Animal welfare has been a matter of concern to mankind ever since the first animals were domesticated around 6000 B.C. Man has taken care of his animals and in return he has received various benefits. However in recent years this mutual relationship between man and beast has become a target of criticism in many Western societies. In the case of the pig industry, critics have claimed that modern systems do not allow the animals to express their natural behaviour, that they are held in unstimulating environments and hence are subject to boredom, or that they are unduly stressed by the modern need for high productivity.

Fortunately such claims are partly susceptible to analysis by scientific methods. Therefore, the pig industry has responded by initiating research into these points. However, the debate on pig welfare is not a matter for science alone. Politics, education, public relations and pig husbandry are also important in what must be a multi-faceted approach by pig producers to an issue that is likely to become increasingly important in the next decade.

ANIMAL WELFARE: A FORCE FOR CHANGE

H.R.C. MEISCHKE** and B.L. MOORE**

The animal welfare debate has come of age in Australia. After nearly four years of occupying major news space in our national and regional media, the "professionals" on both sides are starting to get together to discuss specific issues.

THE ANIMAL WELFARE MOVEMENT

Animal welfare organizations are a part of the environment or conservation movement in this country. Their sympathies line up with over 1,000 other Australian organizations with a total paid-up membership of around 500,000. Fee paying environmentalists outnumber members of all political parties by about 3 to 1 and the movement is growing: for example the National Trust and the Australian Conservation Foundation are increasing in membership at the rate of over 20% each year. The Fund for Animals has recruited 15,000 members in just over one year. Animal Liberation's membership has doubled in the past 12 months. Australia's 100 animal welfare organizations have a total membership of around 150,000 citizens.

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One great strength of the movement is a solid history of practical alleviation of animal suffering and the high respect which the community has for such work. It is viewed as safe, reasonable to the point of pragmatism and definitely here to stay.

The RSPCA is the 'establishment' of animal welfare. Community respect is their most valuable asset. It makes all the difference in their activities, in the hearing they get from our political leaders, in their appearances in courts of law, in the support they get from the police or other public servants, and in the legislative responsibilities accorded to them.

The movement comprises a second group of organizations, loosely linked under the umbrella of the Australian Federation of Animal Societies. Although regarded as more radical than the RSPCA, they include a number of highly educated, dedicated citizens with points of view on farm animal production which are seen by an urban based society as being enlightened and interesting. By any measure, they have promulgated their views with great effectiveness. Radical and conservative animal welfarists can at times have bitter clashes as evidenced in Victoria and NSW in recent years.

SCIENTIFIC DILEMMA

There is no known statistical technique for handling subjective or uniquely individual information. Such information includes emotions such as love, hate, boredom and other feelings such as pain, heat, cold and stress. Many attempts have been made to confront this problem in psychiatry, psychology and ethology with little reward for great effort. Indirect measures such as hormone assays have also been found wanting.

Pain cannot be averaged, added, subtracted or quantified in anything other than subjective or individual terms. Since cruelty is a progenitor of pain, the same applied to it. Our legislators have found it hard to define cruelty and have used subjective terms such as 'unnecessary' and 'unreasonable'. The use of such terms started when the Babylonian ruler Hamurabi created, in the 18th century B.C., the law codex named after him. Carved into stone was the first known animal protection law forbidding the owner of an animal to overexert it.

Most people relate to animals in subjective terms. The welfare of animals is also defined and legislated for in subjective terms. It is not surprising then, to see scientists frustrated when confronted with an immeasurable reality - their classic response has been to criticize anthropomorphism. But it may be that anthropomorphism is the key to the resolution of many animal welfare problems.

GOVERNMENT RESPONSE

Because of the intrinsic inadequacies of the static, legislative approach in a dynamic situation, many countries including Australia, New Zealand, the UK and Sweden, have opted for animal welfare codes of practice. While giving specific guidance, codes of practice still allow for new developments to be instituted by the livestock producer. These innovations can be valuable from both the welfare and the economic point of view.

