

Improving stockmanship through Training and Motivation



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It is refreshing that a world-wide appreciation is beginning to re-emerge of the crucial role of stockpeople and stockmanship in our swine production enterprises. This rekindled interest in stockmanship and the farm animal care profession relates to their impacts on swine health, welfare and productivity, product quality and business efficiency, as well as the consuming public's perceptions of pork quality.

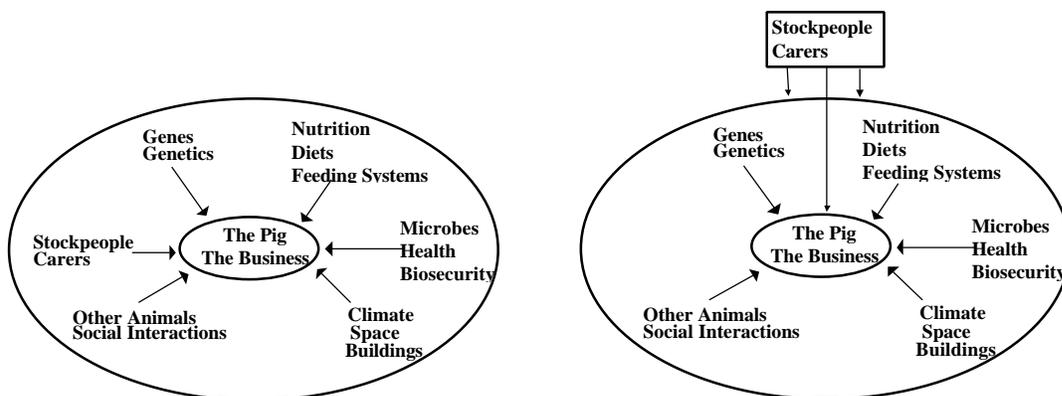
The renewed interest in stockmanship may also be related to the belief of some industry leaders that the lack of quality stockpeople is now becoming the 'Achilles Heel' of many swine production enterprises and a constraint to achieving further improvements in production efficiency and product quality.

Appreciation of the importance of good stockmanship in practice.

There have been many expressions of the importance of stockmanship based on practical experience. These include 'A good stockman is worth his weight in gold', 'Stockmanship is the key to animal welfare' (UK Farm Animal Welfare Council) and 'Excellent animal husbandry is the *sine qua non* of successful animal production' (Professor Stan Curtis).

The author has often 'floated' the alternative models of Figure 1 depicting a swine production system created by management and invited experienced livestock managers to express their preference.

Figure 1. Major controlling influences within the pig system on pig welfare, health, performance, product quality, efficiency and profitability.



Almost without exception Model 2 is supported. This is because the stockpeople, as well as their direct influence on the pig through their man-animal empathy, handling and general care, also have a very influential role on how effectively the pigs of varying genotype are provided with their specific needs in terms of feed, disease control measures, climate, space, housing, general care and the opportunity to socialise appropriately with their fellows.

Research findings on stockmanship and its impact.

The studies of Seabrook (1984) with dairy cows and Hemsworth et al (1981, 1986), Ravel *et al* (1996, 1998) and Coleman (2000) with pigs, demonstrated significant influences of the stockperson on animal performance and indices of welfare. The findings of Seabrook (1984) and Hemsworth *et al* are summarised in Figure 2 and Table 1 respectively.

Despite these important influences in the livestock industries, comparatively little research has been carried out to establish the scientific basis of stockmanship so that the components of this resource could be measured and improved (English et al 1992, Hemsworth and Coleman, 1998).

English et al (1992), Erven (1992) and Hemsworth and Coleman (1998) have drawn attention to the complexity of livestock care jobs, since they demand a comprehensive understanding of the needs of the animals, and a high level of skills in providing for these needs and in handling the animals generally. This emphasises the need for suitable education and training. In addition, other livestock industry researchers have drawn attention to the needs of workers in any job for motivation, job satisfaction and good team spirit/team working in any management-employee group (Maslow, 1954; Bowen, 1992; Grusenmeyer, 1992; Umphrey 1992). The well established influences of regular and progressive training as motivating influences contributing to job satisfaction and job performance in non-agricultural industries has been emphasised (Lloyd, 1975; English et al, 1992). Other positive influences on motivation, job satisfaction and job performance established in the livestock industries include a progressive career structure (Erven,

1992; Umphrey, 1992), status enhancing job titles (Bray, 1992; Umphrey 1992), and team working including a sense of partnership in the business with an influence on ‘trouble shooting’, working out solutions, setting targets and policy making in general (Bowen, 1992; Grusenmeyer, 1992).

Therefore, the theoretical ingredients of high quality stockmanship including careful selection of employees, ensuring good working conditions, regular and progressive provision of relevant education and training, a dynamic career structure to recognise achievements, team working, motivation and job satisfaction, appear to be well established. However, the available evidence indicates that stockpeople in general are not well provided for in terms of essential provisions which would help them to be more competent in, and satisfied with, their work and also to make a much larger contribution to the care of their animals, animal welfare and productivity, the efficiency of the livestock enterprise and the success of the business.

