

THE PRODUCTIVITY OF EXOTIC AND INDIGENOUS PIGS UNDER VILLAGE CONDITIONS—PART I

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ABSTRACT

In order to carry out a preliminary assessment of the productivity of various types of pigs under village conditions in the Highlands of Papua New Guinea, 15 British, crossbred and native pigs were given to members of Okiufa Village, near Goroka. The owners were requested to treat them as normal village pigs and to present them for weekly weighing and examination. Treatment of clinical disease was not undertaken.

Thirteen pigs had died by the conclusion of the experiment five months later. Weight gains were non-existent or insignificant. There was no apparent association between mortality and genotype.

INTRODUCTION

THE distribution of so-called "improved" breeds of pigs to village farmers was commenced by the Administration of Papua New Guinea in the late 1940's as part of the Australian Government's programme of reparation for war damage. This programme has developed over the years to one which now produces some 800 pigs per year from Administration stations at Goroka, Erap (Lae) and Rabaul for sale to village farmers. Breeds involved are mainly Tamworth, Berkshire and Large Black, and more lately crosses of these breeds with indigenous pigs.

Although the programme has achieved a grading of indigenous pigs towards "improved types" over many parts of Papua New Guinea, this process has not necessarily been one of "grading up" when one considers the management systems under which the pig must survive and produce. In addition there has been little follow-up of the contribution these pigs have made to village production, although Harvey (1965) indicated high mortalities and very poor growth rates amongst pigs distributed into various villages in the Highlands.

In this trial, a more detailed study of the performance of three types of pigs distributed from the Tropical Pig Breeding and Research Centre was carried out at the village of Okiufa as a preliminary assessment. Okiufa is a village

containing some 25 families. It is only three miles from Goroka and many of the men are employed in the town. Coffee is grown as a cash crop and subsistence gardens are maintained by the women.

MATERIALS AND METHODS

Nine male pigs of three breed groups ($\frac{1}{8}$ native x British, $\frac{1}{4}$ native x British, purebred British (Berkshire)) each 13 weeks of age, together with six purebred native male pigs 18 weeks of age were distributed to different members of Okiufa village. Once weekly the pigs were weighed and inspected.

RESULTS

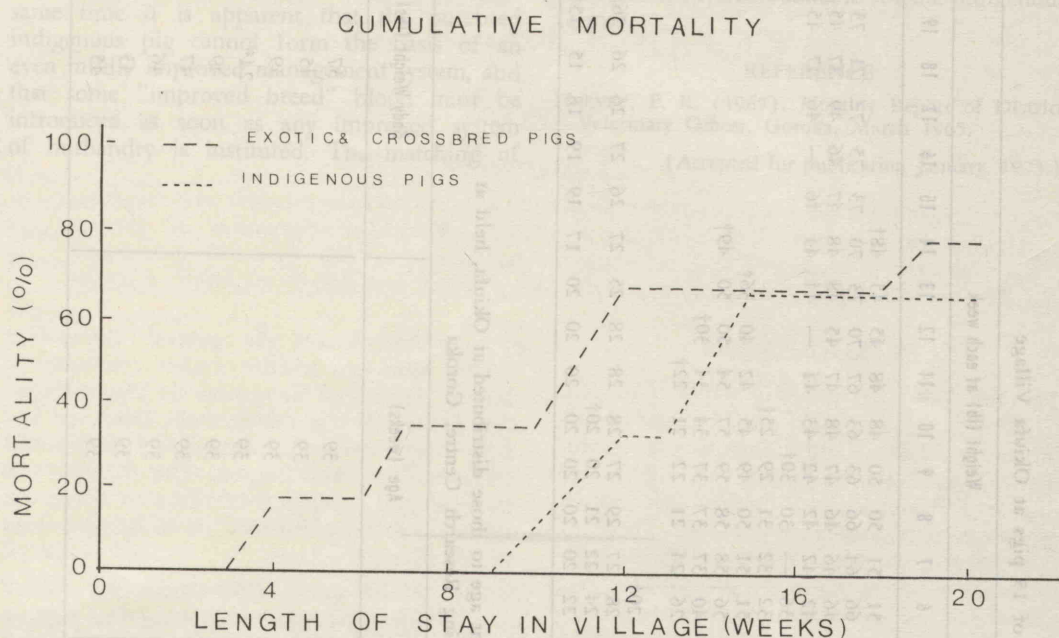
Weekly weight gains are shown in Table 1. In Figure 1 is shown cumulative mortality over the period of the trial. In Table 2 are presented the bodyweights of a number of contemporary native pigs which had not been distributed into villages but remained at the Tropical Pig Breeding and Research Centre and received adequate nutrition.

