Informative for making AI station function from CIMCO on Japanese Breeding Company

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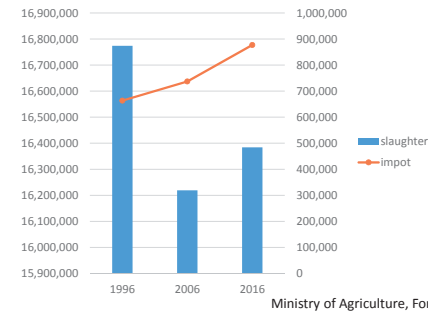
[1]CIMCO corporation,

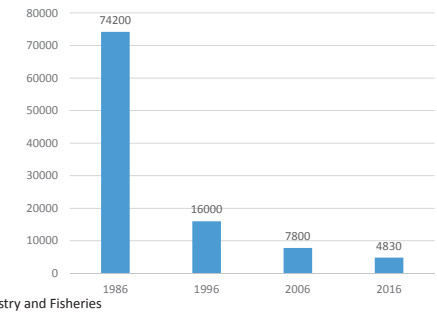[2]NARO Institute of Division of Animal Breeding and Reproduction, Institute of Livestock and Grassland Science

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NIPPON (JAPAN)

No. of Slaughtered pigs and imported pork quantity in JAPAN

Pig Producers In Japan

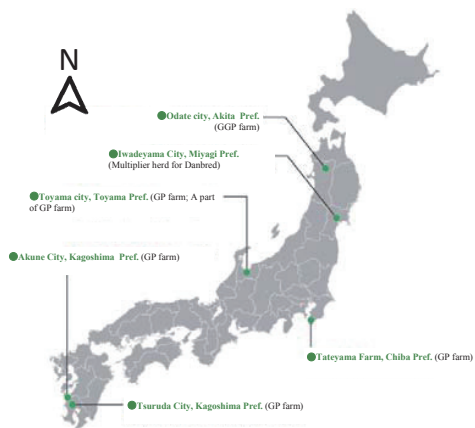Ministry of Agriculture, Forestry and Fisheries

- ✓ 126 mil people
- ✓ Import quantity is approx. 20% of world exports

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What's CIMCO?

- ➤ Ultimate parent company is ITOCHU Corporation.
- ➤ We are Breeding company producing own genes.
- ➤ Exclusive distributor of Danbred International A/S in Japan.
- ➤ Each site has its own AI station.
- ➤ An approximately sum of 400 boars are collected semen.
- ➤ Stock are produced from approximately 4,000 sows.
- ➤ Our herds were operated by Specific Pathogen Free (SPF) system.

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Dam Line

Landrace ⟷ Large White

PS gilts (LW or WL)

Sales are only PS gilt.

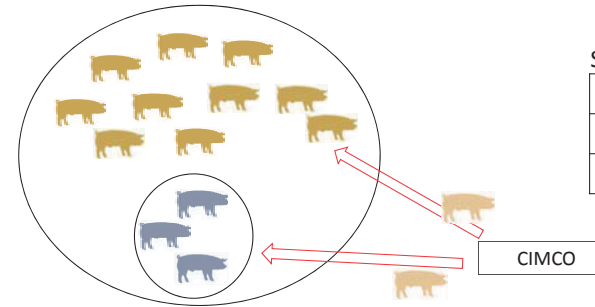CIMCO 株式会社 シムコ

Terminal Sire Line

Duroc

Berkshire

Sales of

| Live purebred boars Semens for AI | Live purebred boars and gilts Semens for AI |

➢ No. of sow in Japan : 839,000 heads
➢ Japan SPF Swine Association grant permission to sell SPF pork.

Approved SPF Sow：80,000頭

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| Sales Performance on 2015		
PS gilt	20,068	heads
Boar	544	heads
Semen	144,871	doses

Actually
No same characteristics of AI boars.

✓Distortion of the penis.

✓The opening of the urethra is in abnormal place.

✓The membrane does not make stretch the penis.

✓The trait of being cautious, i.e.
- no mounting in the presence of humans (recommendation using a Camera).
- Not leave from pen.

✓Time to mount depends on boars.

✓Return soon from the collection place.

✓Different pressure preferences by hands.

✓Not clear distinguishment among white-colored and thick fluid at the ejaculate.

✓There are considerably a difference on semen volume and quality.

Transport Test

➢There are some stress for semen qualities.
- Heat stress
- Transport stress
- Stress by human error, etc.