One syndrome of this general lack of provision for stockpeople is high job turnover in the livestock industries (Segundo, 1989; English et al 1992; Howard et al, 1990; Hemsworth and Coleman 1998). Howard et al (1990) described job turnover as ‘a disruptive, costly process’ on the running of the enterprise, especially in relation to team working. The main causes of job satisfaction leading to employee turnover have been found to be autocratic management style, poor communication opportunities with management, sub-optimal provisions for animal care, and the lack of both training provisions and recognition of achievements (Segundo, 1989; Howard et al 1990).

Figure 2. Milk production in Rex Patterson’s single-man dairy herds (Seabrook, 1984).

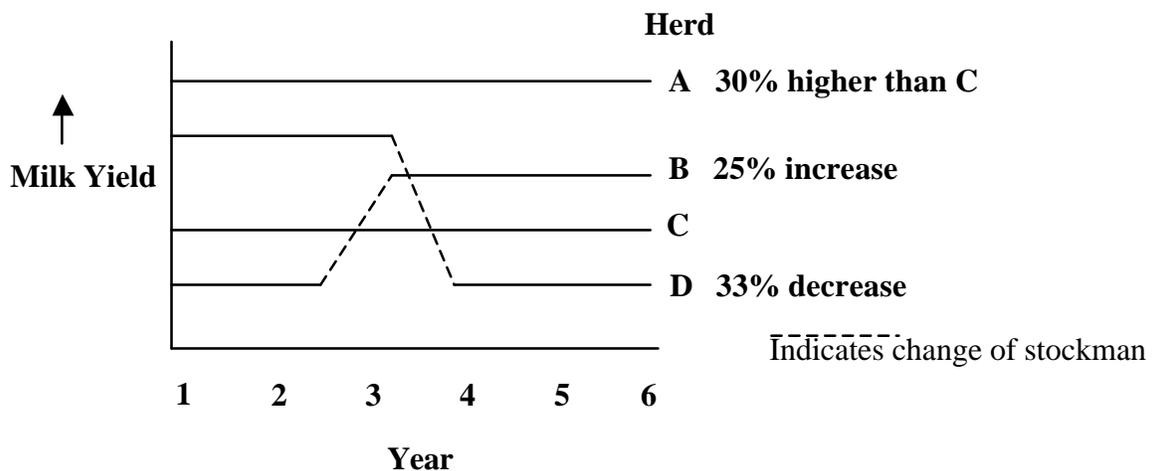


Table 1. Effects of handling treatments on the level of fear of humans and performance of pigs.

	Handling treatment	
	Pleasant	Unpleasant
1. Hemsworth <i>et al</i> (1981)		
Time to react with experimenter (sec) ^a	119	157
Growth rate from 11-22 weeks (g/d)	709	669
Free corticostroid concentrations (ng/ml) ^b	2.1	3.1
2. Gonyou <i>et al</i> (1986)		
Time to react with experimenter ^a	73	147
Growth rate from 8-18 weeks (g/day)	897	837
3. Hemsworth <i>et al</i> (1987)		
Time to react with experimenter (sec) ^a	10	147
Growth rate from 7-13 weeks (g/d)	455	404
Free corticostroid concentrations (ng/ml) ^b	1.6	2.5
4. Hemsworth <i>et al</i> (1986)		
Time to react with experimenter (sec) ^a	48	120
Pregnancy rate of gilts (%)	88	33
Age of a fully co-ordinated mating response by boars (days)	161	193
Free corticostroid concentrations (ng/ml) ^b	1.7	2.4

^aStandard test to assess level of fear of humans by pigs

^bBlood samples remotely collected at hourly intervals from 0800 to 1700h

Source: Hemsworth (1988)

Focus on the basic essentials of good stockmanship.

If as much research had been carried out on stockmanship as on swine nutrition, we would be able to list the components of good stockmanship, to measure these components and know how to improve each of the components and stockmanship in general with a considerable degree of confidence. However, while we know the many essential ingredients of swine diets, and requirements for each of these to enable us to formulate high quality diets, we are unable to 'formulate' good stockpeople in a scientific way. Because of the comparative lack of such scientific guidance, ideas on how to improve stockmanship has had to come mainly from practical experience assisted by guidance from other industries on staff management and motivational strategies. In order to create a focus to which improvement strategies can be applied, the following essentials of good stockmanship are proposed:

Proposed Six Essentials of Good Stockmanship.

1. Sound basic **knowledge** of the comprehensive needs of the animals and of how best to provide these needs in varying circumstances.
2. Competent in the full range of perceptual (observational), handling, technical, caring and treatment **skills**.
3. **Problem detection and problem solving ability.**
Competence in detecting problems in their very early stages, diagnosing the cause, working out a remedy, applying the remedy promptly and monitoring the outcome.
4. **Personal characteristics and attitude.**
An affinity with animals, patience, dedication to caring and a good sense of priorities so as to tend individual animals in greatest need.
5. Having sufficient **time** to pay the necessary attention to detail in all essential aspects of animal care.
6. The **motivation** to perform animal care duties and hygiene practices to a consistently high standard and associated job satisfaction.

