

# Korea's GSP pig breeding programs

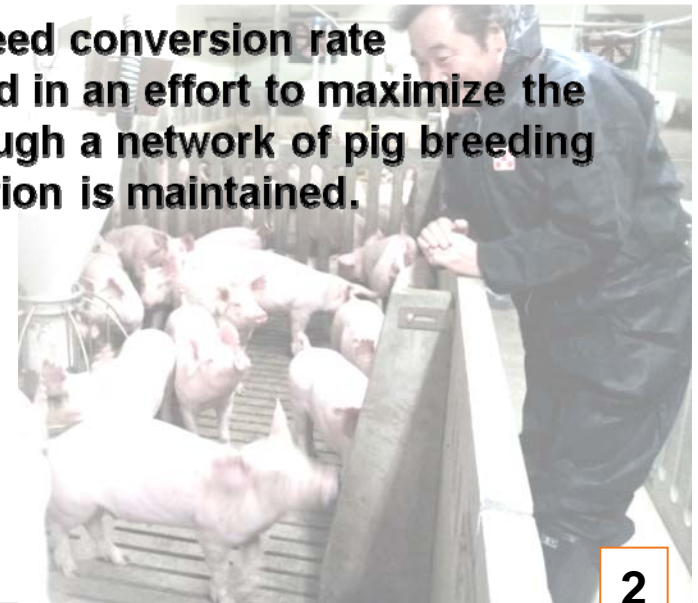


# 1. Korea's GSP pig breeding programs

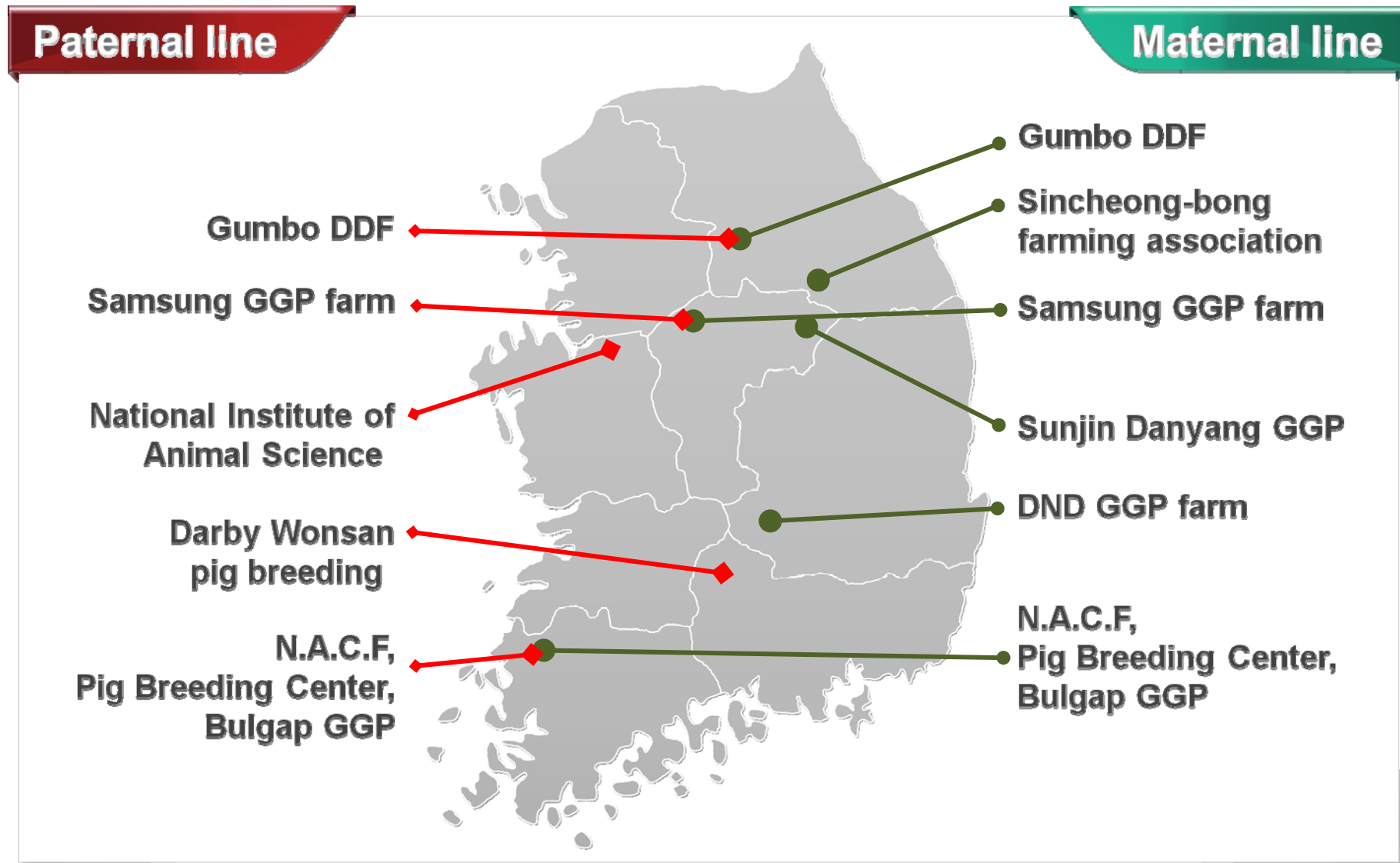
**Korea's GSP pig breeding programs intend to develop excellent breeding pigs with five pig breeding farms dealing with paternal pig genes and six breeding farms that study maternal effect gene joining forces.**

