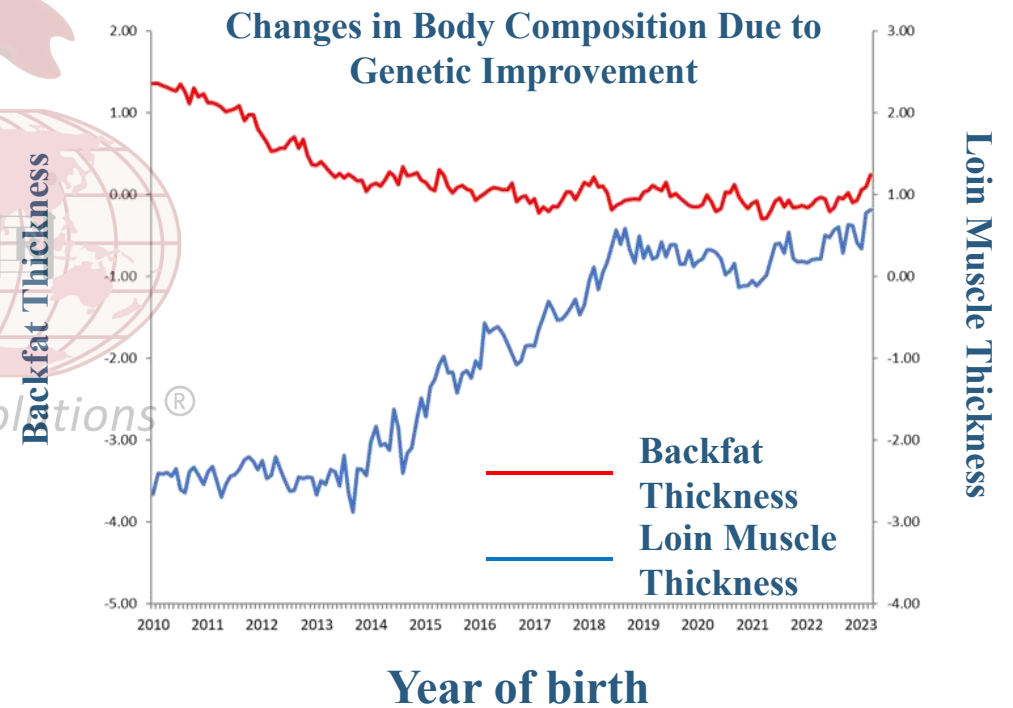
Data from PIC development team in Genetics  
Mean value of PIC L02 and L03; The data displayed on the vertical axis represents the difference from the average performance of PIC® Elite Farms over the past 2 years.

# Recent Years' Progress of PIC in Genetics



## Changes in Growth Performance and Body Composition

In addition to improved reproductive performance, the growth rate and efficiency of modern maternal pigs are constantly improving.



Data from PIC development team in Genetics  
Mean value of PIC L02 and L03; The data displayed on the vertical axis represents the difference from the average performance of PIC® Elite Farms over the past 2 years.

# Today's sows are different from those of yesterday!



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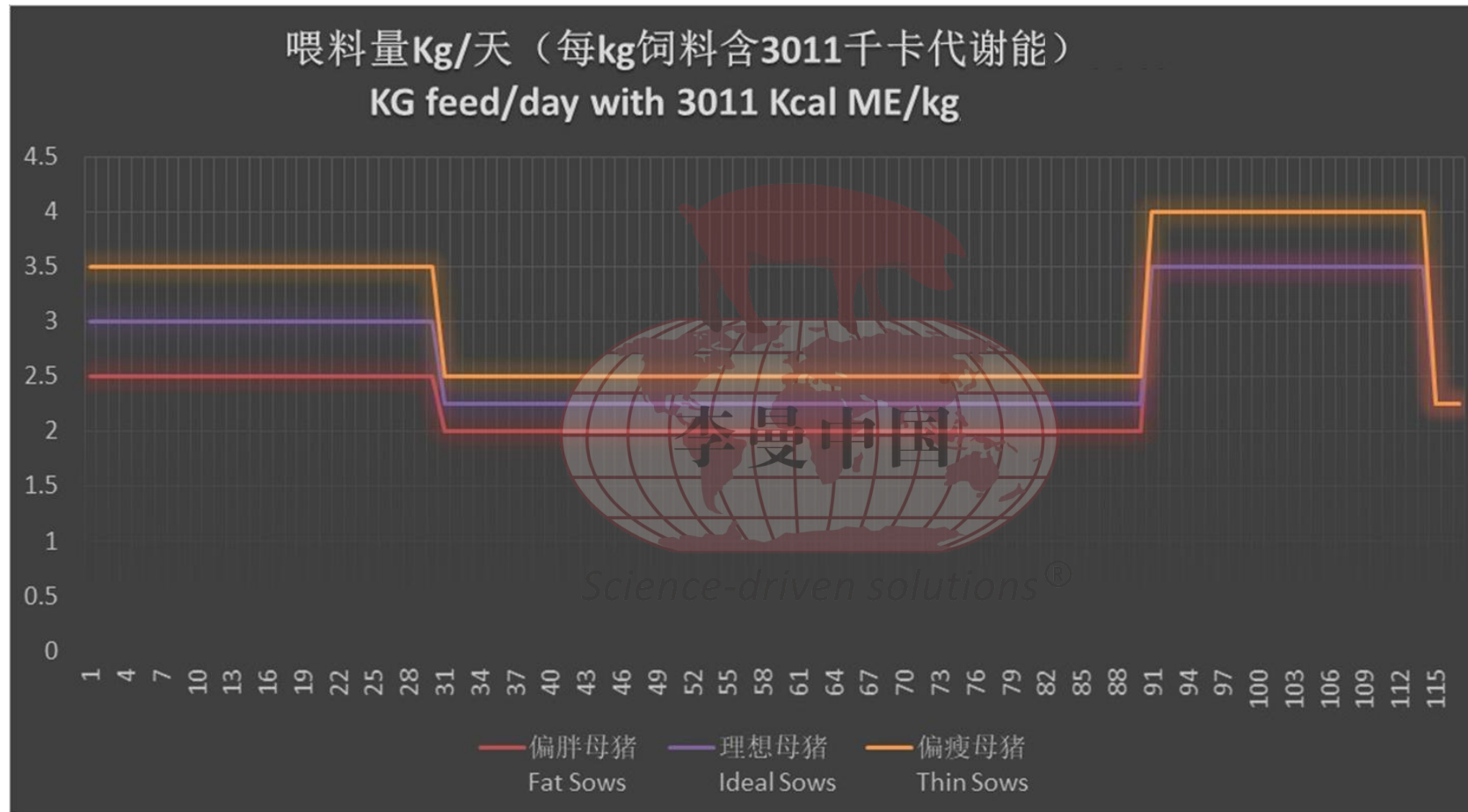
science-driven solutions®

