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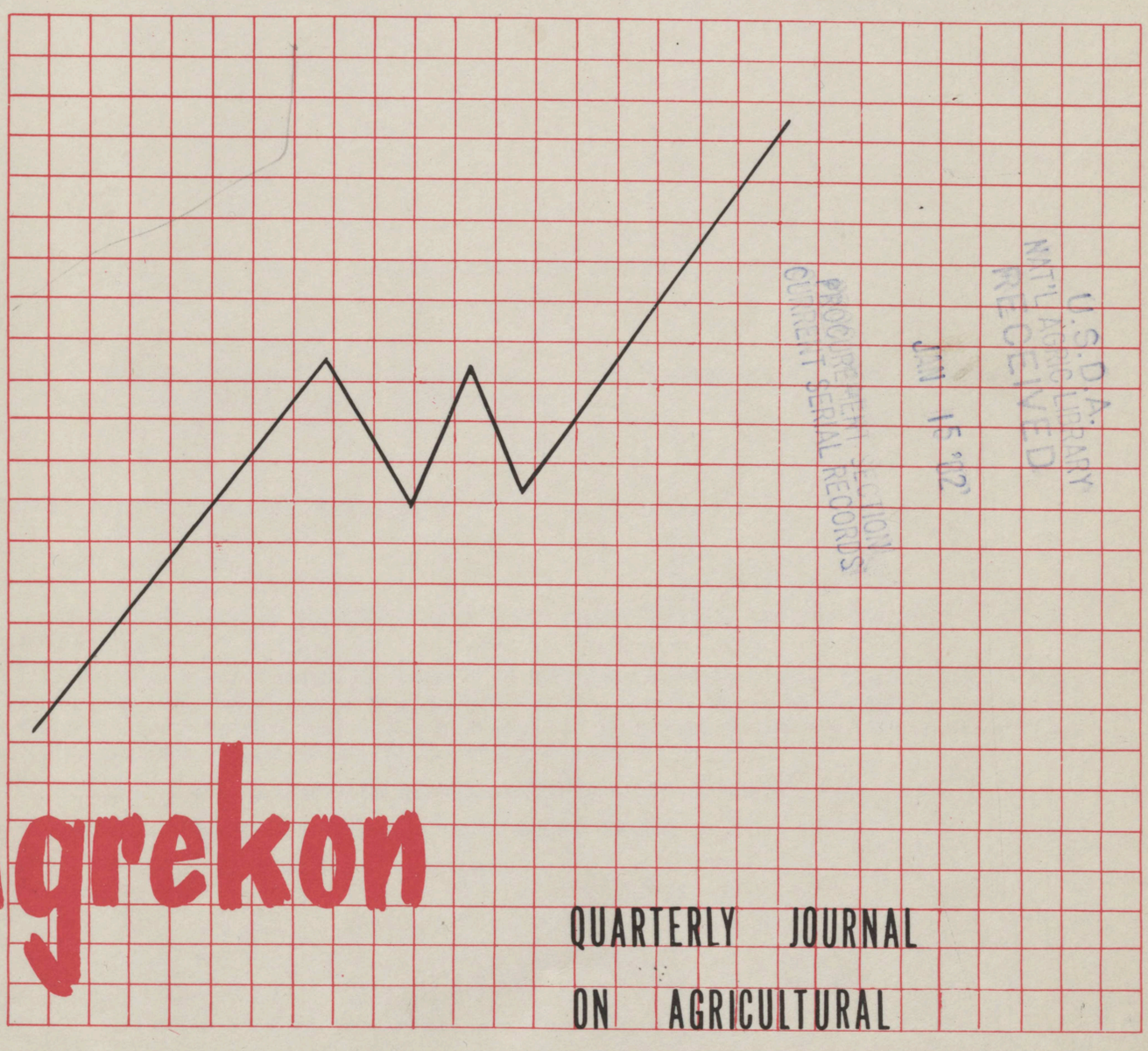

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THE ROLE OF MANAGEMENT IN EFFICIENT PIG PRODUCTION, WITH SPECIFIC REFERENCE TO PERSONNEL PRACTICES*

by

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1. INTRODUCTION

Management is the process whereby a manager manipulates resources and situations, with less than complete information, to realise his aims (Dillon, 1980, p. 258). The quality of management in South African agriculture leaves much to be desired (Groenewald, 1973) and as far as pig farming is concerned it is also one of the most important factors that restricts increased production efficiency (Department of Agriculture and Fisheries, 1980, p. 4).