**Participating pig breeding farms were already certified as "Excellent pig breeding farms for outstanding hygiene and sanitation level" or are in the middle of obtaining the same certificate and free of wasting diseases such as PRRS, PED and PMWS.**

**Main traits subject to improvement include litter size, feed conversion rate and improvement of meatiness (back-fat thickness), and in an effort to maximize the effect of improvement, excellent genes are shared through a network of pig breeding farms while selection system through thorough inspection is maintained.**



## 2. Korea's GSP pig breeding farms



### 3. Structure of GSP paternal line

#### I Pig breeding herd subject to improvement by GSP pig breeding farm on paternal line

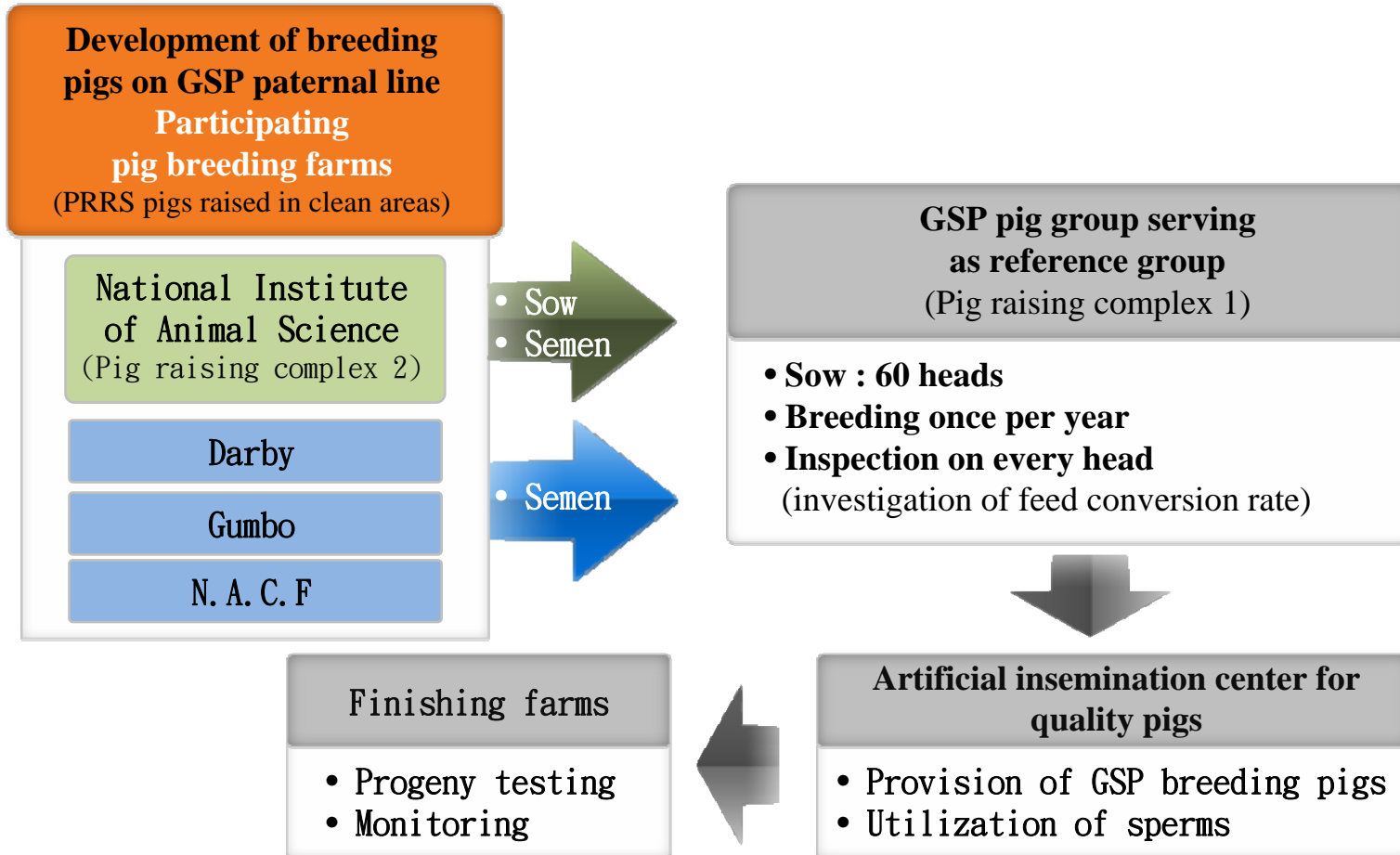
Pig breeding farms name	Number of pigs
National Institute of Animal Science	150
Darby breeding(Samsung, Wonsan)	250
N. A. C. F, Pig Breeding Center, Bulgap GGP	80
Gumbo DDF	80
<b>Total</b>	<b>560</b>

#### I Creation of reference herd, Duroc for the purpose of effectiveness of GSP projects

- Improvement and succession of generation are maintained through utilization of semen from GSP participating breeding farms which can be injected into a herd of sows selected by National Institute of Animal Science

### 3. Structure of GSP paternal line

#### I Improvement structure of GSP paternal line



- ◉ **Focuses on genetic connection between participating pig breeding farms**
- ◉ **Monitors improvement of participating pig breeding farms**
- ◉ **Registers pedigree under the joint title**