These can be summarised as follows:

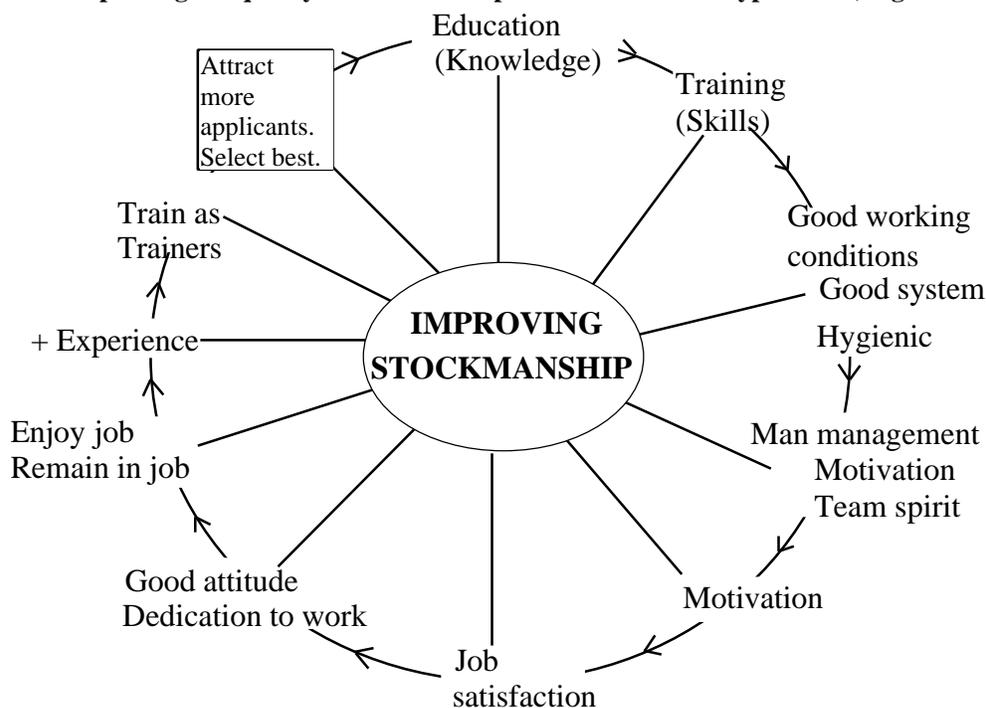
1. Knowledge
2. Skills
3. Problem detection and problem solving ability
4. Personal characteristics and attitude.
5. Having sufficient time to pay attention to detail.
6. Motivation and job satisfaction

Since Essentials 1, 2, 3 and 6 can be enhanced by appropriate education, training and motivational initiatives, (and since these in turn can influence **attitudes** and sense of priorities in relation to making more effective use of available **time**), these 'Six Essentials' have the potential to form a useful basis of a Stockmanship Improvement Programme.

Improving Stockmanship

At the outset of our studies on stockmanship at the University of Aberdeen we established the Mill Wheel Hypothesis (English *et al*,1992) See Figure 3.

Figure 3. Improving the quality of stockmanship - the 'Mill Wheel' hypothesis (English & McPherson 1995)



The initial concept was that by improving our understanding of each of the Mill Wheel components, this would provide awareness or the 'fuel' to increase the efficiency of the operation of the mill wheel ie. the process of enhancing the quality of stockmanship. As well as monitoring the outcomes of the studies of other researchers, our own initiatives have included the development of improved training packages, educational /training approaches and motivational methods. While there is a need for research to improve our understanding of training and stockmanship, we feel that we now have sufficient awareness and experience to provide the basis of a sound educational / training / motivational package to enhance the quality of stockmanship.

On-farm Training - 'Purpose-built' to needs.

An on-farm training approach was adopted from the outset in our work so that the training could be purpose-built to the specific needs of the farm and the staff (English *et al* 1998a, 1998b). It involved the entire working team - owner, managers and stockpeople. The number of staff attending each course varied from 4 to 20. The timing of the training was selected to suit the farm staff, the least busy day and time of the week being selected. Before a series of Training Courses, the pig enterprise was inspected by the trainers along with the owner and/or the manager, to see the stockpeople at their work and to assess the strengths and weaknesses of the system and the specific problem areas and challenges which should be a particular focus for education, training and discussion within the training group.

The emphasis in the training was on husbandry principles and practices (using slides and video training materials) and covered the needs of the pigs and how best to meet these needs. Slides and video training materials were supplemented with relevant exercises (eg. on piglet fostering strategies) and simple knowledge / awareness tests. There was also emphasis on increasing understanding of pig behaviour and using behaviour as indices of well-being so that problems are detected and resolved earlier. Duration of the Training Courses on (1) Farrowing and Piglet Rearing, (2) Breeding and Pregnancy (including gilt management), (3) Weaner Management and (4) Management of finishing pigs and improving carcass / meat quality, each lasted approximately 2 hours.

The stockpeople proved to be very dedicated and interested students. They accorded high scores to the training materials and training approaches and achieved significant improvements in knowledge in the post-course relative to the pre-course tests. They valued these tests and sought such training on a regular, progressive basis. They found the training motivational and it enhanced their job satisfaction. It could be said that they had a thirst for learning, for understanding their animals better and how to meet their needs more effectively. The training materials and approach appeared to meet the needs of all members of the training group - from managers to experienced stockpeople to new recruits.

The opinions of the stockpeople were also sought on a dynamic career structure and, if they favoured such, they were asked to state their main reasons for such interest. They were also asked to examine a list of alternative job titles and to select the title which most appealed to them.