In 1980, awareness of animal welfare matters within the Australian community was stimulated by debate about the transport of brumbies from northern
Australia, the export of horses for human consumption, the growing live-sheep export trade and animal husbandry practices in the pig and poultry industries. Recognising the importance of that debate a Sub-Committee on Animal Welfare (SCAW) was formed in July 1980 following an initiative from the Australian Agricultural Council/Standing Committee on Agriculture.

SCAW is made up of a representative from each State Department of Agriculture, CSIRO, the Commonwealth Department of Health, the Australian Bureau of Animal Health, and other committees within the Australian Agricultural Council structure. The current Chairman is the Director of the Australian Bureau of Animal Health, Mr. R.W. Gee. Since its formation the Committee has become a focal point for intergovernmental expertise on animal welfare matters.

In February 1983, the Australian Agricultural Council endorsed four model animal welfare codes of practice which were titled:

Australian Model Code of Practice for the Welfare of Animals.

1. The Pig
2. The Domestic Fowl
3. Road Transport of Livestock
4. Rail Transport of Livestock

The model codes have evolved following a review of other Australian and overseas codes of practice, and were released in March 1982 for comment by livestock producer and animal welfare organisations, and other special interest groups such as bodies representing road transporters, railways, and veterinarians.

INDUSTRY RESPONSE

Industry has a unique opportunity to demonstrate to the Australian community their desire to safeguard the welfare of animals. The model codes could be used as a basis for industry self-regulation and for continued discussion with government and animal welfare organisations. The codes endorsed by the Australian Agricultural Council are models which can be amended to meet the specific needs of producers and welfarists in each State.

The producer would benefit through increased productivity, reduced mortalities, improved carcass quality and reduced bruising. Two years ago, any suggestion that there might be such areas of consensus would have been viewed with suspicion, today it is regarded as conventional wisdom in some industries.

The poultry industry has led the way by taking the SCAW national code and reproducing it in a booklet form for distribution to all producers as endorsed by the Australian Council of Egg Producers. I understand that a similar approach is under consideration in some quarters of the pig industry. The extensive industries are currently opposed to the Codes.
FUTURE

And what of the future? It is essential to understand that animal welfare is fundamentally a "grass-roots" movement which transcends social divisions based on sex, age, education, occupation or race. We all have different feelings about nuclear weapons, about land rights for aboriginals or about whether a dam would be built in S.W. Tasmania, but central to our upbringing and culture is a revulsion against cruelty to the defenseless or the suggestion that it might be occurring. Where such cruelty is occurring it can be combated by education and effective self-regulation within industry. If that fails, community pressure will force governments to raise welfare standards by other means.

THE WELFARE OF ADULT PIGS: RESPONSES TO CONTRASTING HOUSING SYSTEMS

J.L. BARNETT,* C.G. WINFIELD,* P.H. HEMSWORTH* and G.M. CRONIN*

While it has been recognised that there is a clear need for a "multiple system of welfare indicators" (Smidt 1981), little comparative data on the responses of sows to different levels of confinement have been produced. Some behavioural data are available (Sybesma 1981) but there is little physiological evidence on welfare of pigs in relation to housing. This paper demonstrates first, that chronic stress can be measured in the pig and that it can be induced by minor changes to husbandry and second, describes some responses of sows to different housing systems.

THE STRESS MODEL

Experiments on social restriction (Barnett et al. 1981) and man-animal interactions (Hemsworth et al. 1981) have shown a chronic stress response in isolated or unpleasantly handled pigs, characterised by a sustained elevation of free plasma corticosteroid concentrations. This chronic stress response in the unpleasantly handled pigs produced a lower growth rate in young pigs (Hemsworth et al. 1981), altered secondary metabolism (Barnett et al. 1983) and a lower reproductive performance (Hemsworth and Barnett, unpublished data).

RESPONSES TO LONG TERM CONFINEMENT

The housing of pregnant sows in stalls is one of the main targets of welfare organizations, because sows kept in such stalls alternately with farrowing crates are unable to exercise freely for the whole of their reproductive life. Despite the widespread use of stalls there is little reliable information on the relative health status of stalled and loose housed sows. Bäckström (1973) in an extensive survey in Scandinavia found that veterinary treatment was required more often and traumatic injury was more common in stalled than loose housed sows. A recent experimental study has confirmed many of the earlier findings (Svendsen and Bengtsson 1983). Also sows in stalls tend to be dirtier (Ekesbo and Holmstedt, cited by Ekesbo 1981) and this may have effects on health.

