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# PIG PROJECT OF THE AGRICULTURAL TECHNICAL MISSION OF THE REPUBLIC OF CHINA IN ST. VINCENT AND THE GRENADINES

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## INTRODUCTION

Pig production in St. Vincent was a flourishing industry until 1957, when an outbreak of swine fever occurred. After 1957, the pig production has been erratic. The population has decreased from 5,524 in 1972 to 1,851 in 1986. Pigs are kept mainly by small farmers who manage them in a backyard operation. They are tethered, stake-penned, or penned and for some hours of the day, allowed to graze and scavenge. Kitchen waste, crop residues and crop by-products (mainly banana) are fed to pigs with a complementary ration of commercial feed.

Due to the shortage of improved breeding stock and lack of skilled management, the pig production systems in St. Vincent are characterized by low productivity. In August 1982, the Government of the Republic of China and the Government of St. Vincent and the Grenadines signed an agreement for Agricultural Technical Cooperation. On 19th October of the same year, the Agricultural Technical Mission of the Republic of China arrived in St. Vincent and the Grenadines. Since then, the Mission has carried out various projects such as crop cultivation, fresh water prawn culture, pig and rice production, hill rice production and bamboo craft training programmes. The benefit of these projects have spread throughout St. Vincent and the Grenadines during this seven year period. The pig production project is just one of the successful projects being carried out by the Mission in collaboration with the Ministry of Agriculture, Industry and Labour in St. Vincent and the Grenadines.

## THE PIG PROJECT

### **Establishment of the Management System for Pig Production at the Pig Breeding Centre at the Campden Park Experimental Station (CPES)**

The objective of this project was to improve pig production in St. Vincent and the Grenadines by introducing new breeds, and better management systems. In 1984, the Agricultural Technical Mission of the Republic of China (CATM) introduced 8 Yorkshires (4 females and 4 males) and 10 Landrace (6 females and 4 males) as foundation stock. Since then, two-way crossbreds were produced to improve the quality and quantity of pork. In order to get the best carcass quality, two (2) Durocs (1 male and 1 female) were introduced by the Ministry of Agriculture in 1988 for three-way crossing in 1989. Three-way crossbreds will be available to be distributed to farmers in 1990.

Figure 1 shows the rearrangement of housing facilities of the Pig Breeding Centre at the Campden Park Experimental Station to ensure better management, the number of pens available and the purpose for which they are used. The infrastructure of these pens was old and inadequate; consequently, the mission provided equipment to improve this situation. Table 1 shows the existing housing facilities.

By the end of December 1989, the Pig Breeding Centre possessed 11 sows, 4 boars, 48 gilts, 5 young boars, 40 barrows and 24 sucklings, bringing the total to 142 heads. Table 2 shows the result of pig production at the Pig Breeding Centre in 1989.

**TABLE 1: HOUSING FACILITIES AT THE PIG BREEDING CENTRE AT THE CAMPDEN PARK EXPERIMENTAL STATION (CPES)**

HOUSING	NO. OF PENS	PEN SURFACE	NO. OF HEADS	REMARK
Boar	3	8.93 m <sup>2</sup>	3	One head per pen
Unsettle	7	2.85 m <sup>2</sup>	7	One head per pen
Pregnant	8	9.08 m <sup>2</sup>	8	One head per pen
Farrowing	5	12.60 m <sup>2</sup>	5	One sow & piglets
Growers	11	11.67 m <sup>2</sup>	88	One litter
Fattening	6	10.35 m <sup>2</sup>	48	Eight pigs/pens
Quarantine	6	5.35 m <sup>2</sup>		
Special	1	16.00 m <sup>2</sup>		For adjustment
Exercise Yard	1	150.15 m <sup>2</sup>		

The Mission provided technical guidance and assistance, including improvement of management, record-keeping, production, feeds, feeding, pregnancy tests and swine production. Due to serious efforts the average litter per sow per year increased from 0.88 in 1982, to 2.30 in 1989 (Table 2). Consequently, there was a 161% increase in sow productivity. Mortality decreased from 26.0% in 1983 to 5.7% in 1989. Piglets weaned per sow per year increased from 5.53 heads in 1982 to 18.00 heads in 1989, so increasing the margin per pig, by an extra gain per animal weaned and more animals sold on which that additional gain will apply.