Impacts of the Training.

The training was evaluated by the stockpeople and managers in various ways including a comparison of pre-course *versus* post-course test results and via Course Evaluations. However, the main 'proof of the pudding' was the impact, if any, on pig herd performance. To this end, herd performance records were compared in the year before and the year after the training and a summary of such comparisons are presented in Table 2. Farms selected for this comparison were those with no staff or system changes over the period so that any changes in pig performance were most likely to be attributable to the enhancement of the competence / motivation of the staff.

Table 2. Comparison of herd results in Year 1 (before) relative to Year 2 (after the training).

Herd	Number of sows	Additional pigs weaned per year in Year 2 relative to Year 1.	
		Number	Per Cent Increase
1	520	629	6.7
2	120	307	12.6
3	850	1020	5.0
4	350	726	13.4
5	760	608	3.8
6	210	231	5.5
7	400	640	6.5
8	640	704	5.1

In Herd 1, in addition to the increase in weaner output, reductions were also achieved in Rearing Herd (40%) and Finishing Herd (20%) mortality as well as improvements in growth rate in the Rearing (+13%) and Finishing Herds

(+25%). The major improvements achieved in Herd 1 during the rearing and finishing stages are indicative of the existence of serious problems before the training which the training did much to alleviate.

More specific details of Year Before *versus* Year After comparisons for Herds 3 and 7 are summarised in Table 3. The training emphasis in Herd 3 was on reducing piglet mortality, no training being provided on breeding management and the growing - finishing stages.

Table 3. Details of herd performance in the year before relative to the year after the training in Herds 3 and 7.

Herd 3	Year Before	Year After	
Livebirths per litter	11.2	11.2	
Mortality of Livebirths (%)	12.2	8.0	
Piglets weaned per litter	9.8	10.3	
Litters per year	2.44	2.44	
Piglets weaned /sow/year	23.9	25.1	+5.0%
Herd 7	Year Before	Year After	
Farrowing Rate (%)	82.8	86.3	
Litters/sow/year	2.42	2.46	
Born Alive	11.8	12.2	
Born dead	1.0	0.7	
Piglets weaned per litter	10.2	10.7	
Piglets weaned /sow/year	24.7	26.3	+6.5%

What about the relative likelihood of achieving improvements through relevant training in herds with either high or low productivity before the training? The key factor in terms of likelihood of a good response to training appeared to be the belief of the manager that relevant training could have a useful impact as well as the receptivity of the staff to training. It is likely that given the opportunity and challenge, a high proportion of staff will respond to efficient training. Most have a basic desire to succeed in their job and the better the understanding they have of their pigs and their needs, the more interesting their job becomes and the more motivated and determined they are to achieve both Company and self imposed objectives. It is interesting that Hemsworth *et al* (1994) in Australia set out to improve the attitude and behaviour of pig stockpeople towards their pigs through training and related initiatives and responses obtained included reduced levels of fear in the pigs as well as enhanced reproductive performance (+7.2% in births per sow per year). This level of improvement was within the range obtained in our own work (See Table 2). The Training initiatives used in the Australian work also appeared to enhance job satisfaction and to reduce job turnover rate.

Grandin (1995, 2000) has also emphasised the need for effective education and instruction of handlers of pigs during collection for loading, transportation, unloading and in the lairage section of abattoirs. The dividends from such training included improved ease of handling, reduced death rate in transit and enhanced meat quality.

Other outcomes of Training / Motivational initiatives.

Stockpeople and managers accorded high average scores to the courses, course materials and delivery methods. The preferred duration of individual courses varied from 2 to 4 hours and participants expressed a strong wish for regular progressive training at 3 to 6 monthly intervals. Comparison of Pre and Post Course Test results are summarised in Figure 4.

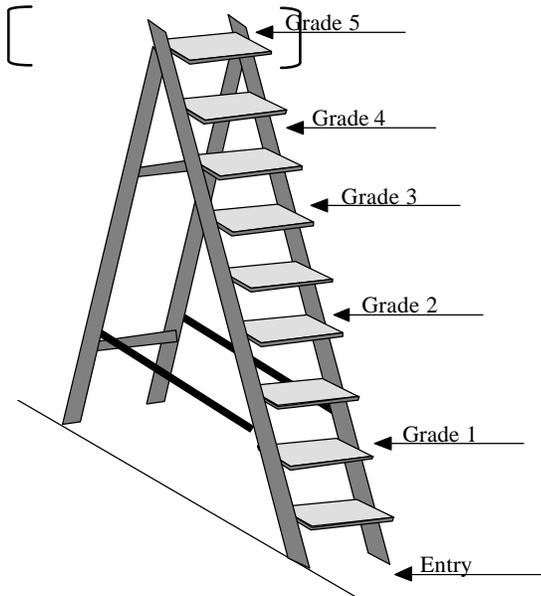
Figure 4. Pre and Post Course Test Scores.

<u>Pre Course</u> <u>Test Score</u>	<u>Post Course</u> <u>Test Score</u>	<u>Increase</u> <u>% Points</u>	<u>Per Cent</u>
68%	82%	14	21

Contrary to the expectations of the researchers, the stockpeople found the Pre and Post Course Tests to be a positive experience.