➢Since we sell semen from AI stations, it is necessary to knowledge for transport stress.
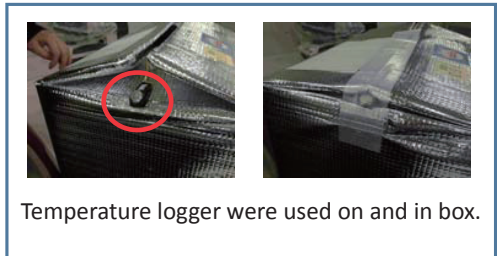
Temperature logger were used on and in box.

A northern AI station to a southern AI station on three different occasions.

Transport Test

Dept. time at NA		Arr. time at SA		breed	ID	immature	abnor.	mob. collect	1 d. after	2 d. after	3 d. after	4 d. after	5 d. after	6 d. after
									23-Jul	24-Jul	25-Jul	26-Jul	27-Jul	28-Jul	29-Jul
23-Jul	13:30	25-Jul	14:05	L	94907	4	9	NA	90	85	85	85	85		
								SA		85	75	70	50	20	
				W	78907	3	7	NA	90	85	80	80	80		
								SA			90	85	80	75	75
									6-Aug	7-Aug	8-Aug	9-Aug	10-Aug	11-Aug	12-Aug
6-Aug	13:40	8-Aug	14:00	L	76404	4	9	NA	90	85	85	85	80	80	80
								SA			85	80	60	30	20
				W	49008	3	6	NA	90	85	80	80	80	70	70
								SA			85	80	50	30	10
									20-Aug	21-Aug	22-Aug	23-Aug	24-Aug	25-Aug	26-Aug
20-Aug	13:35	22-Aug	14:00	L	99807	4	8	NA	90		85	85	80	85	80
								SA			90	80	70	65	60
				W	56906	3	4	NA	90	85	85	85	85	80	70
								SA			90	85	80	65	50

Reference temperature

	North area		Osaka (on the route)		South area	
	Max. (℃)	Min. (℃)	Max. (℃)	Min. (℃)	Max. (℃)	Min. (℃)
23-Jul	27.1	15.6	32.8	23.8	34	23
24-Jul	30.5	17.4	31.4	23.7	33.8	22.8
25-Jul	31.4	16.2	30.6	25.4	33.4	23.4
6-Aug	33	23	36.9	27.7	32.8	23.1
7-Aug	36.9	21.8	36.8	26.7	33	24.2
8-Aug	36.2	21.1	36.3	27.3	33.7	22.8
20-Aug	34.4	21.5	37.6	27.3	35.7	23.8
21-Aug	32.9	22.7	36.9	27.8	36.4	24.5
22-Aug	31.7	22.7	36.3	28.6	35.5	23.7

Japan Meteorological Agency

We recommend to customers using up to 3 days including arrival date.

NA: North area, SA: South area
Directly: 1,300 km

Recom.

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First Step For Delicious Pork

Influence of Heat Stress with Semen Characteristics

This work was supported by a grant from the Ministry of Agriculture, Forestry and Fisheries of Japan (Development of Breeding Technology for Animal Life Production).

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Estimates of genetic parameters on Semen Traits

	σ_p	Vol	Con	Normal	Mo	Ntotal	Nfunc
Vol	43.00	0.17±0.03	−0.56±0.06	0.00±0.11	0.13±0.09		
Con	1.87		0.22±0.02	−0.29±0.08	−0.18±0.07		
Normal	6.32			0.23±0.04	0.84±0.05		
Mo	4.16				0.17±0.03		
Ntotal	203.78					0.20±0.04	0.95±0.01
Nfunc	169.78						0.16±0.04