**Modern sows are more productive and efficient, grow faster, and have a higher proportion of protein in their bodies.**

**Genetic improvement means that modern sows have unique nutrition and feeding needs!**

# Traditional feeding programs in gestation period are similar...

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# Feeding Procedure in Gestation Period



First-Parity Sows

Assuming the energy level of gestational feed is 3050 Kcal/kg ME.

**5.9 Mcal ME/day**  
**4.4 Mcal NE/day**  
**(2.0 kg/day)**

**Gilts are fed at this level throughout gestation and do not adjusted based on first mating weight.<sup>1</sup>**



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0 30 60 90 112

Days of Gestation



<sup>1</sup>PIC does not recommend adjusting feeding levels based on first mating weight or the body condition of the first-parity sows in gestation period.

# Feeding Procedure in Gestation Period



## Multiparous Sows

Assuming the energy level of gestational feed is 3050Kcal/kg ME.

**Thin Sows**  
8.0 Mcal ME/day  
6.1 Mcal NE/day  
(2.7 kg/day)



- Use this feeding level if sows are thin at any stage of gestation.
- Using this feeding level for 30 days is expected to improve body condition caliper units by approximately 2 points.
- Assess body condition promptly to determine whether sows' body condition has returned to ideal.

**Ideal Sows**  
5.9 Mcal ME/day  
4.4 Mcal NE/day  
(2.0 kg/day)

Using basic feeding levels throughout gestation can help sows improve body condition caliper units by approximately 1.7 points.<sup>1</sup>

**Fat Sows**  
4.9 Mcal ME/day  
3.7 Mcal NE/day  
(1.7 kg/day)



- Use this feeding level if sows are fat from ~30 days to ~90 days of gestation.<sup>2</sup>
- For sows that are fat in early and late gestation, avoid feeding below the basic feeding level.

0

30

60

90

112

Days of Gestation period



<sup>1</sup>Estimated based on sows weighing 200 kg.

<sup>2</sup>It can be difficult to help fat sows regain body condition during gestation.



# Bump Feeding is not Effective for All Sows.



Late Gestation Period

**Bump feeding for gilts increases the weight of sows, but only slightly increases the weight of piglets.**

Literature	Control Group		Bump Feeding Group		Changes due to Bump Feeding	
	Mcal ME/d	g SID Lys/d	Mcal ME/d	g SID Lys/d	Weight gain due to 1 kg supplemental feeding, kg	Changes in piglet birth weight, g
Shelton et al. 2009	6.8	11.9	9.8	17.1	6.6	86
Soto et al. 2011	7.0	9.8	12.9	18.2	NR	126
Gonçalves et al. 2015	5.9	10.7	8.9	10.7	5.6	24
Gonçalves et al. 2015	5.9	20.0	8.9	20.0	9.1	28
Greiner et al. 2016	5.9	9.0	8.8	14.0	NR	-120
Ampaire 2017	7.2	12.3	8.6	14.5	24	-10
Mallmann et al., 2018	5.9	11.7	7.2	14.3	6.5	6
Mallmann et al., 2019	5.9	11.5	7.6	14.7	6.4	26
Mallmann et al., 2019	5.9	11.5	9.2	17.9	8.8	-1
Mallmann et al., 2019	5.9	11.5	10.9	21.1	7.9	-11
<b>Average</b>	<b>6.2</b>	<b>12.0</b>	<b>9.3 (49%)</b>	<b>16.3 (36%)</b>	<b>7.7</b>	<b>12.0</b>



# Bump Feeding is not Effective for All Sows.



Late Gestation Period

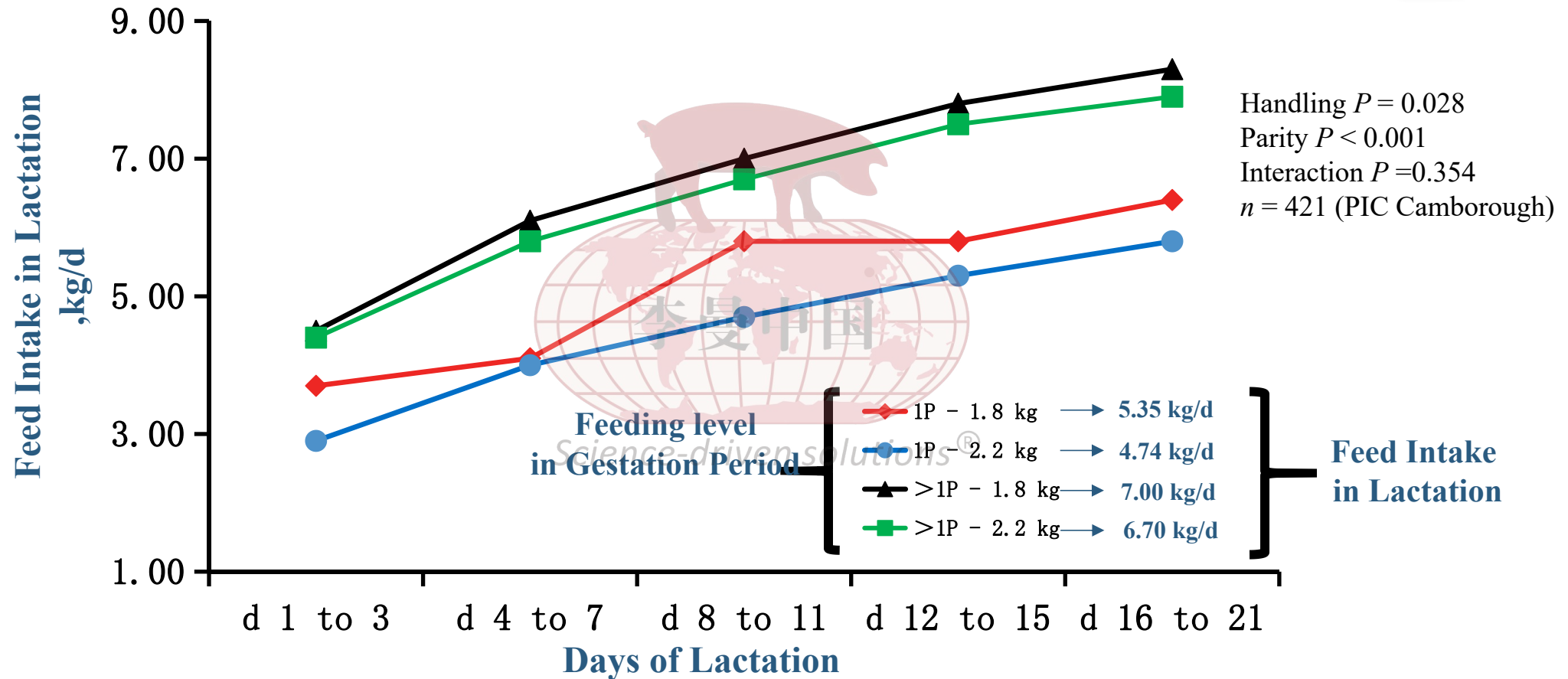
**Bump feeding for multiparous sows increases the weight of sows rather than piglets.**