There was very strong support (from 96% of participants) for the concept of a Dynamic Career Ladder (See Figure 5). The proposal was that new recruits would aspire to attain Grade 1 as quickly as possible, based on overall competence and effectiveness in the workplace as judged by the manager. On attaining Grade 1, they would then aspire to attain increasingly higher grades. They would be awarded an Attainment Certificate as they moved up the Career Ladder to recognise their progressive improvement.

Figure 5. The concept of a Career Progression Ladder.



Main reasons for being attracted to the Career Progression Structure.

1 = most important reason
9 = least important reason

1. Improved job satisfaction
2. Better pig welfare
3. Improved job status
4. Better motivation at work
5. More incentive to improve
5. Better pig performance
7. Increased chance of a pay rise

The main reasons for being attracted to such a Career Grading Structure were (in order of priority): (1) Improved job satisfaction; (2) The attainment of better pig welfare; (3) Improved job status; (4) Better motivation at work; (5) Greater incentive to improve. 'Increased Chance of a Pay Rise' came well down the priorities in the reasons for being attracted to a Career Progression Structure, which surprised many employers and managers. It appeared that many employers did not understand the aspirations of their employees.

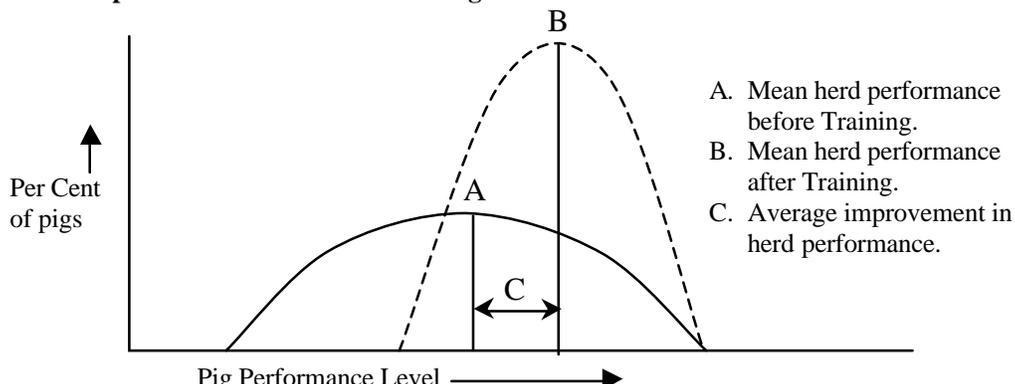
Course participants were asked to select their preference from a list of alternative job titles. The titles included both 'pig' and more general 'animal' or 'livestock' prefixes and terms to better describe the extensive knowledge and skills (including caring skills) of good stockpeople. There was considerable support for terms such as 'Care' or 'Carer' and 'Technician' or 'Specialist'. More general 'animal' or 'livestock' prefixes were preferred to 'pig' specific ones.

Reasons for improvements in pig performance achieved.

The improvements in performance summarised in Tables 2 and 3 were achieved with no additional capital investment and almost entirely by (1) additional care (hypothermia prevention and sensitive fostering) of new-born piglets, (2) improved care of smaller, less competitive pigs, (3) earlier detection of disease and other problems combined with prompt application of remedial treatment and (4) better AI/service management through having a better understanding of the pig's needs and providing for these needs through enhanced handling and general stockmanship care. As well as reductions in mortality and enhanced reproductive performance, some economies were achieved in sow feed usage on some farms, while pig growth rate from weaning to slaughter was increased substantially on others. Thus considerable dividends in terms of enhanced pig survival, reproduction, growth and efficiency of production resulted from the training / educational / motivational / staff and enterprise development initiatives applied.

It is not possible to determine the specific effects of each of these possible influences. The enhancement of the knowledge and understanding of the stockpeople, the improved basis of their skills (including handling), their enhanced motivation and team working, or some combination of these and other associated factors, appeared to be effective in achieving these substantial improvements in important performance parameters. Thus, all that can be concluded from the work to date is that it was the synergistic package of stockmanship and teamworking improvement initiatives which resulted in the promising results obtained. It is possible and indeed likely that a considerable proportion of the pig performance improvements achieved was in guiding and motivating the stockpeople to provide greater support and care to previously less competitive and more vulnerable individuals at all stages of the pig production process as indicated in Figure 6.

Figure 6. Possible impact of the educational / training / motivational initiatives.