diagonal : heritability, above : genetic correlations,

Data were used 28,670 of 686 boars records treated from 2000 to 2015.
Traits: Semen volume (Vol, ml), Sperm concentration (Con, 100 million/ml), Normality (Normal, %), Mobility (Mo, %), Total No. of sperm (Ntotal, hundred million)=Vol × Con, No. of functional sperm (Nfunc, 100 million)=Ntotal × Normal × Mo.
Effect: Year, Month, Farm, Collection interval, No. of week after an initial collection, Breeding Values, Permanent environmental effect, residual.
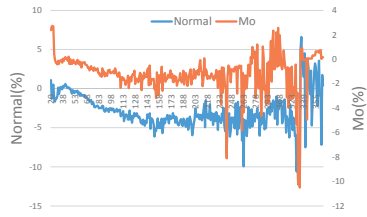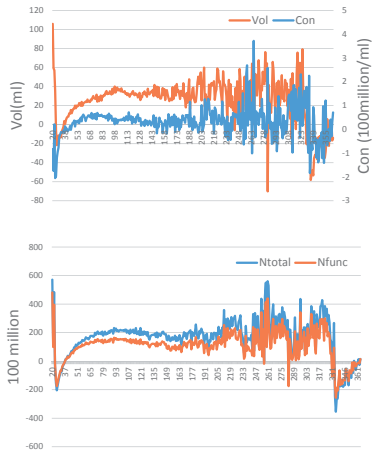REML procedure using four traits or two traits animal model.

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Estimates for collection interval
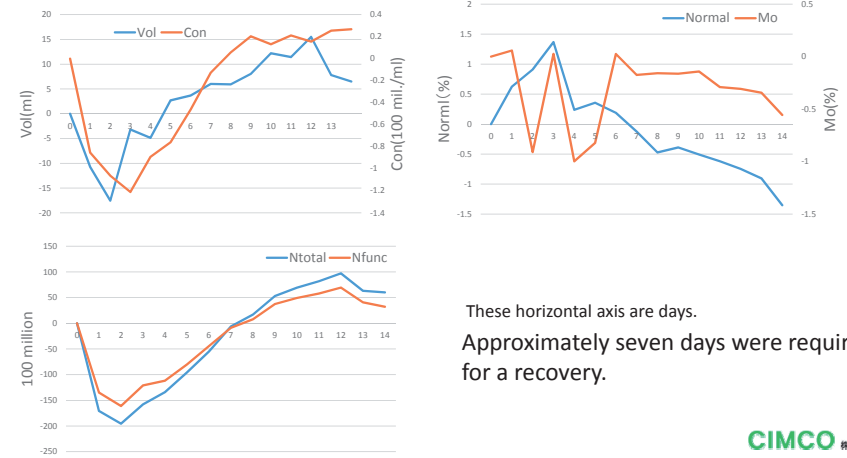
These horizontal axis are days.

Approximately seven days were required for a recovery.

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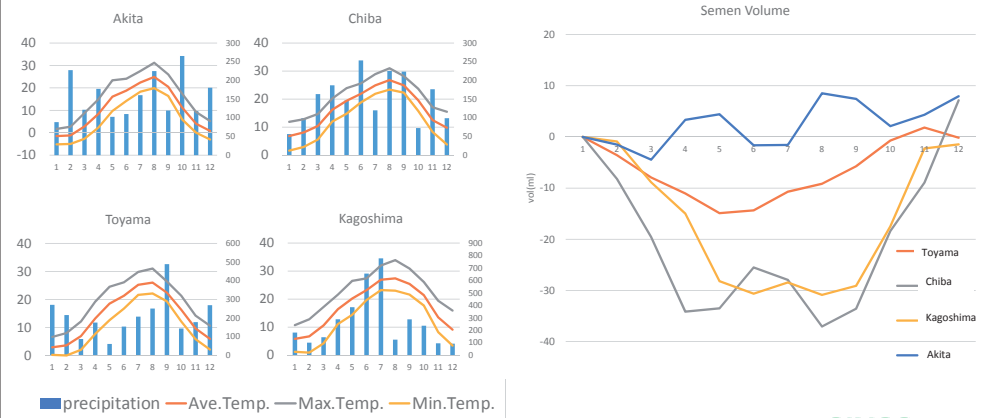# Estimates for No. of week after an initial collection

These horizontal axis are weeks.

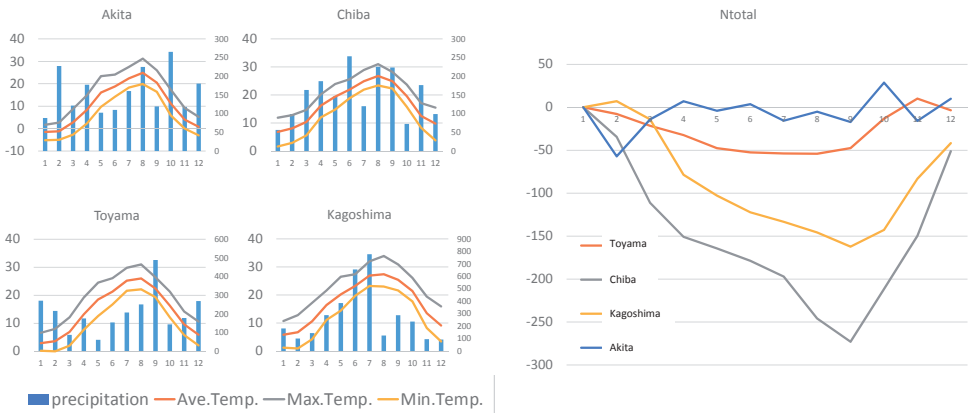A small variation approximately between 26 and 200 week is a favorable.