A mange-like condition of undetermined aetiology was observed in most pigs. It was noticeable that pig numbers 30168 and 38718 (which survived) failed to show symptoms.

Coughing was commonly a premonitory symptom of impending death. Anorexia was a common premonitory symptom of ensuing mortality, usually beginning some days before death. Diarrhoea was observed only once, during the third week of the experiment.

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FIGURE 1



Terminally there occurred a change in the tone of the squeal which became very weak. This change in squeal was invariably followed by death.

DISCUSSION

British bred pigs under commercial husbandry conditions should weigh just under 260 lb at 34 weeks of age. The only two surviving improved pigs (30168 and 38718) weighed 78 and 42 lb respectively at this age.

If the weight gains of the native pigs in the trial are compared with their contemporaries under normal husbandry conditions, it is apparent that the degree of stunting among native pigs was much less severe than among the pure and crossbred British pigs. Of particular interest is the low bodyweight of the native pigs under good conditions. It has been estimated at ceremonial "pig kills" that fully grown indigenous pigs weigh in the region of 300 lb. It is interesting to speculate that the low growth potential of native pigs is a fitness characteristic which may increase their survival rate under conditions of nutritional stress.

The mortalities among all groups were extremely high—reaching 80 per cent by the

end of the trial. It can be seen from the figures that the mortality of native pigs was somewhat higher than that of British pigs. Whilst this is an unexpected finding, it may be explained by the fact that those people receiving British or crossbred pigs managed them better than those receiving indigenous pigs. It is well recognized among village people that British pigs, while possessing a greater growth potential, are less adapted to local environmental conditions. The very name "susu pik" (milk pig), suggests this recognition. It is therefore quite probable that the possession of a "susu pik" elicits a higher standard of management than that accorded to normal village pigs.

CONCLUSIONS

The programme of pig distribution based on "improved" breeds of pigs was designed to introduce to the indigenous pig population the more productive characteristics of high growth rate and fertility. While the programme has been effective in changing the genotype of a large percentage of Papua New Guinea's pig population, this trial and previously recorded evidence suggest that it is essential that this

Table 1.—Weekly body weights of 15 pigs at Okiufa Village

Group	Ear Tag No.	Breed*	Initial Age (wks.)	Weight (lb) at each week																				
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
A	38593	1/8N x B*	13	48	45	49	53	51	51	51	50	50	48	45	45	48†								
A	30168	1/8N x B*	13	56	54	54	—	60	66	64	66	63	63	67	70	73	70	73	75	72	71	73	76	78
A	38711	1/8N x B*	13	44	40	44	45	46	46	46	46	47	48	47	45	48	48	47	46	49	47	45	48	36†
B	38718	1/4N x B	13	38	38	37	44	40	42	42	42	42	43	44	—	44	44	46	—	46	47	45	—	42
B	38713	1/4N x B	13	39	34	37	40	38	36	—	30	30†												
B	38729	1/4N x B	13	33	31	32	35	31	32	32	31	29	25†											
C	30242	B	13	52	48	52	53	46	51	51	50	49	45	42	40	36†								
C	30633	B	13	50	37	52	56	58	56	58	58	59	57	54	50	50	49†							
C	30232	B	13	40	48	38	43	41	40	37	37	37	34	34	30†									
D	32427	N	18	25	23	23	27	24	26	24	21	22	21	22†										
D	32432	N	18	25	21	21†																		
D	32431	N	18	29	22	21	23	21	20†															
D	32428	N	18	32	30	29	30	24	28	27	29	27	28	28	28	25	27	26	27	26	26	26	—	25
D	30676	N	18	23	20	24	25	22	24	22	21	20	20	20†										
D	30689	N	18	22	18	20	21	20	22	20	20	20	20	20	20	20	17	19	19	18	15	15†		