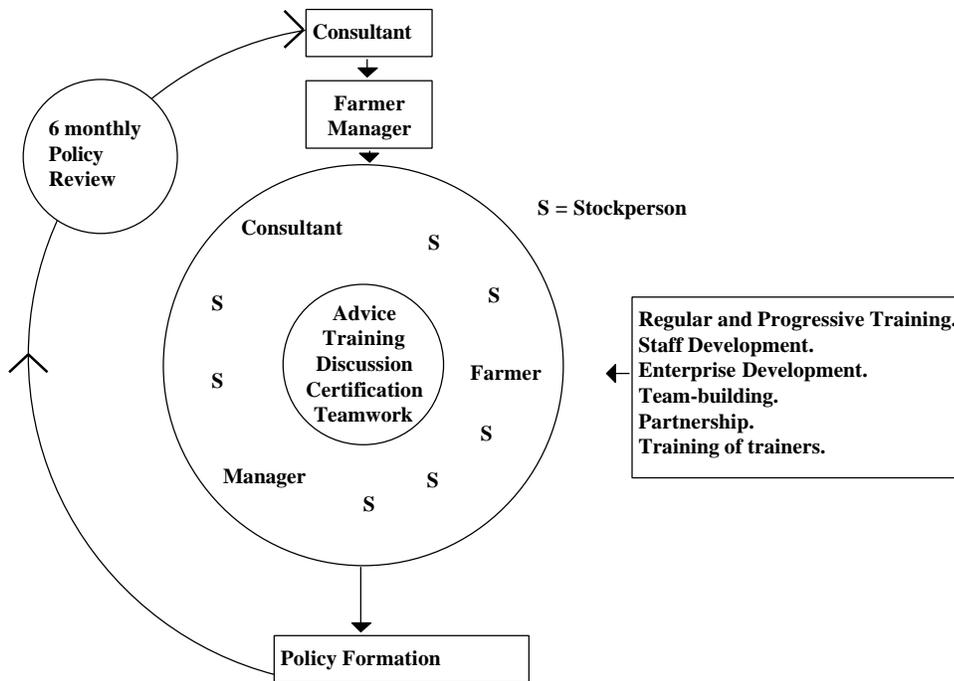
- A. Mean herd performance before Training.
- B. Mean herd performance after Training.
- C. Average improvement in herd performance.

Thus the main impact of the staff development initiatives applied may have been to improve average performance mainly by improving performance of the previously most disadvantaged pigs.

Projected development of the initiatives.

The projected further development of our educational / training / motivational initiatives are summarised in Figure 7.

Figure 7. Projected development. A model for regular and progressive training, staff development, team building and enterprise development.



Part of the future strategy will be the training of trainers so that each farm will eventually have the opportunity to be responsible for its own regular and progressive training. Thus the owner, managers and senior stockpeople can gradually contribute increasing proportions of the training provision. It is desirable that the main farm consultants (e.g. the veterinarian, nutritional consultant, the husbandry or business adviser) also become more involved in training. Up to the present, it is likely that many of these consultants communicate almost exclusively with management. This communication at management level should continue but should also be extended to include the stockpeople during the regular and progressive training which is envisaged. With all personnel involved in training, trouble shooting, and problem solving together, the talents and ideas of the stockpeople can contribute to the policy making of the management team. Thus, progressively, the stockpeople themselves have the opportunity to contribute to policy making. This is effective team-working as well as training and the stockpeople feel an increasing sense of partnership in the business. Conferring such increased problem solving and policy making responsibility has been found to contribute substantially to employee motivation and enhanced job satisfaction (Herzberg *et al*, 1959; Bowen, 1992; Umphrey, 1992; Grusenmeyer, 1992). These workers found that farm policies which had the 'handprint' of the entire management-stockpeople team on them were much more likely to succeed.

Development of supportive Training Packages for stockpeople and managers.

To facilitate the development of training and motivational initiatives for pig stockpeople such as that depicted in Figure 7, two comprehensive Training Packages in Interactive CD-ROM Format have been developed in UK (English *et al* 2000 and Edwards *et al* 2002). The first of these is designed for the training of pig stockpeople and the second for the training of pig sector managers. These are now available to the industry. These and related Training Packages will greatly facilitate pig sector training at all levels - stockpeople, managers and industry support personnel, as well as being supportive to animal science and veterinary students, trainers and teachers. Dr John Carr, now of Iowa State University, has played a prominent role in the development of both of these Training Packages.

Motivation of Stockpeople.

Motivation is a specialist and vast subject area about which we all know a little. The following has been extracted from a range of sources to provide guidance on the subject to pig enterprise managers.

Motivation refers to the desire of a stockperson or any other employee to perform well at work. All managers must know about motivation and how best to motivate their employees. Stockpeople, in caring for their pigs, carry out their

duties more effectively if they are motivated. Motivation has a powerful influence on the job satisfaction of the stockpeople, and on their attitudes to work, on their mental and physical efforts on behalf of the pigs and the business and on the resulting influence on the health, welfare and performance of the animals in their care. Stockpeople who are motivated to look after their pigs with great care will improve their health, welfare and performance and in turn help to improve the profitability of the enterprise.

Motivators and their Impacts

Pig Enterprise managers must be aware of the following motivators and their impacts and incorporate as many as possible into their staff management policies.

Motivators	Impacts
Regular and progressive training	Job satisfaction Job performance
On-farm training involving the whole team. Trouble-shooting, Problem solving, Policy formation	Greater sense of belonging within the team Greater sense of partnership in the business A strong motivator Job satisfaction
Interactive staff-management discussions, trouble shooting, problem solving, policy making	Motivation Job satisfaction
The togetherness and team spirit of the group	Improved attitude to work
Responsibility accorded to staff	One of the strongest motivators
Increased understanding of the needs of the pigs and how best to provide for these needs	Increased interest in animals Renewed efforts in caring
Feeling of achievement in improving animal performance e.g. reducing mortality	Job satisfaction
Policy of internal promotions	Improved morale of staff
+ Increased pay for low income workers or poorly motivated workers	Enhanced security and self esteem Improved attitudes and behaviour at work
Recognition of worth Recognition of achievements Being held in high esteem by peers and colleagues	Improved attitude to work Increased mental and physical efforts on behalf of the pigs and the business
Involvement of staff in decision making Granting authority to the working team e.g. to set their own targets	Facilitates the job of the manager Easier supervision Reduced staff turnover
Satisfying hierarchy of needs of staff Good Management style Effective Staff Management Policies Management understanding of the needs and ambitions of staff and also their dislikes	