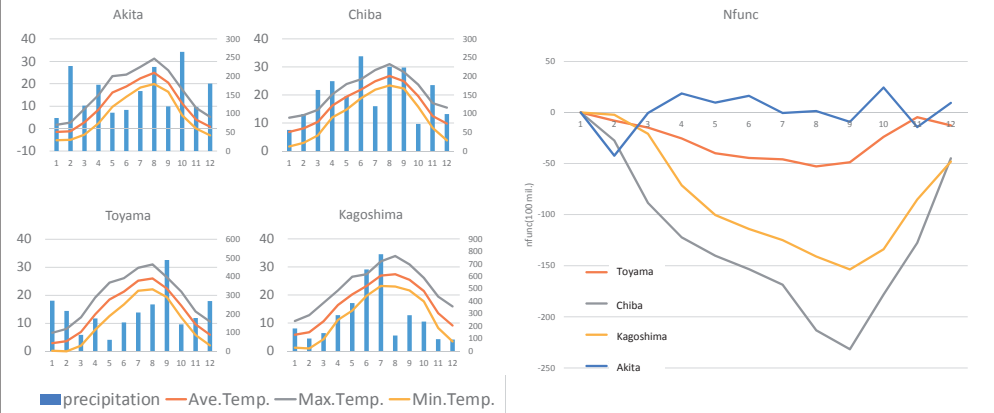# Estimates of month effect on each farm

Akita | Chiba | Semen Volume

Toyama | Kagoshima

precipitation — Ave.Temp. — Max.Temp. — Min.Temp.

Toyama
Chiba
Kagoshima
Akita

Estimates of month effect on each farm

Akita | Chiba | Ntotal

Toyama | Kagoshima

precipitation — Ave.Temp. — Max.Temp. — Min.Temp.

Toyama
Chiba
Kagoshima
Akita

Estimates of month effect on each farm

Akita | Chiba | Nfunc

Toyama | Kagoshima

precipitation — Ave.Temp. — Max.Temp. — Min.Temp.

Toyama
Chiba
Kagoshima
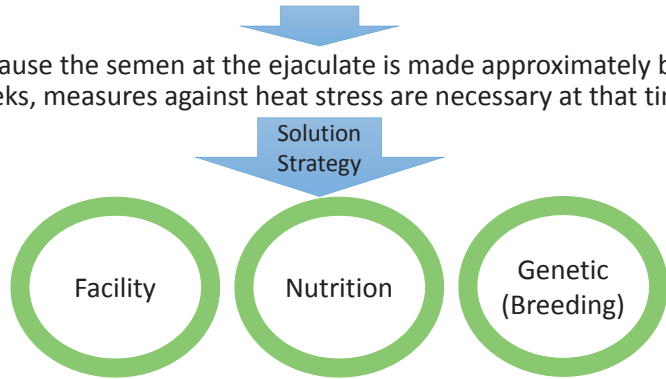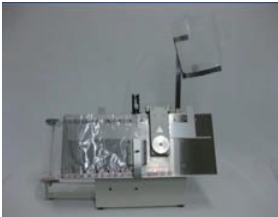Akita

Conclusion

- The influences of month effect depend on each farm.
- Farm located in a south area is exposed greater heat stress.

- Because the semen at the ejaculate is made approximately before 6 weeks, measures against heat stress are necessary at that time.
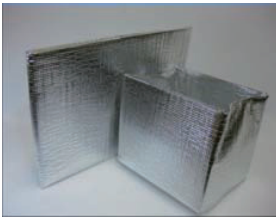
Solution Strategy

Facility

Nutrition

Genetic (Breeding)

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Movie of Semen collection

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Implements for AI

Pig house on Asia (Fattening section)

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