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Veterinary Clinicostatistical Observation on the Productive Performance in A Breeding Sow Herd in Japan

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Abstract

Veterinary clinicostatistical observation on the productive performance in a breeding sow herd in Japan during the period from January to December in 1990, in a modernized breeding sow herd in kanagawa prefecture, consist monthly, varied from 347 to 363 sows on production(average 355) and boar on service of between 26~29(average 28) shows computerized analysing figures of moderate high production results per year of 20.8 weaning pigs per sow or 18.8 fatteners at market weight per sow when continue their rearing within farm. Sows perform average 2.25 litters per sow that year.

On other hand, morbidity rate of piglets with clinical signs and symptoms was 0.2%(morbidity rate : 200 per 100,000 population in piglets) on average in year and that of mortality rate in suckling from birth was 17.8%, respectively.

Finally, these information may be used or reference in further study of the field of veterinary clinicostatistics and medicine.

Introduction

Extensive use of farm animals for food, fiber, transportation, and other by-products indicates that they are necessary and desirable for the well-being of the people of the world. The health of farm aniamls must to maintaine to efficiently utilize the resources that sustain them ; to preventive diseases that can affect both animal and man.[9]

In the case of Pigs, the sow has one commercial purpose in life which is to produce weaners, and the more efficiently she dose this, the higher will be the profit margin on any pig enterprise.

However, the general level of profitability in pig production is strong influenced by the "pig cycle".

Pigs have a fast rate of reproduction and, in periods of scarcity of pig meat and accompanying high prices, there is a stimulus for existing producers to expand and for former and new producers to go into production.[2,5]

Paturition, or farrowing, is one of the most critical stages in the whole process of pig production, for the well-being of both the sow and the piglets. Various problems can arise which can result in death or, at least, reduced efficiency of both sow and piglets. It is therefore important to recognise what constitutes normal par-

turition so that departures from normal can be detected quickly and prompt remedial action taken.[2,9]

On other hand, for many years it has been generally assumed that a diseased pig must have succumbed to an infectious agent. The clinically normal pig is simply one which is in a state of balance between the forces whitin and without. When the defence mechanisms are overcome and the physiological processes fail, the pig is said to be diseased.[1,2,6]

It is our intention to a veterinary clinicostatistical observation on productive performance in a breeding sow herd in Japan, such as breeding and farrowing performance of the herd in sow and that of nursing(lactating), and morbidity and mortality in sow and piglets in Kanagawa of Japan, during the period from January to December in 1991.

Materials and Methods

Materials : Kanagawa prefecture is one of the most intensive pig production areas in the central part of Honshu Island in Japan. It lies southward and faces to the pacific ocean. A farm of 355 breeding crossbred of *Landrace X Large* White sows on production-divided in to 2 houses and 28 *Druoc Jersey* boars on service is conducted by full automatic devices and machines e.g. feeding system, housing circulate! air and temperature control, waste and sewage water treatment.

methods : Original computer software program of some modification are written and used for years for analysing data collected from each individual sow card. There are records of mating, from both boar and sow determining their performance of production in farrowing and nursing houses, weaning in nursery and the dairy observations on morbidity and mortality, any cases incidence and other clinical manifestations among each age groups.

In breeding herd, vaccination program against swine fever, parvovirus, Japanese encephalitis, T.G.E.(transmissible gastroenteritis), erysipelas and atrophic rhinitis a-

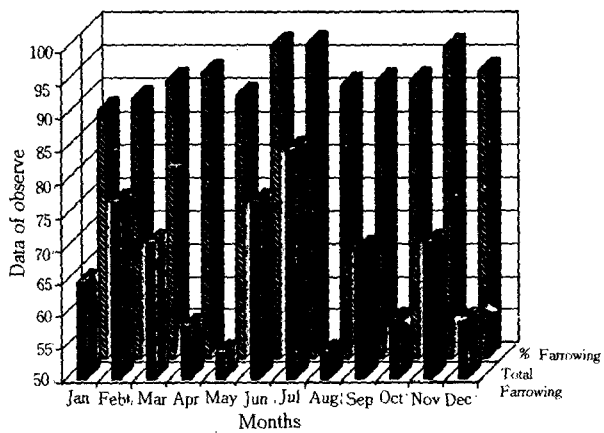

Fig. 1. Toptal Farrowing and Rate of Sow(Observation during the Year).