The need for regular motivation and re-motivation

It must be appreciated that motivators which were effective in the first place are likely to become less effective over time on the thinking, attitude and effort of staff. Therefore, management must come up with new motivators over time, e.g. Regular Progressive Training, Special Awards and Recognition of Achievements (See Figure 1). All of us need more 'fuel' or different imaginative forms of 'fuel' to stimulate our striving for ever higher levels of attainment.

Increasing job satisfaction and making jobs more attractive.

Doing all we can to motivate and remotivate staff helps to increase job satisfaction, reduce job turn-over rate and also helps to increase the attractiveness of jobs in the pig industry. This in turn helps to attract more applicants for available jobs and hopefully also applicants with better stockmanship potential. More applicants for jobs in turn makes it possible for the manager to apply objective selection procedures so as to enhance the quality of new recruits.

The impact of appropriate training and incentive to gain National Vocational Qualifications in other industries.

The following impacts of regular, progressive training, striving for and attainment of National Vocational Qualifications (VQ) were achieved in a range of Food Manufacturing and Processing Companies in Scotland (See Table 4).

Table 4. Responses from Training and VQ Attainment in 28 Scottish Food Manufacturing and Processing Companies.

Productivity	+ 20%	Accidents	? 56%
Product Quality	+20%	Absenteeism	? 26%
Wastage	? 6%	Staff Retention	+ 27%
Complaints	? 12%		

These dividends are obviously of great importance both to the employees and to the business. Large pig production companies with good in-house Training / Staff Development Programmes are already achieving many such dividends both for their staff and their business.

Of all the major components affecting the efficiency and profitability of pig production enterprises, the staff component, both at management and stockmanship level, has been the last to be developed.

Now, with the full realisation of the major impact of quality stockmanship on the health, welfare and performance of the pigs, meat quality and the efficiency / profitability of the business, the incentive is there to address staff development challenges. It is fortunate that this realisation of the importance of the staffing component has coincided with the development of more effective staff recruitment / induction / training / motivational tools to both satisfy, and make more effective use of, the management / stockmanship component on our swine production operations.

Improving stockmanship to extract more value from other expensive inputs.

The author believes that making the most of human resources on farms, both individually and collectively, in effective teams of animal carers, trouble shooters, problem solvers and policy makers, is likely to be the most cost-effective way in the future to ensure high standards of pig welfare, performance, technical efficiency and business success in swine production enterprises. Good managers and good stockpeople together have a great impact on increasing the efficiency of the use of all the other expensive components of the pig production enterprise - the capital, buildings, equipment, genotypes, diets and high health security measures. They extract more value from these very expensive capital resources.

References.

- Bowen, M K (1992) The role of the Dairy Manager in human resource management. In: Large Dairy Herd Management (Eds: H. H. Van Horn and C. J. Wilcox). American Dairy Science Association. 757-763.
- Bray, D.R. (1992). Job Descriptions and job images. In: Large dairy herd management (ed. H.H. Van Horn and C.J. Wilcox), pp. 772-776. American Dairy Science Association.
- Coleman, GJ. (2000). Selection and Training of Stockpeople to improve sow productivity. Proceedings of the North Carolina Healthy Hogs Seminar. North Carolina Swine Veterinary Group.
- Edwards, S.A., English, P.R., Carr, J., Gill, B.P., Sheldon, M., Brent, G., Grant, S. and McPherson, O. (2002). An Interactive Multi-Media Training Package for Pig Managers. University of Newcastle and Meat and Livestock Commission, UK.
- English P.R., Burgess G, Segundo R and Dunne JH (1992). Stockmanship: improving the care of the pig and other livestock. Farming Press. Ipswich, Suffolk, England. 190 pages.
- English, P.R. and McPherson, O. (1995) Stockmanship: The 'Achilles Heel' of the pig industry and the role of training, education and motivational procedures in enhancing pig care and performance. Proceedings Iowa State University Conference on 'Swine Breeding Herd Management'. Des Moines, Iowa, USA. September 1995.
- English, P.R., McPherson, O., Deligeorgis, S.G., Vidal, J.M., Tarocco, C., Bertaccini, F. and Sterten, H. (1998a). Evaluation of training, certification and career development strategies for livestock industry workers in