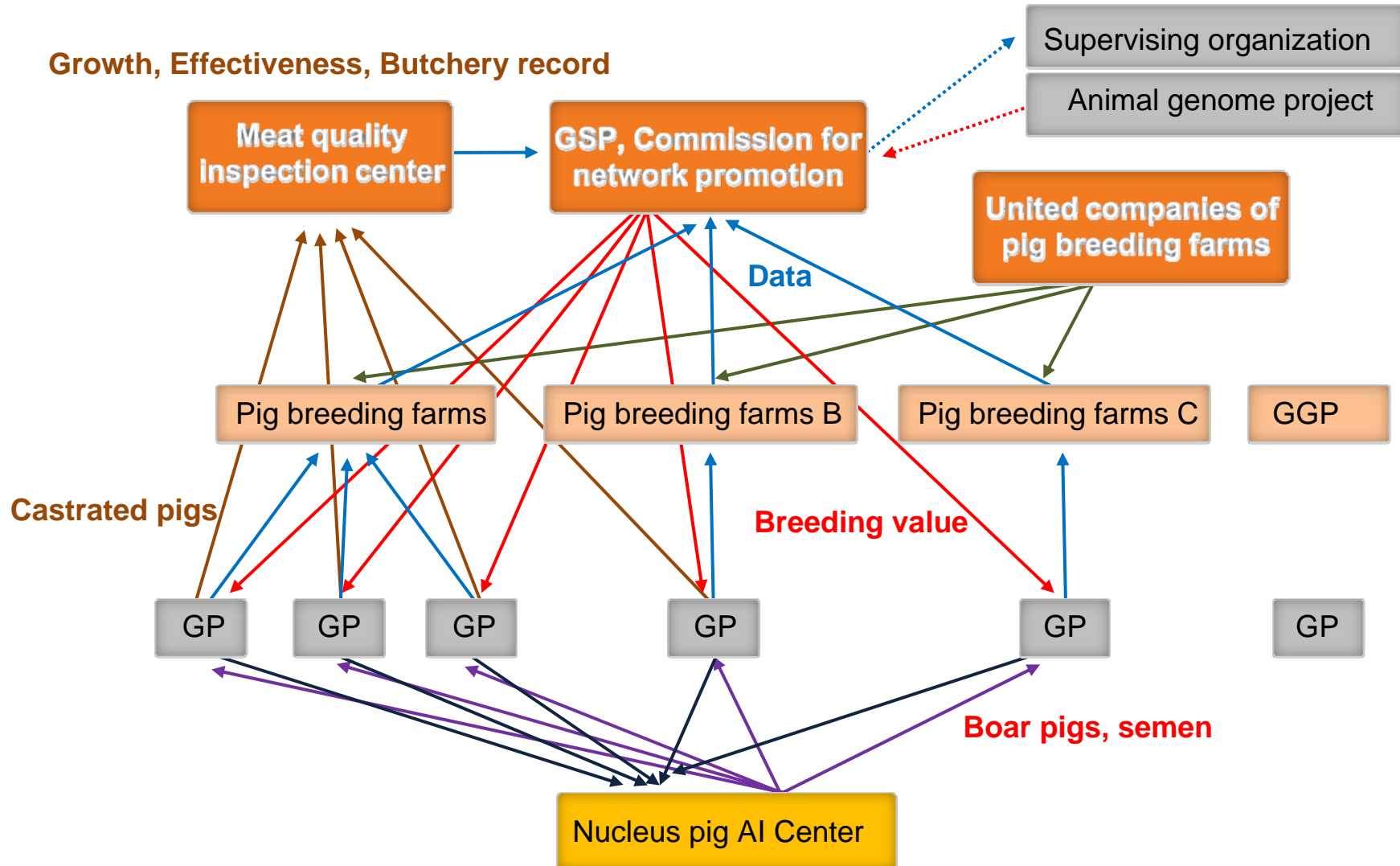
## 4. Improvement of GSP maternal line

### I Pig breeding herds subject to improvement by GSP pig breeding farm on maternal line

Pig breeding farms	GGP pig herd on maternal line		GP pig herd
	YY	LL	
<b>Geumbo DDF</b>	330	30	1,500
<b>N.A.C.F, Pig Breeding Center, Bulgap GGP</b>	297	103	3,500
<b>Samsung GGP farm</b>	437	-	2,500
<b>Sunjin Danyang GGP</b>	298	255	4,500
<b>Sincheong-bong farming association</b>	166	125	4,000
<b>DND GGP farm</b>	451	-	2,500
<b>Total</b>	<b>1,979</b>	<b>513</b>	<b>18,500</b>