Mortality was mainly due to inadequate infrastructure which caused the sows to suffocate the piglets. Pig raising was not affected by any serious diseases. All diseases were easily controlled at the Pig breeding centre. Some farmers did encounter serious problems with disease, but were assisted by technicians from the centre.

#### **Development of Systems of Artificial Insemination in Pigs**

The objective of this activity was to develop the artificial insemination system in pig production by providing the necessary instruments and techniques. Containers for fresh semen and equipment used for artificial insemination in pigs, were introduced by the mission in May 1987. The first sow was artificially inseminated in October 1988. By the end of 1989, 84 sows was artificially inseminated (free of charge), and distribution of the recipient farmers according to the Ministry's Extension District was as follows:

*District: 1 2 3 4 5 6 7 8 9 Total*  
*Farmers : - 3 52 21 5 3 - - - 84*

The best results received on artificial insemination from the Pig Breeding Centre at CPES was as follows: Pregnancy - 88.9%, mortality - 10.8% and piglets weaned per litre - 9.25. The percentages of

**TABLE 2: SOW PRODUCTIVITY IMPROVEMENT ON PIG BREEDING CENTRE AT CAMPDEN PARK EXPERIMENTAL STATION IN ST. VINCENT AND THE GRENADINES**

Year	1982*	1983*	1984**	1985	1986	1987	1988	1989
No. of Sows in production	8	13	10	12	15	15	21	20
Breeders	S.B.	S.B.	L.Y.	L.Y.	L.Y.	L.Y.	L.Y.	L.Y.D
Total Litter/Year	7	10	9	18	25	16	23	46
Total Litter Size	55	95	74	155	241	140	296	384
Piglet Born/Litter	7.90	9.50	8.20	8.61	9.64	8.80	8.97	8.35
Total Piglet Weaned	44	70	72	146	218	124	251	360
Piglets Weaned/Litter	6.29	7.00	8.11	8.11	8.72	7.75	7.61	7.83
Mortality (%)	20.00	26.00	2.70	5.8	9.5	11.4	15.2	5.7
Litter/Sow/Year	0.88	0.77	0.90	1.50	1.67	1.07	1.57	2.30
Piglets Weaned/Sow/Year	5.53	5.39	7.30	12.17	14.56	12.91	11.96	18.00

pregnant animals from artificial insemination and natural mating at the CPES were 88.9% and 80.0% respectively. The higher percentage of pregnant animals at the CPES. (A.I.) was probably due to the small amount tested as compared to natural mating. The percentage of pregnant animals from artificial insemination on farms was only 74.4%, due to lack

of knowledge to distinguish the right time for the sows to be inseminated (see Table 3).

The number of piglets born per litter from artificial insemination on farms was 8.63. This value was lower than that obtained at CPES, this was possibly due to a lack of knowledge in artificially inseminating the sows and poor management which

affected the number of eggs deposited, as well as death of some of these eggs during the early embryonic stage. There was no significant difference between the percentage of mortality of artificial insemination and natural mating at the CPES which was 10.8% and 10.9% respectively. The percentage of piglet mortality on A.I. farms was 16.3% which was higher than the others (Table 3). Data in Table 4 show the frequency of piglets born per sow from artificial insemination and natural mating.

### **Piglet Revolving Project**

The main objectives of this project were to improve the economy, nutrition and social well-being of low income farmers, by giving each farmer 2 gilts, 2 barrows, 8 sacks of feed and the provision of funds to assist with the construction of pig pens. When the gilts farrowed the farmer was expected to return four piglets to the Mission. The first farmer was selected in October 1984; now there are 226 farmers involved in this project (Table 5). These farmers were dispersed among the nine districts as shown in Table 6 and Fig. 2. In order to continue to implement the revolving pig project, the Mission imported two new breeds of pigs: 5 Yorkshire and 5 Landrace in August 1987.

Two hundred and twenty six (226) farmers were involved in the Piglet Revolving Project from October 1984 to December 1989. There are now 196 farmers involved in this project, which means that 86.7 percent of extension pig farmers are still engaged in pig production in St. Vincent.