- Scotland, Greece, Spain, Italy and Norway. In: Farm Animal Welfare – Who writes the rules? Occasional Publication No. 23 – British Society of Animal Science 1999. (Eds. A.J.F Russel, C.A. Morgan, C.J. Savory, M.C. Appelby and T.L.J. Lawrence) 144 - 149.
- English, P.R., McPherson, O., Deligeorgis, S.G., Vidal, J.M., Tarocco, C., Bertaccini, F. and Sterten, H. (1998b). Evaluation of the effects of training methodologies, motivational influences and staff and enterprise development initiatives for livestock industry workers in Scotland, Greece, Spain, Italy and Norway on livestock performance and indices of animal welfare. In: Farm Animal Welfare – Who writes the rules? Occasional Publication No. 23 – British Society of Animal Science 1999. (Eds. A.J.F Russel, C.A. Morgan, C.J. Savory, M.C. Appelby and T.L.J. Lawrence) 137 - 143.
- English, P.R., Carr, J., Gill, B.P., Sheldon, M., Brent, G., Grant, S., McPherson, O. and Edwards, S.A. (2000). An Interactive Multi-Media Training Package for Pig Stockpeople. University of Aberdeen and Meat and Livestock Commission, UK.
- Erven, B.L. (1992). Recruiting, selecting and training dairy farm employees. In: Large dairy herd management (ed. H.H. Van Horn and C.J. Wilcox), pp. 777-785. American Dairy Science Association.
- Grandin, T. (1995). Methods for reducing stress during transport and handling. Paper 41. British Society of Animal Science. Winter Meeting. Scarborough, England, UK. March 1995.
- Grandin, T. (2000). Handling pigs for optimum performance. In: Animal Welfare in the Swine Industry: Proceedings 31st Annual Meeting, America Association of Swine Practitioners. Indianapolis, USA. 11-14.
- Grusenmeyer, D (1992) Maximising human resource output. In: Large Dairy Herd Management (Eds: H. H. Van Horn and C. J. Wilcox). American Dairy Science Association. 764-771.
- Hemsworth, P.H., Barnett, J.L. and Hansen C. (1981). The influence of handling by humans on the behaviour, growth and corticosteroids in the juvenile female pig. *Hormones and Behaviour* 15, 396-403.
- Hemsworth, P.H., Barnett, J.L. and Hansen, C. (1986). The influence of handling by humans on the behaviour, reproduction and corticosteroids of male and female pigs. *Applied Animal Behavioural Science* 15: 303-314.
- Hemsworth, P.H., Coleman, G.J. and Barnett, J.L. (1994). Improving the attitude and behaviour of stockpeople towards pigs and the consequences on the behavioural and reproductive performance of commercial pigs. *Applied Animal Behaviour Science* 39, 349-362.
- Hemsworth, P.H. and Coleman, G.J. (1998). Human-Livestock interactions: The stockperson and the productivity and welfare of intensively farmed animals. CAB International. 152 pages.
- Lloyd, D.H. (1975). Effective staff management. In Economic factors affecting egg production. (Eds. Freeman, B.M. and Boorman, K.N.) *British Poultry Science*, Edinburgh. 221-251.
- Maslow, A.M. (1954). *Motivation and personality*, Harper & Brothers, New York.
- Ravel A, D'Allaire S and Bigras-Poulin M (1996). Survey of management and housing in farrowing quarters among independent and integrated swine farms in Québec. *Can. J. Vet Res.* 60, 21-28.
- Ravel, A., D'Allaire, S., Bigras-Poulin, M. and Ward, R. (1999). Psychodemographic profile of stockpeople working on independent and integrated swine breeding farms in Quebec. *Canadian Journal of Veterinary Research*.
- Seabrook M.F. (1984). The psychological interaction between the stockman and his animals and its influence on performance of pigs and dairy cows. *Veterinary Record* 115: 84-87.
- Segundo, Ricardo Cochran (1989). A study of stockpeople and managers in the pig industry with special emphasis on the factors affecting their job satisfaction. MSc Thesis. University of Aberdeen. Aberdeen, Scotland.
- Umphrey, J. E. (1992) Understanding employee motivation. In: Large Dairy Herd Management (Eds: H. H. Van Horn and C. J. Wilcox). American Dairy Science Association. 786-792.

Professor Peter R English

Professor Peter R English, BSc, NDA, PhD, recently retired as Professor of Animal Science and Husbandry at the University of Aberdeen. Served the University as a Professor, Lecturer, Researcher, Extension Specialist and Administrator. Lectured in Animal Science and Animal Systems, animal behaviour / welfare and the education, training and motivation of livestock farmers and stockpeople. His role as Director of 2 internationally respected one year Masters Courses (Animal and Pig Production) involved him in research on the full spectrum of animal systems which serve man throughout the world. He is the senior author of 3 text books on swine: 'The Sow: Improving her efficiency', 'The Growing and Finishing Pig' and 'Stockmanship'. His pig research has focused on the causes and prevention of piglet mortality and on the wide spectrum of factors influencing reproduction, lactation, growth and product quality in relation to improving pig husbandry and efficiency of production. He is the author of over 400 scientific and advisory publications related to Pig/Animal Care and Production systems. He has been actively involved in translating research into practice through his papers, books, lecturing and extension activities. His youthful experience as a shepherd and cattleman on small family farms in the Scottish Highlands, combined with his early University responsibilities for the management of the University's experimental pig herd, has been influential in his current focus of addressing the challenge of incorporating 'stockmanship' into the scientific spectrum of factors which impinge on the health, welfare, productivity and efficiency of swine and other farm livestock enterprises. He was the winner of the prestigious David Black Award in 1984 for his services through his research and extension activities to the British Pig Industry. In 1998 he received the British Society of Animal Science / RSPCA Award for his pioneering research in Animal Welfare and the education, training and motivation of stockpeople. He is a member of the UK's Farm Animal Welfare Council.

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