# 4. Improvement of GSP maternal line

## Improvement structure of GSP maternal line



## 5. Articles subject to improvement and level of capability

### Growth traits, year of 2013

Breed	Male/ Female	Number of pigs	Age at 90kg body weight (day)				Back-fat thickness (mm)				Depth of sirloin (mm)				
			10%	30%	50%	Average	10%	30%	50%	Average	10%	30%	50%	Average	
Paternal line (DD)	Female	2,091	130	136	141	141.0	11.8	13.3	14.5	14.7	51	47	44	45.7	
	Male	2,721	124	130	135	135.7	10.0	11.1	12.0	12.3	51	47	44	45.5	
Maternal line	YY	Female	12,643	136	145	151	150.5	11.7	13.2	14.4	14.7	53	50	47	47.2
		Male	1,886	130	138	145	144.2	10.2	11.4	12.4	12.6	53	49	47	46.6
	LL	Female	2,599	136	144	151	150.7	10.7	12.1	13.2	13.6	54	50	47	47.3
		Male	704	130	138	144	144.0	9.7	10.7	11.6	12.0	52	49	47	46.5

### Reproduction traits, year of 2013

Breed	Number of registered litter	Total litter size				Pigs bon alive per litter			
		10%	30%	50%	Average	10%	30%	50%	Average
LL	1,496	15	13	12	11.4	13	12	11	10.4
YY	13,754	16	13	12	12.0	14	12	11	11.0



## 5. Articles subject to improvement and level of capability

### Changes in growth of pigs on paternal line for each year

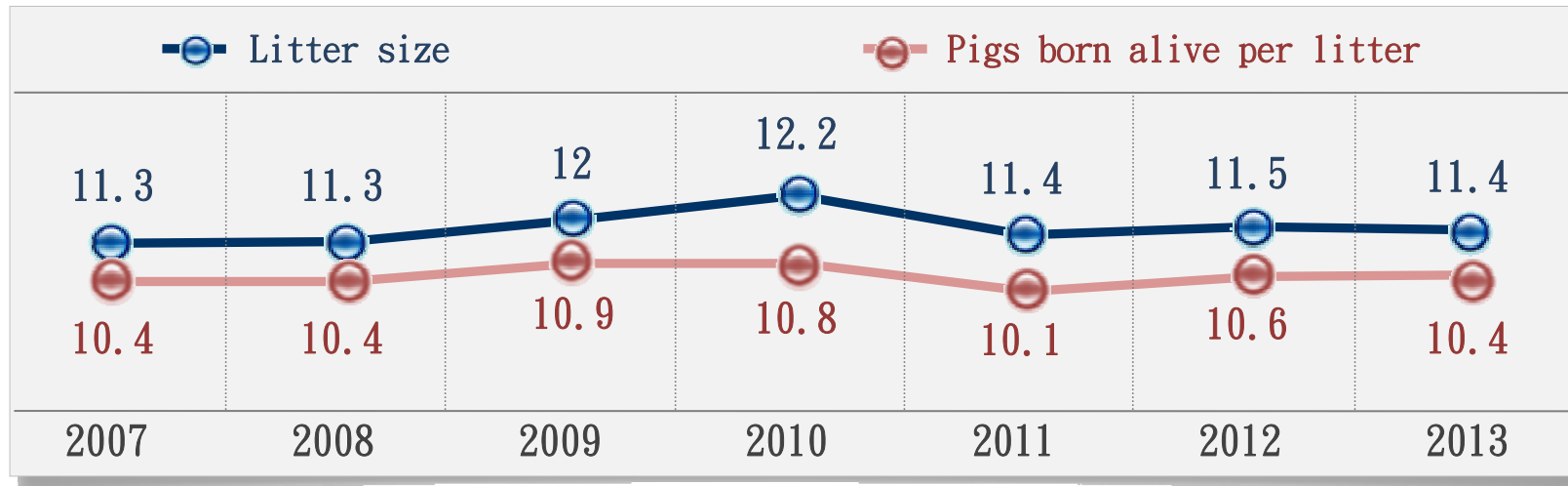
Years	2005	2006	2007	2008	2009	2010	2011	2012	2013
The number of pigs	2,236	2,464	2,869	3,638	4,975	57,45	4,020	5,721	4,812
Age at 90kg body weight (day)	145.53	143.36	142.86	144.79	141.32	139.33	140.24	139.17	138.05
Back-fat thickness (mm)	11.60	11.62	12.57	12.51	13.19	13.48	12.47	12.82	13.34
Depth of sirloin (mm)	46.78	47.21	47.13	45.46	46.29	47.21	46.12	45.72	45.60