Ortman (1978a) found that the high cost of feed, which amounts to 75 per cent of the total costs, is the main factor responsible for a negative net farming income in pig production. Managerial practices that can reduce the cost of feed without lowering productivity, such as reduction of feed wastage and utilisation of cheaper feed, will increase profitability. Although labour costs are a relatively small component of the total cost, about 5 per cent, they are the most critical factor in the successful combination of production costs (Thornton, 1977, p.261). The worker in his place of work is the catalyst that enables meaningful reactions between the enterprise's production means to take place (Armstrong & Lloyd, 1972, p. 4). For that reason a manager cannot afford personnel who are less than optimally motivated in their work. Unfortunately the personnel management dimension of farming management is still largely left out of account by farmers. The hypothesis is that more efficient and less efficient pig producers differ in their approach to management, in the emphasis they place on elements in the management process and in the practices that they apply.

2. PROCEDURE

Data were assembled by sending a questionnaire to each of the 120 members of the Pig Breeders' Association of South Africa. Alltogether 36 completed questionnaires, or 30 per cent of those sent out, could be used.

The respondents were divided into two groups, namely relatively more and relatively less efficient pig farmers. This division was possible because each respondent evaluated his own enterprise with the help of a nine-point scale in respect of 25 efficiency areas in pig farming, namely: fertility of animals; number of litters per sow per annum; number raised per sow per annum; weaning mass; farrowing intervals; length of period from birth to sale of young pigs; health of animals; strength of legs and feet; grading of slaughter animals; number of workers available for screening; quality of employees; degree of workers' motivation; remuneration of workers; labour relations; in-service training of workers; productivity of workers; workers' satisfaction and morale; availability of long-term, middle-term and short-term capital; adequacy of own capital; profit margin; measure of specialisation; timing of and procedure for corrective steps; and extent to which activities are expressed in plans. The average score of all the respondents was taken as the criterion to divide them into the above-mentioned two groups. On the basis of these scores, 24 respondents were classified as more efficient managers and 12 as less efficient managers. The farmers were requested to identify problem areas that in their opinion can hamper pig production, as well as those aspects which require further research. They were also asked to indicate the measure in which they apply each of 49 management practices. In determining which management practices have a bearing on more or less efficient pig production, the chi-square test for independence is used in contingency tables and the statistical significance level (Alpha sign) (α) of the differences is calculated.

3. RESULTS AND DISCUSSION

The views of the two groups of farmers concerning problem areas and research needs in respect of pig farming, as well as the extent to which certain management practices are applied, are compared in the following paragraphs.

3.1 Problems areas in pig farming

The areas in which, in the opinions of the respondents, problems can arise in pig farming, are summarised in Table 1. According to the Table the

*Financial contribution by The Standard Bank

order of the problems differs somewhat between the more and the less efficient producers. In the case of the more efficient managers the most important problem is the high capital investment costs, followed by the unfavourable pork: feed price ratio. Following this, high feed costs, labour and fertility and growth of pigs are equally important problem areas. The less efficient managers regard the unfavourable pork: feed price ratio as the most important problem, followed by feed costs, labour and pig diseases as equally important probems.

Therefore, although there are differences between the views of the more and the less efficient pig farmers, it is notable that economic factors are regarded by both groups as the most important problems. This is to be expected, because Nel and Groenewald (1976) state that intensive pig production is characterised by continual changes in economic ratios which influence profitability.