Table 1. Observation on the Breeding and Farrowing Performance of the Herd

	Production month of the year													
	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Mean±SD	
Sow on production	351	348	353	358	358	363	363	360	361	348	347	352	355±6	
Replacement gilt	3	5	9	6	15	20	17	13	7	3	1	2	8.4±3.4	(101)
Boar on sevice	28	28	27	26	26	27	28	28	29	29	28	29	27.8±1.1	
Replacement boar	1	2	2	2	3	4	4	3	3	2	3	1	2.5±1.0	(30)
Sow : boar ratio	12.5	12.4	13.1	13.8	13.8	13.4	13.0	12.9	12.4	12.0	12.4	12.1	12.8±0.6	
Total mating	55	81	81	67	76	62	81	70	73	84	74	71	72.9±8.6	(875)
Total farrowing	65	77	71	58	54	77	85	54	70	59	71	59	66.7±10.1	(800)
Percent farrowing	87.8	89.5	92.2	93.5	90.0	97.5	97.7	91.5	92.1	92.2	97.3	93.7	92.9±3.2	
Total piglet born	792	887	790	667	671	907	988	606	778	663	803	664	769±119	(9226)
Average born/litter	12.2	11.5	11.1	11.5	12.4	11.8	11.7	11.2	11.1	11.2	11.3	11.3	11.5±0.4	
Total born alive	715	812	716	605	601	832	912	552	719	618	725	586	669±111	(8393)
Average born alive	11.0	10.5	10.1	10.4	11.1	10.8	10.7	10.2	10.3	10.5	10.2	9.9	10.5±0.4	

( )means total number from year 1991

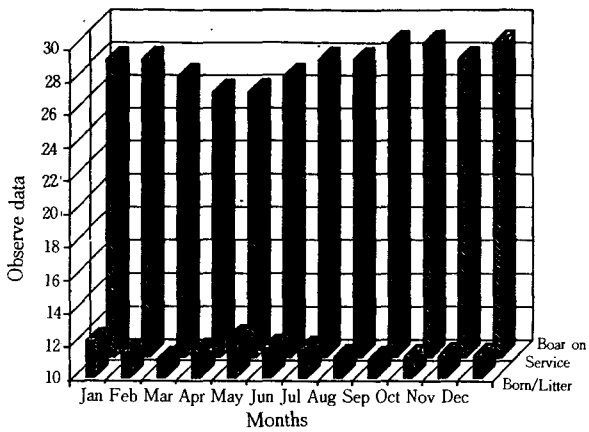

Fig. 2. Boar on Service and Born/Litter(Observation during the year).

re giving as routine work and/or occatonally[8]. Vaccination against Aujeszky's disease started some years ago in breeding as well as in fattening pigs at period end of starter. Production figure as a whole since then are increasing suprisingly. The farm intends to rear all weanling piglets to market weight hogs, with very few exceptions of selling out or buying in starter pigs. Quarantine station provided for all replacement gilt at 1~2 months before installation. Since the high cost of man power is growing rapidly, it allows a staffs limit of six people working full time on the farm with a couple of part time workers.

Results and Discussion

Breeding and Farrowing performance of the Herd

: The gilt can often be a neglected entity on the pig unit. She is looked upon as an unproductive animal and is often treated as such. Gilts can be bred at too late a stage, resulting in exessive age and weight at first farrowing, thus increasing the cost of rearing.[2]

Table 1 and Fig.1 and 2 show the observation on the breeding and farrowing performance of the herd in a modernized breeding sow herd in Kanagawa prefectur during the period one year, consists monthly varied from 347 to 363(average 355±6.0) sows on production and boar on service, varied from 26 to 29(average 28) shows computerized analysing figures of moderate high production results per year. There are some point to be mentioned as outcomes from a study of this farm. The number of total newborn piglets born per litter, varied from 11.1 to 12.4(average 11.5±0.4) and the highe-