Literature	Control Group		Bump Feeding Group		Changes due to Bump Feeding	
	Mcal ME/d	g SID Lys/d	Mcal ME/d	g SID Lys/d	Weight gain due to 1 kg supplemental feeding, kg	Changes in piglet birth weight, g
Shelton et al. 2009	7.9	11.9	11.4	19.9	4.9	-109
Soto et al. 2011	7.9	11.2	13.9	19.5	NR	-69
Gonçalves et al. 2015	5.9	10.7	8.9	10.7	9.0	47
Gonçalves et al. 2015	5.9	20.0	8.9	20.0	10.8	19
Greiner et al. 2016	5.9	9.0	8.8	14.0	7.1	-40
Mallmann et al., 2018	5.9	11.7	7.2	14.3	9.0	-4
<b>Average</b>	<b>6.6</b>	<b>12.4</b>	<b>9.9 (50%)</b>	<b>16.4 (32%)</b>	<b>8.9</b>	<b>-1.3</b>



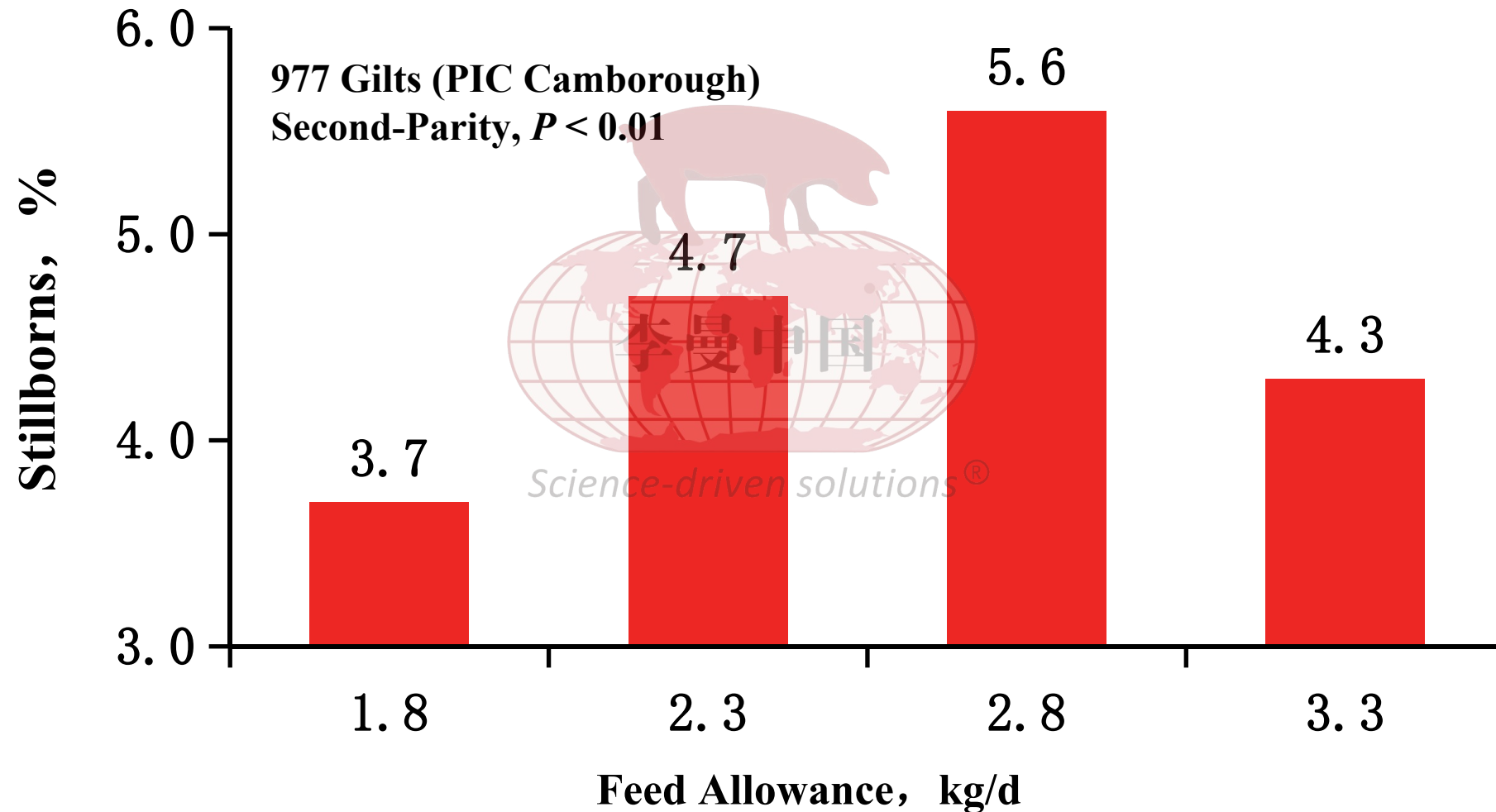
# Increased Feeding after 90 Days of Gestation Leads to Decreased Feed Intake During Lactation.