TABLE 1 - Problem areas in pig farming in the opinions of the more efficient farmers (Group A) and the less efficient farmers (Group B)

Problem area	Group A	Group B	Total
Unfavourable pork:feed price ratio	4	3	7
High capital investment costs	6	0	6
High feed costs	3	2	5
Labour	3	2	5
Pig diseases	2	2	4
Fertility and growth of pigs	3	0	3
Breeding material	2	1	3
Marketing of pork	2	1	3
Quality of purchased rations	2	0	2
Availability of high quality farm feeds	2	0	2
Management	0	1	1

3.2 Research needs

Aspects of pig farming which in the opinions of the respondents need further research, are grouped together in Table 2. Here, too, there are differences between the viewpoints of the more efficient producers and those of the less efficient producers. In the case of the more efficient farmers the greatest need for research is in respect of breeding, followed by pig diseases, followed, in turn, by feeding, pig housing and the quality of purchased rations. In the opinion of the less efficient managers the most important research need is in respect of management, followed by breeding, feeding and marketing. It is interesting to note that whereas the more efficient producers are keen to know more about the quality of purchased rations, fertility and growth of pigs, availability of high quality farm-produced feed and the motivation and training of labourers, the less efficient producers do not regard these aspects as fields for research. On the other hand, the more efficient farmers do not feel the need for management research, while the less efficient managers are eager to know more about this aspect (also compare Table 1). The last-mentioned finding can probably be ascribed to the fact that at this stage the less efficient managers are not making use of certain management practices to the same extent as the more efficient managers.

TABLE 2 - The research needs of the more efficient farmers (Group A) and the less efficient farmers (Group B) in respect of aspects of pig farming

Research field	Group A Number	Group B Number	Total
Breeding	6	2	8
Pig diseases	5	1	6
Feeding	4	2	6
Pig housing	4	1	5
Quality of purchased rations	4	0	4
Fertility and growth of pigs	3	0	3
Availability of high quality farm feeds	2	0	2
Marketing of pork	2	2	4
Motivation and training of labour	1	0	1
Price policy	1	1	2
Guidance	1	1	2
Management	0	4	4

3.3 Management practices which can increase pig production

For the purposes of analysis, the 49 management practices are divided into 5 categories, namely: acquisition and production; financing; planning and control; personnel provision; and motivation and communication. Only those management practices in which the extent of application by the two groups of farmers differs significantly are shown in Table 3. Discussion in 3.3.1 and 3.3.2 is based on information in this table.

3.3.1 *Personnel provision practices*

3.3.1.1 *Recruitment and selection*

Since effective disease control, feeding and daily care of the animals are the responsibility of the worker, it is important for the manager to find a person with the necessary abilities and aptitude. By means of active recruitment efforts ($\alpha = 0{,}05$), the more efficient managers succeed in drawing sufficient applicants to their enterprise from whom to make a selection. Their screening is more thorough ($\alpha = 0{,}1$) and they conduct a formal screening interview with each applicant before employing him ($\alpha = 0{,}1$).

3.3.1.2 *Training and evaluation*

A worker with the required abilities must furthermore develop the right perception about how things should be done in the enterprise (Orpen, 1976, p. 100). The more efficient managers provide a larger measure of systematic on-the-job training ($\alpha = 0{,}01$) and allow their workers to attend courses at an in-service training centre ($\alpha = 0{,}01$). The knowledge that a worker acquires in

TABLE 3 - Management practices applied by more efficient farmers (Group A) to a larger extent than by less efficient farmers (Group B)