### Changes in breeding traits of pigs on maternal line for each year

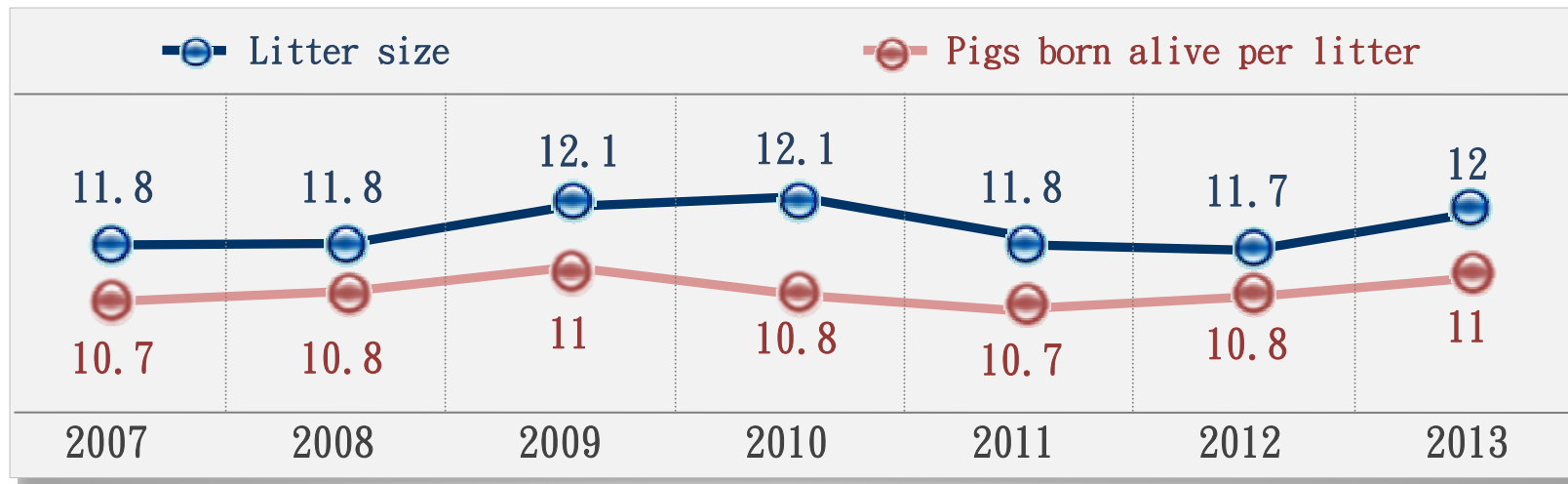
Breed		2007	2008	2009	2010	2011	2012	2013
LL	Litter size	11.3	11.3	12.0	12.2	11.4	11.5	11.4
	Pigs born alive per litter	10.4	10.4	10.9	10.8	10.1	10.6	10.4
YY	Litter size	11.8	11.8	12.1	12.1	11.8	11.7	12.0
	Pigs born alive per litter	10.7	10.8	11.0	10.8	10.7	10.8	11.0

## 5. Articles subject to improvement and level of capability

### Changes in reproduction traits of Landrace for each year



### Changes in reproduction traits of Yorkshire for each year



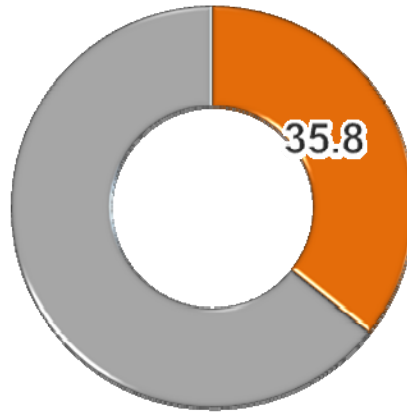
## 6. Domestic market share of GSP pig breeding farms