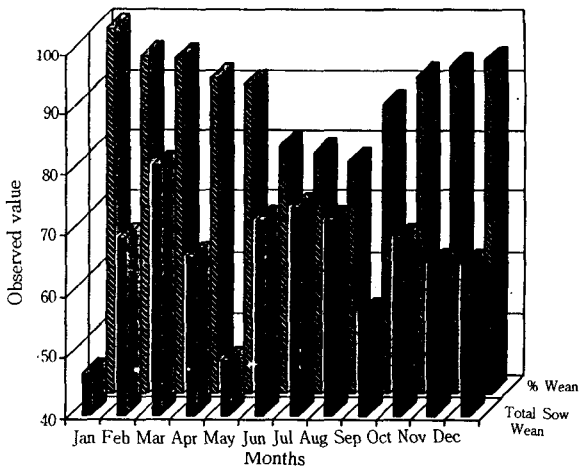

Fig. 3. Total Sow Wean and Percent Wean.

Table 2. Observation on Suckling and Nursing Performance of Sow and Piglets

	Production month of the year													
	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Mean±SD	
Total sow wean	47	69	81	66	49	72	74	72	57	69	65	65	65.5±10.0	(786)
Total piglet wean	463	738	806	5966	473	632	626	609	525	653	629	618	614±97.9	(7368)
Average piglet wean	9.9	10.7	10.0	9.0	9.7	8.8	8.5	8.5	9.2	9.5	9.7	9.5	9.4±0.7	
Percentage wean	100	95.6	95.3	91.8	90.8	80.4	79.4	77.9	87.5	92.1	93.7	94.8	89.9±7.1	
Litter size(kg)	57	61	57	49	52	50	44	45	51	51	60	60	53.1±5.8	
Average wean weight(kg)	5.6	5.7	5.7	5.4	5.4	5.7	5.2	5.3	5.5	5.4	6.2	6.3	5.6±0.3	
Average suckling day	28.9	24.2	25.3	26.8	28.5	26.0	23.6	25.4	26.0	25.7	26.7	27.6	26.2±1.6	

( )means total number from year 1991

Table 3. Observation on Morbidity and Mortality of Gilt and Boar

	Production month of the year												
	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Mean±SD
Open sow day	12.3	5.2	7.9	12.9	9.6	13.1	10.3	7.6	9.9	5.8	8.4	7.7	9.2±2.6
Piglet wean/sow/year	17.2	25.0	27.8	19.6	16.1	20.5	20.3	20.6	17.1	22.8	21.3	20.7	20.8±3.3
Litter/year	2.41	2.60	2.45	1.91	1.84	2.50	2.76	1.83	2.28	2.06	2.41	1.97	2.25
Mortality in suckling from birth(%)	16.4	15.7	13.9	18.0	16.5	20.2	30.9	20.7	25.6	9.5	13.3	13.4	17.8±5.9
Mortality in sow and gilt	0	1	0	0	1	2	0	0	1	1	0	2	(total 8)
Mortality in boar and young boar	0	0	0	0	0	0	0	0	0	1	0	0	(total 0)
Piglet with clinical signs and symptoms(%)	19.6	18.7	17.3	22.0	19.7	25.3	44.8	26.1	34.3	10.6	15.3	15.5	22.4±9.3
Sow with clinical signs and symptoms(%)	0	0.3	0	0 18.3	0.3	0.6	0	0	0.3	0.3	0	0.6	0.2±0.2
Fattener/sow/year	17.9	18.6	20.9		14.9	18.9	15.4	18.4	25.3	18.3	18.4	19.8	18.8±2.6

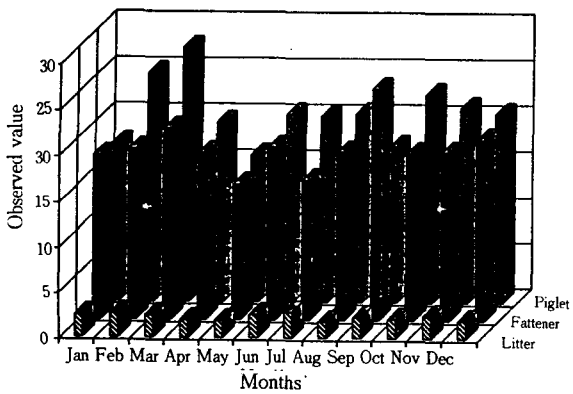

Fig. 4. Piglet Wean and Fattener per Sow(Observation of sow per Year).

st average born per litter was 12.4 of May. A total farrowing of 800 cases of the herd during one year, varied from 54 to 85(average 66.7±10.1), and that of farrowing rate in percentage was 92.9%(average). The ratio between sow and boar was 12.8±0.6(Range 12.1~13.8).