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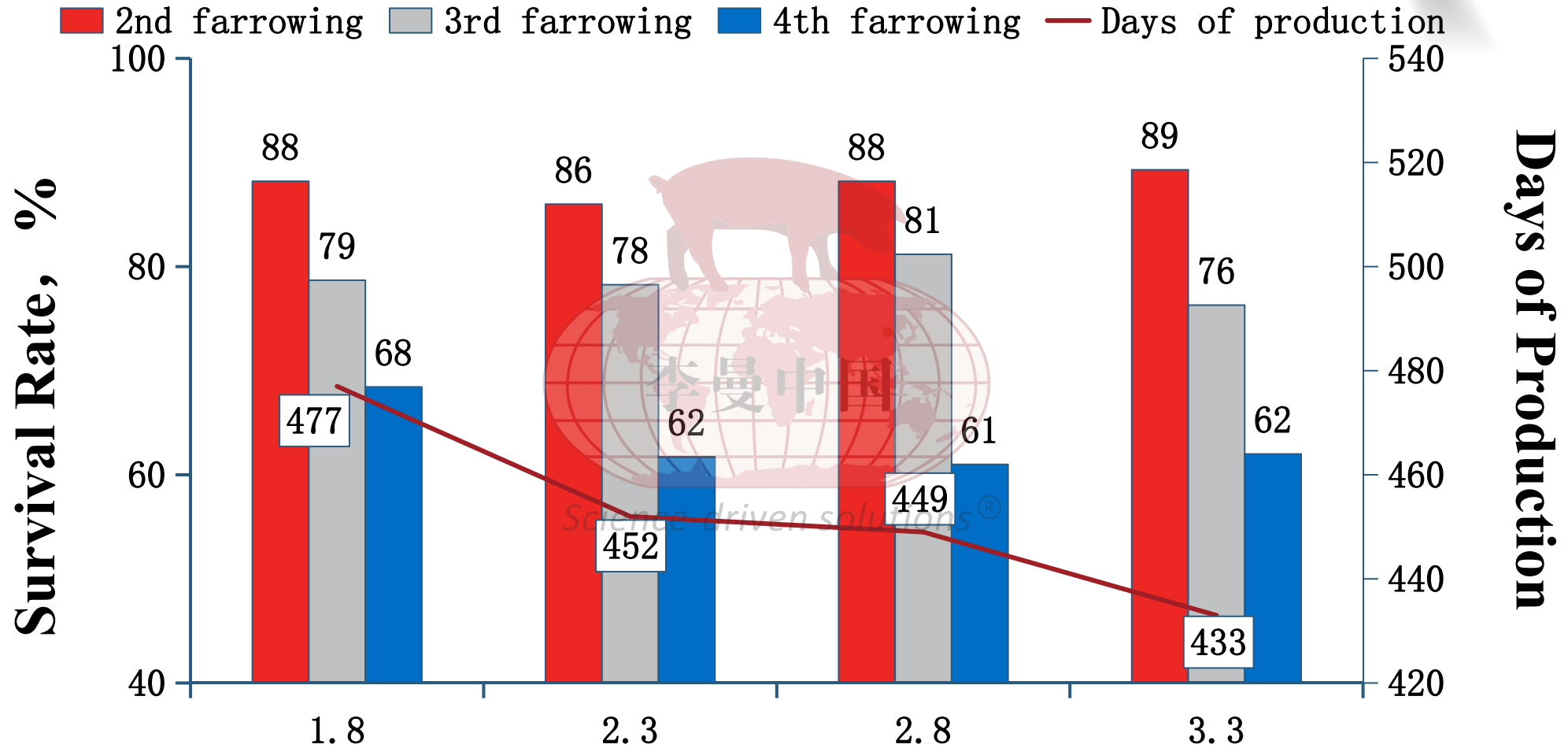
# Increased Feeding after 90 Days of Gestation Leads to Increased Stillbirth Rate.

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# Long-term effects of bump feeding for first-parity sows in late gestation

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**Bump feeding is only performed in gestation period of first parity, while the basic feeding level is used according to body condition for the rest of parities.**



# Excellent genetic potential + reasonable feeding procedure = excellent feed efficiency!



## Total Annual Feed Consumption per Sow

**PIC Camborough: 1033kg/head/year**

**Other Breeding Pigs: >1100 kg/head/year**

## Feed consumption per piglet weaned

Line	PSY: Number of piglets weaned per sow per year			
	26	28	30	32
PIC Camborough	38	36	33	31
Other Breeding Pigs	> 42	> 39	> 37	> 34



## Ratio of feed in gestation and lactation

### PIC Camborough

- Feed in gestation  $\approx 65\%$
- Feed in lactation  $\approx 35\%$

### Other Breeding Pigs

- Feed in gestation  $> 70\%$
- Feed in lactation  $< 30\%$

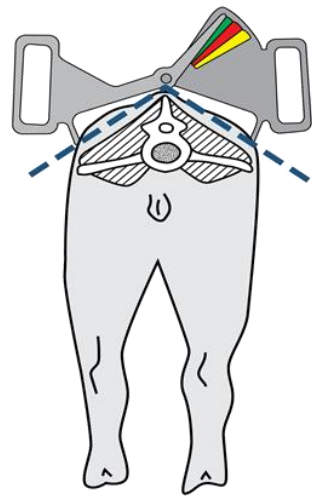
**PIC**

All comparisons are based on recommendations of feeding manual from various pig breeding companies. Assuming that the metabolizable energy level of feed in gestation is 3000Kcal/kg and that of feed in lactation is 3300Kcal/kg.