### Paternal line

Sales volume



Share(%)

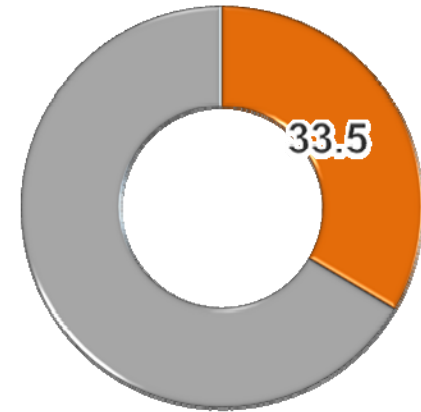


### Maternal line

Sales volume



Share(%)



Accounts for more than 1/3 in sales of Korea's purebred pigs

## 7. Automatic feeding system and rating system

### | Automatic feeding system

- Uses automatic feeding system in the improved system
  - Feedback on improvement of individual feed conversion



### | Feedback on improvement by using the grading system

- Every butchered pig is subject to evaluation for enhanced quality.
- Grade system in accordance with appearance and meat quality.
  - Types of grade : 1+, 1, 2, and other rates (4-grade)
  - Items that decide the grade : appearance(including fat content)/ meat quality(deposit of fat, color of meat, meat texture, color and quality of fat) / carcass weight and back-fat



## 8. Hygiene and sanitation levels of GSP pig breeding farms

**Satisfy certification criteria for Korea's excellent pig breeding farm + meet quarantine requirements for export**

**Certified as the pig breeding farm for excellent hygiene and sanitation by quarantine center under Ministry of Agriculture and Forestry**

- Time required for certificate : 1 year
- Post management : annual re-evaluation
- Free of wasting diseases: management of 13 types of diseases including PRRS
- Grade : First-class grade, excellent grade
  - First-class grade: farms free of more than 13 diseases out of the specified diseases
  - Excellent grade: farms free of more than 10 diseases out of the specified diseases