It seems that some pig farmers are primarily interested in the subsidy and don't have any interest in developing pig production here. It was found that some farmers sold their pigs as soon as the feed given by the Mission was exhausted. Also due to the lack of labour, some of them returned their four piglets to the Mission and stopped their own pig raising. Another reason was lack of funds to support feeding the animals which prolonged the raising period causing the farmers to lose interest in pig production. At the end of 1989, they possessed 493 sows and gilts, 71 boars, 289 sucklings and 829 fatteners, bringing the total number of pigs to 1,682 heads. Of the 153 farmers who received the gilts before the end of 1988, 107

farmers (69%) each returned their four piglets to the Mission. Under normal raising conditions, the contract farmers would have one year to return their piglets. Unfortunately, the onset of maturity of gilts was delayed due to poor management and nutrition. Since most pig pens were located on hill sides, there was a possibility that this hindered natural mating. The Mission's technician visited the farmers regularly to give technical assistance to improve their management skills. In 1989, artificial insemination techniques were introduced to solve the mating problem. It is believed that in 1990, there will be substantial improvement in the existing situation.

### **Training**

The Mission held three one day workshops during 1989. The first was held at the Dumbarton Station in January; the second at the Georgetown Community Centre in April; and the final at the Chateaubelair Community Centre in June. A total of 193 farmers participated in these workshops. Farmers have indicated interest in forming a Pig Farmers Association, which they feel will greatly assist the production and marketing of animals. The purpose of these workshops was to improve the knowledge and management skills of the pig farmers and to facilitate the technology adaptation.

Technicians of the Department of Agriculture are also being trained in techniques of artificial insemination at courses conducted by the Chinese Mission. These courses commenced in November 1989. The Ministry of Agriculture is also planning to establish A.I. units in selected farming communities in collaboration with the Mission.

### **CONCLUSION**

The pig project is considered to be a very successful exercise by all concerned. Already, the Ministry has initiated discussions with the Mission and a third agency to initiate a similar revolving project for sheep and other small ruminants, as part of its diversification effort. The farmers are very anxious to have such a project. In the meantime, plans are at an advanced stage to conduct an economic assessment of the pig project, to examine its impact on the farming community.

**TABLE 3: THE COMPARISON BETWEEN ARTIFICIAL INSEMINATION AND NATURAL MATING IN THE PIG PRODUCTION IN 1989**

	A.I. at C.P.E.S	A.I. on Farms	A.I. Total	N.M. at C.P.E.S
No. of sows serviced	9	43	52	45
No. of sows pregnant	8	32	40	36
Pregnancy (%)	88.9	74.4	76.9	80.0
Total litter size	83	276	359	320
Piglets born/litter	10.38	8.63	8.98	8.89
Total piglets weaned	74	231	305	285
Piglets weaned/litter	9.25	7.22	7.63	7.92
Mortality (%)	10.8	16.3	15.0	10.9

**TABLE 4: THE FREQUENCY OF PIGLETS BORN PER SOW BY ARTIFICIAL INSEMINATION AND NATURAL MATING**

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HEADS	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2
AI at CPES	0	0	1	0	3	0	0	2	1	1	0	0	0	0	0
AI on Farms	2	1	0	0	2	2	5	4	6	2	1	4	0	3	0
NM at CPES	0	0	2	1	1	3	6	9	6	3	3	0	1	0	1

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**TABLE 5: THE RESULT OF THE PIGLET REVOLVING PROJECT BY CATM IN ST. VINCENT**

Items	1984	1985	1986	1987	1988	1989	Total
No. of Extension Farmers	6	23	36	35	52	74	226
No. of Extension Piglets	24	92	144	140	204	293	901
No. of Farmers Raising Pigs	2	15	24	30	52	73	196
% of Pig Farmers	33.3	65.2	66.7	85.7	100	98.6	86.7
No. of Pigs	45	117	281	384	415	440	1682
No. of Revolving Farmers	6	20	31	26	24	0	107
% of Revolving Farmers	100	87	86.1	74.3	46.2	0	47.3

**TABLE 6: DISTRIBUTION OF PIG FARMERS BY EXTENSION DISTRICT**

ITEM	1	2	3	4	5	6	7	8	9	TOTAL
% of total	8.4	6.2	17.3	29.6	8.9	15.9	2.7	9.7	1.3	100
No. of farmers	19	14	39	67	20	36	6	22	3	226