Suckling and Nursing performance of Sow and Piglets : Following birth, piglets get to their feet within minutes and instinctively make attempts to reach the udder and to suckle. One average, piglets obtain their first successful sucker in about 45 minutes following birth. [2)]

The influence of these various factors on the newborne piglets is indicated below : birth preservation, state of umbilical cord at birth, interval between birth, interval since first pig, birth order and piglets born enveloped in afterbirth etc.

Average of total sow wean was 65±10.0 and that of average piglet wean was 9.4±0.7, and percentage wean was 89.9±7.1% during one years summerized in Table 2 and Fig. 3. At 26 day after birth piglets average of sucking developed their body weight to 5.6±0.3 kg on average. Milk replacer and other subtituents are of major function in practice. New born piglets are almost immediately mobile. They rapidly find their way to the udder and may be suckling within five minutes ; most have obtained milk within half an hour of birth. At this early stage. milk is avaiable on demand, possibly because of continuous milk letdown due to circulating oxytocin associated with the birth process.[4,5)]

Morbidity and Mortality of Gilt and Boar : Perinatal mortality refers to death of the offspring shortly before, during or up to 24 hours after parturition at normal term. Stillborn piglets resemble live litter-mates but their lungs do not float in water[5)]. One to two piglets in approximatly one third of all litters are dead at birth with advancing parity, in extermes of litter size, and in litters in which the gestation period is less than 110 days.[7)]

Table 3 and Fig. 4 show the comparative observation on the mortality rate in suckling from birth of piglets during the period one year, varied from 13.3 to 30.9%(average 17.8%). Therefore, the rate of morbidity of June was much higher than those of the other month in year.

Considering the number of 20.8 piglets weaned per sow per year at 26 day of nursing, we still find the relative high production of sow instead of mortality rate of suckling in farrowing house. Fattener per sow per year were 18.8(range 14.9~25.3) at market weight per sows when continue their rearing within farm. Sow perform average 2.25 litter per sow that year.

On the other hand, morbidity rate of piglets with clinical signs and symptoms was 0.2%(200 per 100,000 population in piglets) on average in year, and that of mortality rate in suckling from birth was 17.8%, respectively.

In case of this farm, high percentage of parturition reflects the above average of non retrun rate and low number of remate sow. It implies then as to good status of herd health, non suspected of malnutrition of inadequate of feeding system or other complication during the gestation period. The only thing to be clarified is the period of open sow day which take too long(5.2~13.1 with average of 9.2 day). Probably the heavy production breed requires proportinally more days after weaning to came to next estrus. Shortening of open sow day could be tried by complete nutritive values of sow's feed e.g. vitamin and mineral fortifies supplement.

Finally, the most important components are the animal's genetics, which is derived from good selection, and of course, of good management of health conditions within the farming system, and occationally the prompt solving of any problems occuring in the running the farm.

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日本國內의 種牝豚場에 대한 獸醫臨床統計學的 觀察

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초 록

著者들은 日本國內의 種牝豚場에 대한 能力을 觀察코저 試圖하여 1990年 1月부터 12月까지사이에 神奈

川縣의 現代式 種牝豚場 一部를 研究對象으로 하여 調査하고, 그 結果를 獸醫臨床統計學的으로 分析, 다음과 같이 摘要 한다.

電算化施設에 依한 分析에서, 月平均 種牝豚의 出產은 355이었고, 種牝豚의 種付能力은 月平均 28回 이었으며, 離乳는 20.8日, 市場出荷 肥育은 18.8 그리고 年間 平均出產은 2.25이었다.

한편 出產後 哺乳中 死亡率은 平均 17.8%이고, 獸醫臨床的 症狀을 나타낸 罹患率은 0.2%(200 per 100,000)이었다.