# Body Condition Management is Closely Related to Feeding Procedures.

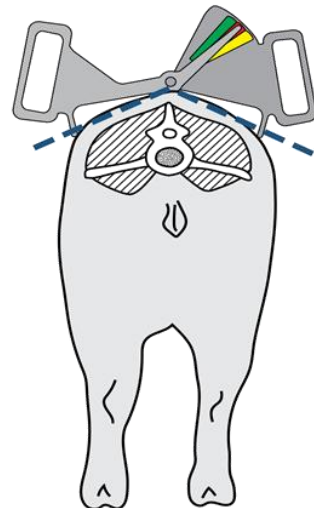
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## Body Condition Management Goals



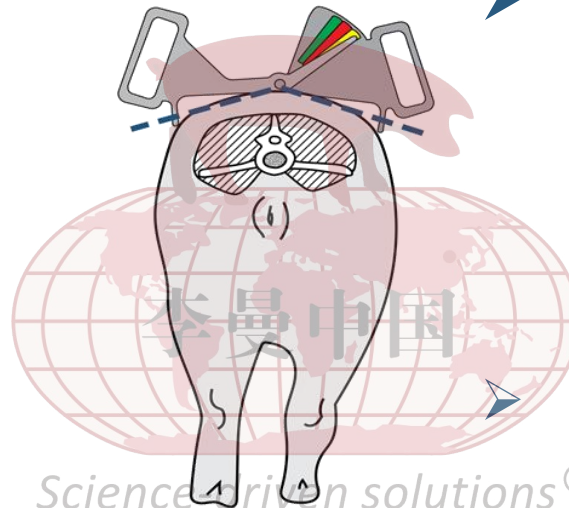
THIN

None at farrowing



IDEAL

As many as possible



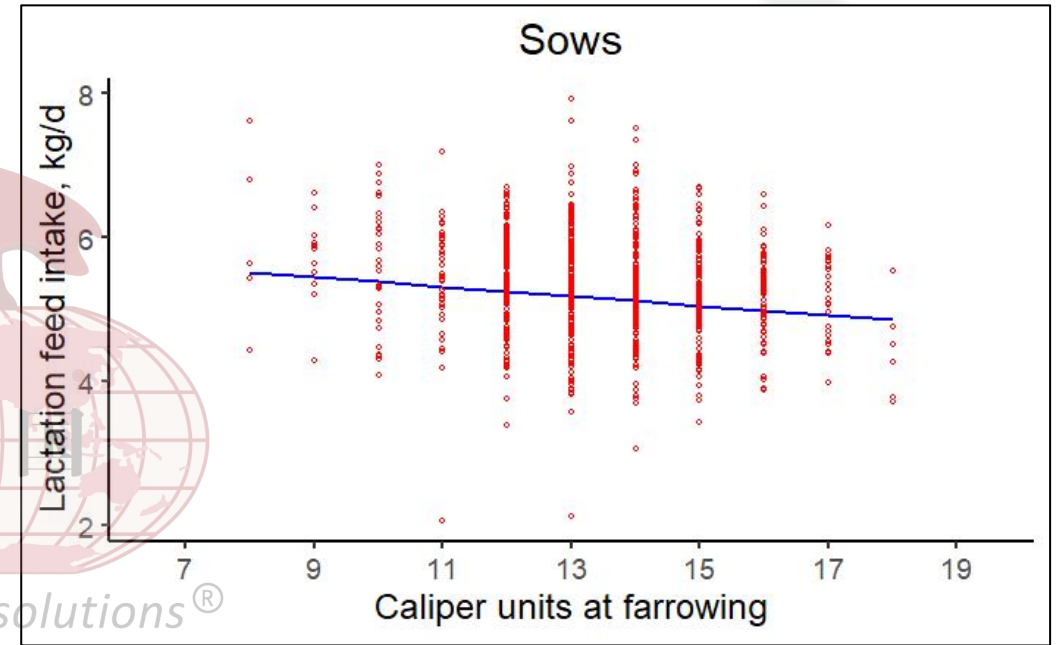
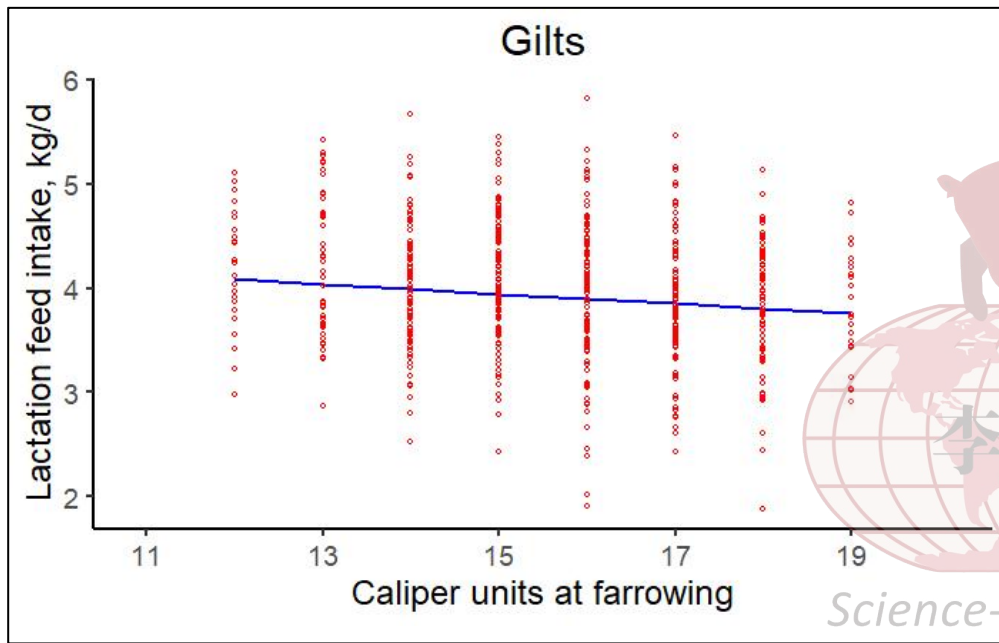
FAT

None at weaning

➤ Adjust the feeding level in time based on body condition assessment to avoid great changes in body condition in gestation period.

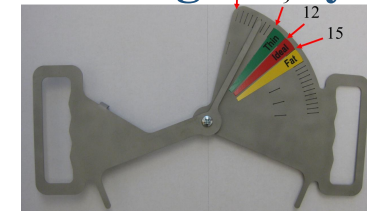
➤ Adjusting body condition is a long-term process, and the feeding program must be carried out persistently, steadily and orderly.