Management practices		Extent of application: Not at all	Extent of application: Sometimes/partially or consistently	Chi-square*	1-α **
		Number observed			
Acquisition and production					
Active recruitment of labourers	A	11	11	(4,07)	0,95
	B	8	1		
Purchase and mixing of feed ingredients	A	11	10	(2,67)	0,75
	B	9	2		
Purchase of complete rations	A	9	12	(2,36)	0,75
	B	2	10		
Artificial insemination	A	1	19	(5,16)	0,975
	B	4	7		
Financing					
Effective cash flow budgets	A	4	19	(1,37)	0,75
	B	3	5		
Use of commercial bank credit for the erection of buildings and for fixed improvements	A	10	11	(1,37)	0,75
	B	7	3		
Planning and contol					
Regular recording of meat:fat ratio	A	5	16	7,16	0,99
	B	8	3		
Evaluation of production results	A	0	22	(3,90)	0,95
	B	2	10		
Regular recording of weekly and fortnightly post-weaning masses	A	8	13	1,89	0,75
	B	7	4		
Regular recording of pregnancy test results	A	9	12	2,0	0,75
	B	7	3		
Use of official performance testing	A	5	15	1,36	0,75
	B	5	6		
Complete service record of labourers	A	3	17	(3,44)	0,90
	B	5	6		
Personnel provision					
Thorough screening of labourers	A	2	18	(3,75)	0,90
	B	4	6		
Formal screening interview before employment	A	7	12	3,59	0,90
	B	8	3		
Systematic on-the-job training	A	1	20	(7,85)	0,99
	B	5	6		
Attendance of courses at in-service training centre	A	14	5	(3,47)	0,90
	B	11	0		
Periodic evaluation and recording of workers' performance	A	6	14	5,23	0,975
	B	8	3		
Motivation and communication					
Wage increases according to workers' contribution	A	2	20	(3,67)	0,90
	B	4	7		
Determination of workers' needs	A	2	18	(1,92)	0,75
	B	3	7		
A system of incentive wages	A	4	18	(4,59)	0,95
	B	6	5		
Additional benefits:					
Vacation bonus	A	6	16	(4,06)	0,95
	B	7	4		
Long-service bonus	A	6	13	(1,53)	0,75
	B	6	5		
Recreational facilities and opportunities	A	5	15	5,40	0,975
	B	8	4		
Housing benefits	A	2	20	(1,89)	0,75
	B	3	8		
A formal system by which workers can voice their complaints and grievances	A	3	18	(12,78)	0,999
	B	8	2		
A formal system by which workers can make suggestions	A	5	16	(6,09)	0,975
	B	7	3		
Interview at termination of service	A	6	16	(4,18)	0,95
	B	6	3		
Use of notice boards	A	7	15	4,95	0,95
	B	8	3		

*The chi-square values placed in brackets are cases where the expected number in a cell is less than five, which may make the test less reliable.
**Reliability coefficients.

this way makes his work more meaningful and interesting to him and at the same time enables him to pursue the aims of the enterprise more successfully. Subsequently the more efficient managers periodically evaluate their workers' performance and record it ($\alpha = 0{,}02$). The service record they keep of their workers is much more complete than is that of their less efficient colleagues ($\alpha = 0{,}1$).

3.3.2 *Motivation and communication practices*

The more efficient managers increase the remuneration of their workers in accordance with their contributions ($\alpha = 0{,}1$). It would appear as though these managers also give the kind of remuneration their workers would like to receive, because they make a bigger effort to discover what their workers' needs are ($\alpha = 0{,}25$). These farmers regard vacation bonuses ($\alpha = 0{,}05$) and recreational facilities and opportunities ($\alpha = 0{,}02$) as part of the remuneration package. It appears furthermore that supplying long-service bonuses and housing benefits are personnel practices which should not be lost sight of ($\alpha = 0{,}25$).

The more efficient managers also make more use of an incentive wage system ($\alpha = 0{,}05$). This may be due to the fact that to them, more so than to the less efficient farmers, remuneration goes hand in hand with work performance. It should, however, be pointed out that a system of incentive wages fails if work performance is not evaluated fairly and/or the remuneration is not in accordance with what, in the opinion of the workers themselves, constitutes a fair remuneration. Laubscher and Joubert (1976) found that farmers who remunerate according to a bonus system, are more likely to experience labour shortages because the bonus is probably not paid to reward productivity, but to compensate for other benefits.

A worker with the necessary abilities and training who receives the remuneration that he would like to receive, one who sees a strong link between work performance and remuneration and who believes he can accomplish more if he tries hard, ought to be not only productive, but also contented in his work (Orpen, 1976, p.81). A worker who performs well can be further motivated if the manager tells him how he is faring in the work situation. Notwithstanding the fact that the more efficient managers evaluate their workers' performance to a greater extent, it was found that feed-back to the workers did not occur to the same extent. The motivational power of this management practice is therefore not always fully appreciated.