**Meet import quarantine requirements in advance for major exporting countries**

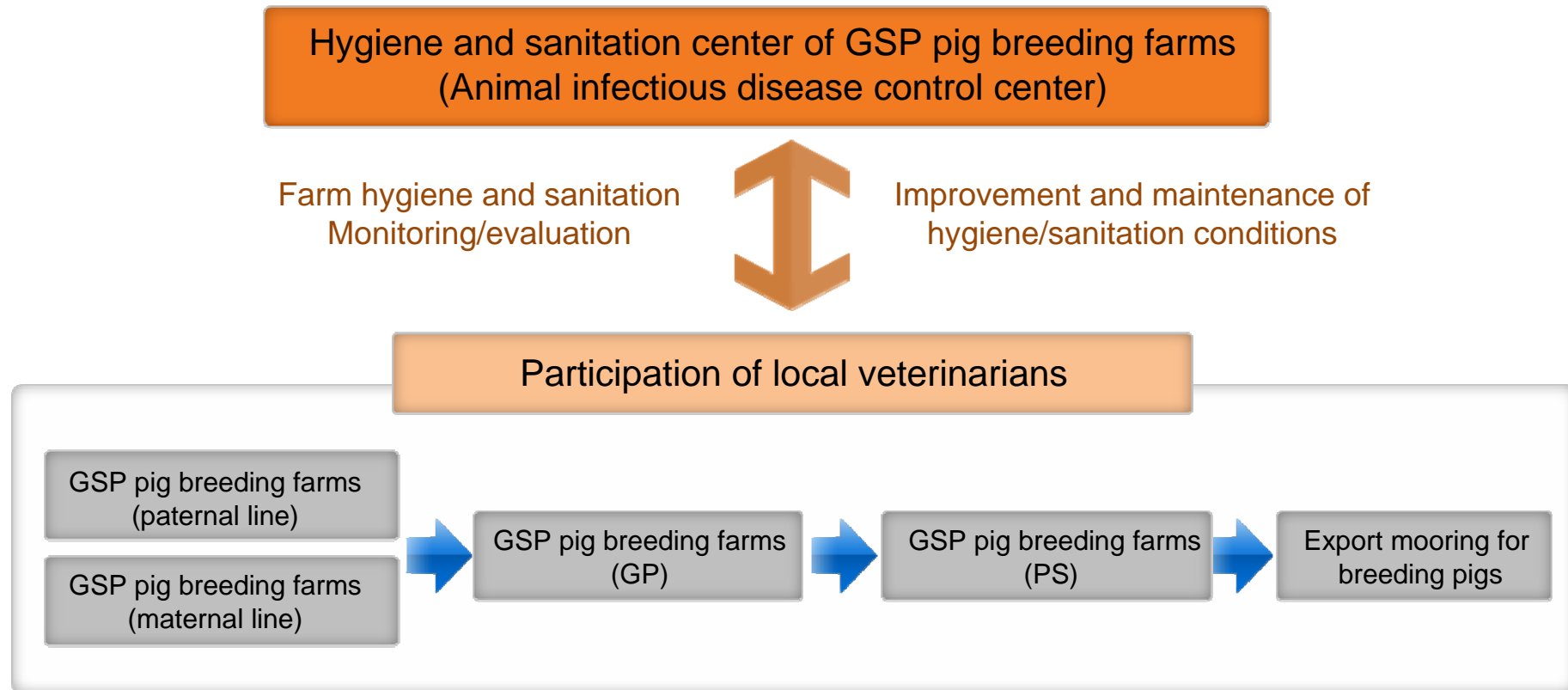
## 8. Hygiene and sanitation levels of GSP pig breeding farms

### I Disease control and prevention in GSP pig breeding farms

Notifiable diseases	Diseases subject to preventive measures in GSP pig breeding farms	Diseases subject to inspection in pig breeding farms that focus on export
Foot and mouth disease	○	○
Classical swine fever	○	○
Aujeszky's disease	○	○
PRRS	○	○
Transmissible gastroenteritis	-	○
Porcine epidemic diarrhea	○	○
Porcine parvovirus infection	-	○
Tuberculosis	-	○
Swine enzootic pneumonia	○	-
Actinobacillosis	○	-
Porcine circovirus disease	○	-
Salmonella infection	○	-
Mange	○	-
Brucellosis	○	○
Atrophic rhinitis	○	○
Proliferative ileitis	○	-
Swine erysipelas	-	○
Leptospirosis	-	○
Trichinellosis	-	○

## 8. Hygiene and sanitation levels of GSP pig breeding farms

### I Hygiene and sanitation system of GSP pig breeding farms



## 9. Hygiene and sanitation system of GSP pig breeding farms

**Confirms where the farm satisfies certification standard for excellent pig breeding farms through regular monitoring**

**GSP breeding farms that meet the requirements will maintain their GSP qualifications, but if they fail to satisfy the conditions, they will be eliminated from GSP pig breeding farms.**

**Conducts regular disease monitoring to check on quarantine conditions of each pig breeding farm and carries out inspection on the farms(biosecurity- geographical conditions, farms' quarantine conditions) to confirm the actual conditions.**



## 10. Superiority of GSP breeding pigs

**1** Top reproductive performance

**2** Fast rate of gain

**3** Excellent marbling

**4** A large number of heads

**5** Removal of spot genes

**6** Ideal hygienic conditions, regular monitoring to detect diseases

**7** Stable supply system for breeding pigs

**8** Provision of customized sperm

**9** Sperm quality control

**10** Improvement centered on consumers



# Thank you