*B=British Breed, N=Native.

†Died before next weighing.

Table 2.—Body weights of native pigs of equivalent age to those distributed at Okiufa, held at Tropical Pig Breeding Research Centre, Goroka

Ear Tag No.	Sex	Age (weeks)	Body Weight (lbs)
30647	F	39	37
39435	F	39	45
32434	F	39	39
30675	F	39	24*
30685	F	39	49
32436	F	39	47
30688	F	39	46
32426	F	39	43
30687	F	39	45

*This pig was suffering from anaemia at the time of weighting.

improvement of genotype quality be accompanied by some improved standards of husbandry, nutrition and disease control. At the same time it is apparent that the purebred indigenous pig cannot form the basis of an even mildly improved management system, and that some "improved breed" blood must be introduced as soon as any improved system of husbandry is instituted. The matching of

genotype with environment will be the most vital aspect of the development of various management systems suitable for the indigenous farmer.

REFERENCE

- HARVEY, P. R. (1965). Monthly Report of District Veterinary Officer, Goroka, March 1965.

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INTRODUCTION

In the first part of this paper (Malinick 1973) the results of distributing 100 exotic pigs into a typical Highland village were presented. These indicated that pigs and village conditions sustained high mortality, and that the growth rate of survivors was low. The present study contains the results of a larger survey into the performance of 150 exotic bred pigs which were distributed to a number of villages throughout the Highlands.

MATERIALS AND METHODS

The normal scheme of distribution for pigs from D.A.S.P. piglets was followed. First a Rural Development Officer placed an order for stock through his District Livestock Officer, who relayed the request to the nearest piggy. Weaner pigs are then sent as soon as they are available to the Extension Centre from which the animals are sold to village people at a subsidized price. In many cases where Extension Centres are inaccessible by road pigs are flown to their destination. For the pigs used in the survey the normal distribution procedures were followed, with the exception that the pigs were weighed monthly after distribution.

All pigs distributed throughout the survey were either purebreds (Berkshire, Tamworths or Latic Black) or crosses with the indigenous breed but containing at least 25% indigenous blood.

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Superimposed on the general distribution survey were two smaller studies conducted at Mount Hagen and Hengano. At Mount Hagen two groups of pigs (marketable and non-marketable) were distributed to two different villages (Purup and Bepur). The objective was to determine the degree of variation which can be expected in the performance of distributed pigs in two adjacent villages.

The second set of observations was carried out to determine whether putting the pigs on a village diet of sweet potato, maize meal and growing for one month prior to distribution would improve survival and performance. The control group received a normal mixed ration and was housed individually or in small groups. The pigs in these two treatment groups, which were called "hard" and "soft", were distributed through the Hengano Extension Centre.

RESULTS AND DISCUSSION

The mean monthly increases and average daily weight gains of the distributed pigs are shown in Table 1. It is apparent that there is considerable variation in the performance of the pigs in terms of weight gain, with pigs at Mt. Hagen being lighter at almost two times the rate of those at Kanihwa. Similar pigs retained at the Goroka piggy which have been fed standard commercial ration gain between 400 and 600 grams daily. This comparison alone states that growth under village conditions even at its optimum is severely depressed. It is considered that the main factor restricting growth are undernutrition of all animals with the possible exception of Vitamin A. The comparison between Purup and Bepur shows the wide variation that can be found even when very similar pigs are distributed to adjacent villages.