The more efficient managers, however, receive constant feed-back from their personnel, not only in connection with personal complaints and grievances ($\alpha = 0{,}001$) but also in respect of suggestions in the work situation ($\alpha = 0{,}02$). Evans (1976) found that his liaison committees made only productive suggestions. Feed-back that is not received in this way is obtained in an interview at the termination of service ($\alpha = 0{,}05$). It also appears that the more efficient managers make use of notice boards ($\alpha = 0{,}05$) to pass on certain information.

3.3.3 *Production practices*

Tables 1 and 2 show that the quality of purchased rations and the availability of high quality farm produced feeds cause problems for the more efficient managers. The debate about self-mixing as against complete purchased rations will always crop up, because the most important single cost item in pig production is feeding costs (Ortmann, 1978a). In Table 3 it would appear that the more efficient managers favour buying feed ingredients and mixing these themselves ($\alpha = 0{,}25$), whereas the less efficient managers purchase complete rations ($\alpha = 0{,}25$). The profitability of pig farming can be increased if pre-mixed concentrates are bought and then mixed with cheaper feeds. (Ortmann, 1978b, p. 4), but this makes higher demands on a manager and his team of workers. Thornton (1977, p. 260) recommends the following in this connection: " The cereal farmer may well decide to add a pre-mix to home-grown cereals for on-farm feed preparation. The large intensive unit may be much better off concentrating entirely on the finer points of management instead of turning feed compounder and nutritionist".

As regards breeding, it appears that the more efficient managers apply artificial insemination ($\alpha = 0{,}02$). With artificial insemination the best use is made of a stud boar, which makes an important contribution to the genetic improvement of the herd, because controlled service takes place (Van Wyk, 1980); however, the handling of the stud boar demands the skill of a trained worker.

3.3.4 *Financing practices*

It would appear from Table 3 that the more efficient managers make more use of cash flow budgets than the less efficient managers ($\alpha = 0{,}25$). In spite of better financial planning, it still appears that the more efficient managers finance capital goods, such as pig housing, with more expensive short-term funds to a greater extent than do the less efficient managers ($\alpha = 0{,}25$). In Table 1 it can also be seen that a relatively larger percentage of the same farmers regard the high capital investment costs as a hindrance in efficient pig farming. The fact that the more efficient managers are inclined to apply this incorrect management practice may indicate that there are not sufficient and suitable financing schemes at their disposal to provide for especially their middle-term financing requirements (Vogel, 1978).

3.3.5 *Planning and control practices*

There can be no question of planning without an efficient record system and the enterprise can consequently not be controlled optimally (Hattingh, 1976). In Table 3 it can be seen that the more efficient managers evaluate their production results

to a greater extent ($\alpha = 0{,}05$). There is no sense in keeping records and not using the results (Mackie, 1975). Characteristics such as fertility, speed of growth, feed conversion and meat:fat ratio are reasonably highly heritable and are directly measurable in the living pig (Van Wyk, 1980). The more efficient managers measure the subcutaneous fat thickness ($\alpha = 0{,}01$) and sustained selection for this can improve the quality of the carcass considerably. It would furthermore also appear that they make greater use of official performance testing ($\alpha = 0{,}25$) and record pregnancy test results and post-weaning masses ($\alpha = 0{,}25$).

4. CONCLUSIONS

A considerable measure of confirmation was found for the hypothesis set out above. From the analysis and discussion of the results it became evident that there are differences between the more efficient pig farmers and the less efficient ones, not only in respect of the management practices that are applied but also regarding their viewpoints concerning the most important problems in pig farming and the existing research needs. As regards management practices, most of the differences are found in respect of the application of personnel practices and policies. The more efficient pig producers succeed to a greater extent in drawing good workers to their enterprises and in retaining and motivating them because they make significantly more use of certain personnel management practices. Productive and contented workers who can take more effective care of pigs with less supervision enable the manager to give more time to planning, innovation and control. The results show clearly that the more efficient managers make more use of record systems to obtain information for decision-making.

Although the results are not representative of all pig breeders, it would nevertheless appear that numerous pig farmers largely underestimate the contributions of their staff to the realisation of the aims of the enterprise and/or are not capable of motivating their workers optimally. Management training and guidance to farmers with specific attention to the personnel management dimension of farming management work can therefore make a significant contribution towards increasing productivity in pig farming.

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