# Fat sows eat less in lactation.



**Effect of each additional point increase in caliper units at delivery on average daily intake during lactation:**

- **A Decrease of 47g/d in Gilts**
- **A Decrease of 66g/d in Sows**

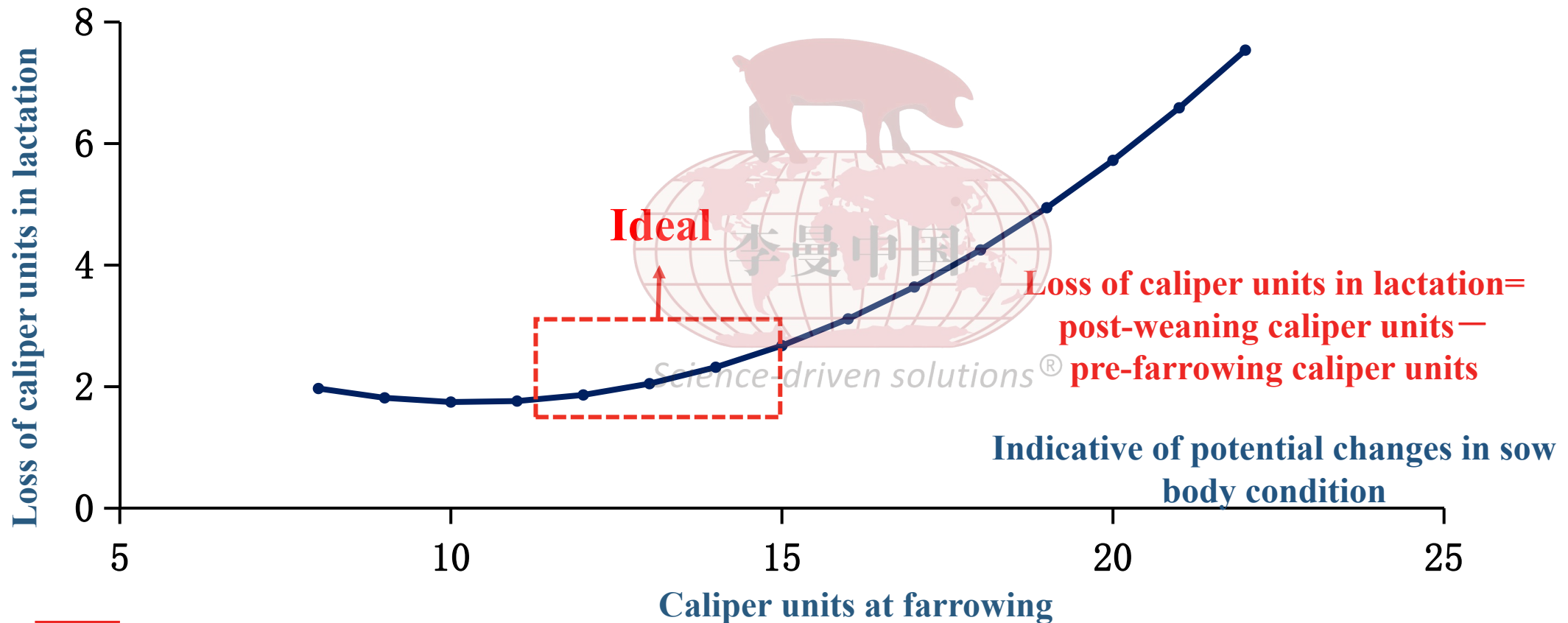




# Fat sows lose more body condition in lactation.



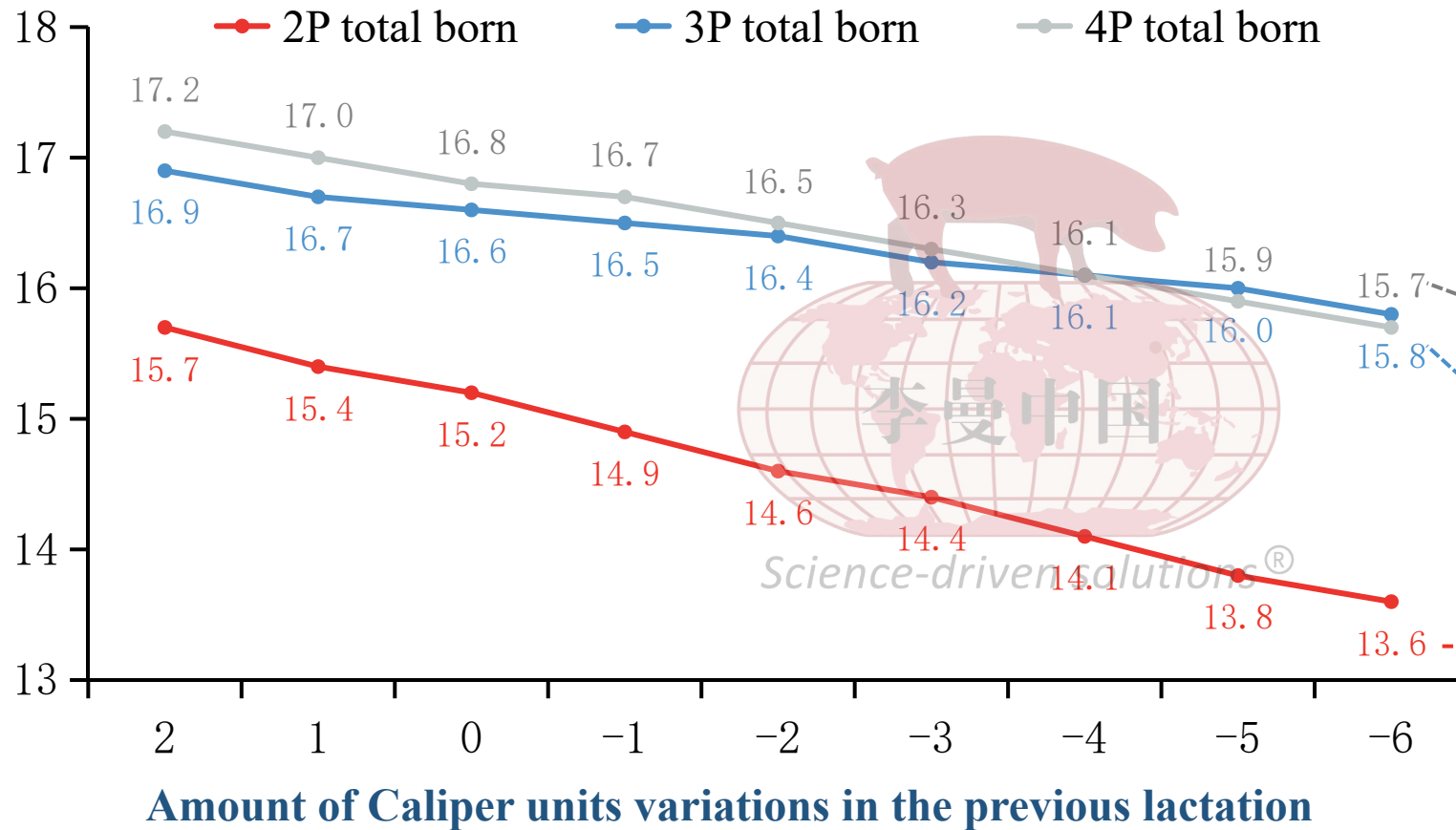
## Data of 1-6 Parities of 4500 Sows



# The More Losses in Lactation = The Worse Performances for the Next Parity

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Total born for the next parity



For each 1 point decreased in the caliper units in the previous lactation, the total born for the next parity decreases:

- The 4<sup>th</sup> parity: **0.19 head/parity**
- The 3<sup>rd</sup> parity: **0.12 head/parity**
- The 2<sup>nd</sup> parity: **0.27 head/parity**



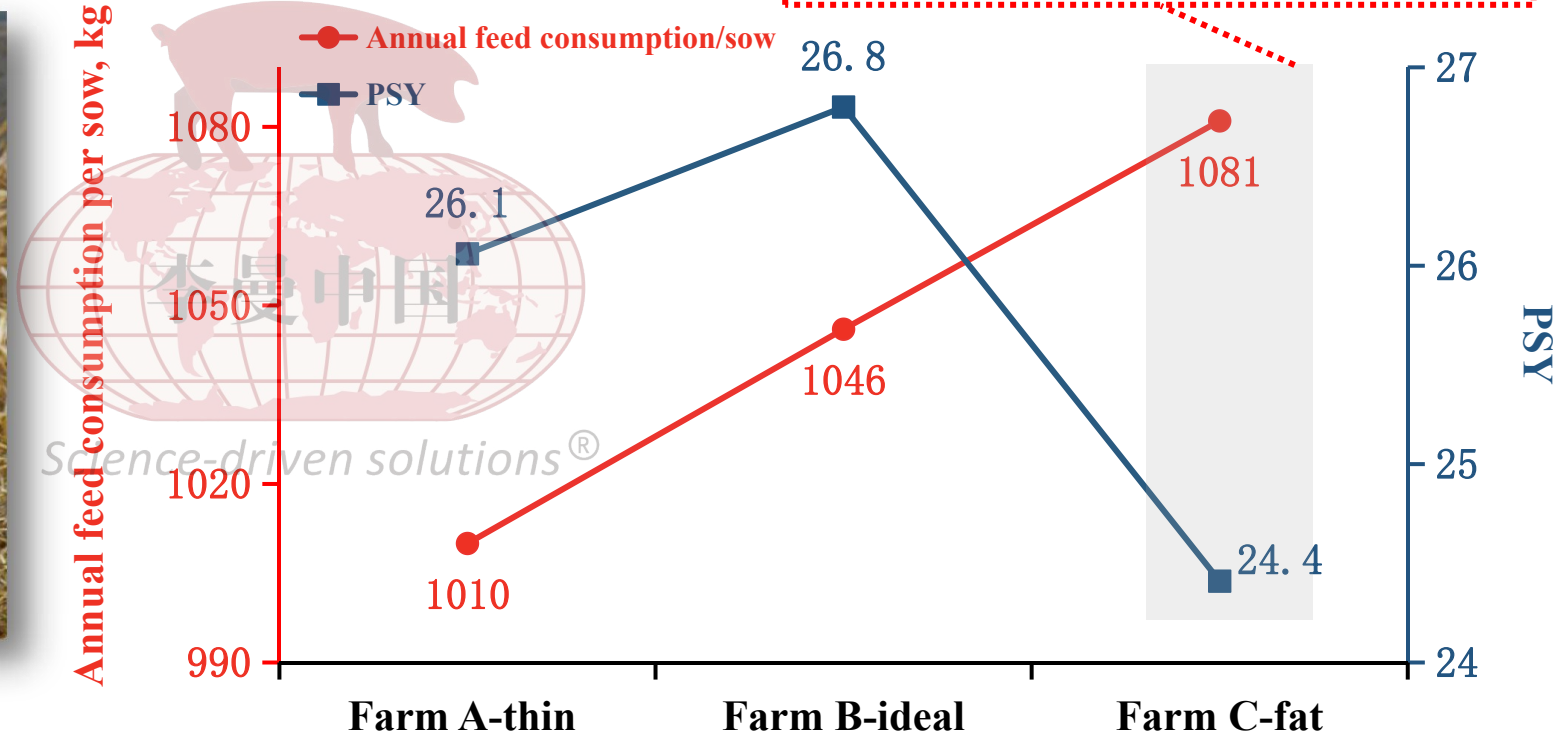
# Are fat sows necessarily happy? ?

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Fat sows will face double problems.



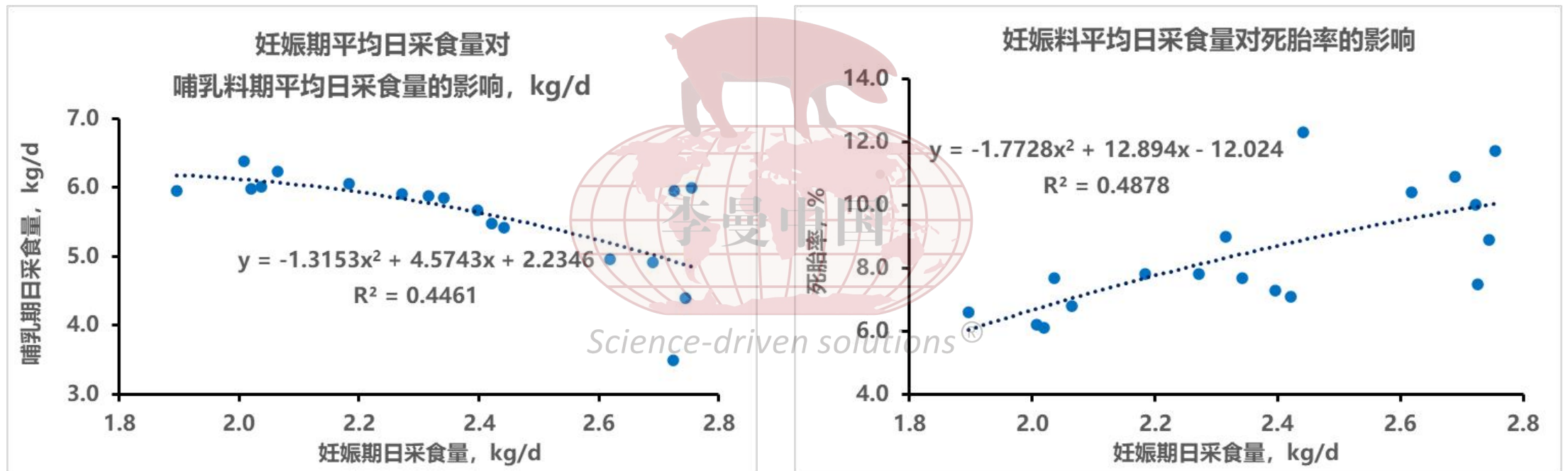
- Worse production performances
- Higher feed costs



# Effects of excessive feeding levels during gestation – Feedback on production data



Tracking of 19-month data from a 6000-sow farm, provided by a PIC customer in China.



# Key Points for On-site Implementation of Feeding and Body Condition Management.



1. Ensure the production frontline understands the feeding plan.



2. Unify the assessment standard of body condition to ensure its accuracy and consistency.



# Key Points for On-site Implementation of Feeding and Body Condition Management.

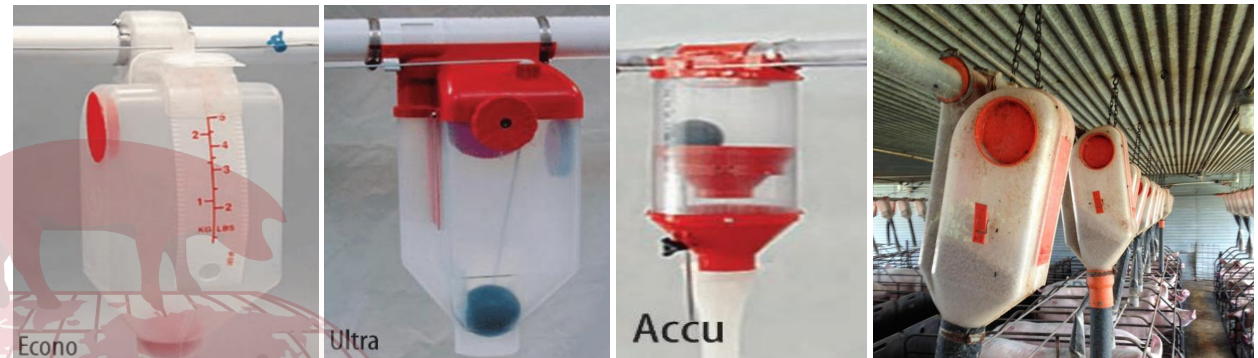


## 3. Perform calibration work of feeder well

Brand

Angle between feeder and feed line

Variations of bulk density in diet



## 4. Implementation issues to be avoided

Inconsistency between body condition assessment results and implemented feeding standards

Inconsistency between feeding standards implemented and those established

Failure to make assessment and adjust feeding standards according to assessing time of body condition

Need for dedicated staff with clear responsibilities

# Economic Benefits of Scientific Feeding of Gestating Sows



Before applying BCM and PIC<sup>®</sup> feeding procedure      After applying BCM and PIC<sup>®</sup> feeding procedure

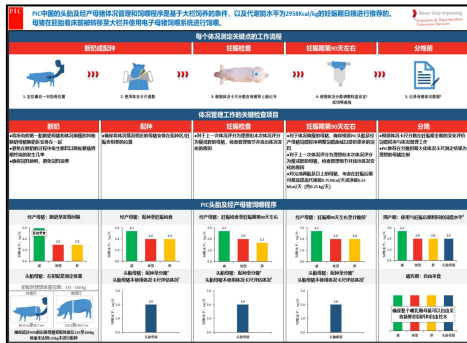
Item	January-June 2021	January-June 2022
Gestational feed intake, kg/head/year	733	606
Reproductive performances		
Mean of total litter size	14.0	14.4 <sup>®</sup>
Mean of litter stillborns, %	9.1	7.3
Mean of litter weaners	10.7	11.2

- Assuming gestational feed is 3.5RMB/kg
- The economic benefits of reduced gestational feed consumption:  
**445RMB/sow/year**  
**6000 sows inventory**  
**≈ 267 million RMB**

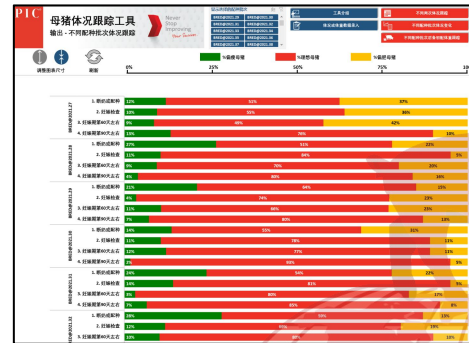


# Execution of Body Condition Management and Feeding Procedures - Tools

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Tools for sows feeding execution



Tools for sow body condition tracking



Tools for feeder calibration

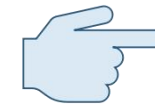
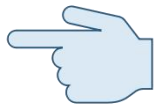


Frequently asked questions

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Scan the QR code on the left  
Get the above 3 tools for execution of sow feeding procedures



Scan the QR code on the right  
Get FAQ summary document





# Summary



- **Stop bump feeding for first-parity or multiparous Sows.**
- **During gestation, the amount of feeding should be adjusted according to the body condition to improve the body condition of the sow herd.**
- **Body condition management of sows is a gradual process, which requires long-term and continuous on-site implementation .**
- **By performing body condition management on sow farms consistently and correctly, genetic potential of PIC<sup>®</sup> sows can be better realized while feed costs being reduced, thus helping sow farms increase efficiency and reduce costs!**



# Thanks!

李曼中国

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