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Some comparisons of production between stalls and loose housing showed advantages for groups (e.g. England and Spurr 1969) and some advantages for stalls (e.g. Watson et al. 1978). Sommer (1980) found that duration of parturition was doubled in stalled sows. Loose housing between weaning and conception is generally associated with improved reproductive performance, but much of this difference may be associated with improved detection of oestrus and mating management and so unrelated to welfare. Nevertheless Barnett et al. (1982) have shown that individually penned sows which are either socially isolated or allowed only visual and limited tactile contact have abnormal hormonal patterns around oestrus. Gilts consistently have reduced reproductive performance if closely confined before puberty (e.g. England and Spurr 1969).

Stereotyped behaviour such as bar biting (Ekesbo 1981) and continuous drinker manipulation (Fraser 1975) are seen more frequently in stalled than loose housed sows, but there is little reliable information on the incidence of these behaviours in commercial herds, on the reasons for so much variation within and between herds or on the predisposing factors.

The behavioural and physiological responses of non-pregnant and pregnant pigs to different housing systems have been examined in two experiments (Barnett et al. 1984, in press).

### Non-pregnant Adult Pigs

Adult non-pregnant pigs were kept in neck-tethers, pairs, a group indoors, an outdoor yard or a paddock for 12 months and behavioural and physiological responses were determined at intervals. Those housed in pairs exhibited a chronic stress response, evidenced by a sustained elevation of free corticosteroids (Table 1, Experiment 1).

**TABLE 1** Effects of housing treatments on mean free plasma corticosteroid levels in female pigs (ng/ml)*

<table>
<thead>
<tr>
<th>Condition</th>
<th>Housed Indoors</th>
<th>Group Housed Outdoors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tethers</td>
<td>Stalls</td>
</tr>
<tr>
<td>Non-pregnant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experiment 1</td>
<td>1.4 ab</td>
<td>2.0 c</td>
</tr>
<tr>
<td>Pregnant</td>
<td>2.2 a</td>
<td>1.5 b</td>
</tr>
</tbody>
</table>

within rows different letters denote significant differences P < 0.05
* the bleeding regime has been described (Hemsworth et al. 1981)

The pigs in pairs also had a disrupted diurnal pattern of free plasma corticosteroids, a slower rate of increase of corticosteroid levels at the start of an acute stressor (transport), a lower percentage increase during transport, and a slower rate of decrease of corticosteroid levels following transport compared to the other treatments. Behaviourally the pigs in pairs spent more time lying alone (P < 0.05) than pigs in other treatments (11% of lying time compared to 5, 7 and 7% for pigs in groups indoors, the yard and the paddock
treatments, respectively), and there was significant positive regression between
the time spent lying alone and free corticosteroid levels. Gross behavioural
patterns were similar across the treatments (active, 14-27% of observations;
inactive, 1-3% of observations; and lying, 70-82% of observations). These
behaviours were more affected by observation period (time) than treatment.
While the mean occurrence of inappropriate behaviours such as champing (0-1 out
of 144 observations/day), biting (0-1 observations/day) and manipulating
drinkers (1-3 observations/day) was generally low, it was higher in pigs housed
indoors, particularly the tether and pair treatments, than those housed
outdoors.

Pregnant Pigs

A basically similar study with pregnant pigs, comparing the effects of
housing in neck-tethers, stalls, a group indoors and a group in a paddock showed
that those in tethers exhibited a chronic stress response (Table 1, Experiment
2). As in the previous study, the indoor group showed lowest free
corticosteroid levels. Pigs in non-tether stalls showed a significant \((P<0.05)\)
increase in the use of drinkers (3.2 compared to less than 1.2 observations/day)
and licking and biting of pen components (6.9 compared to less than 5.7
observations/day), but these activities were not accompanied by an increase in
corticosteroid concentrations.

These two studies show first, that pigs which are closely confined (in
tethers and stalls) or socially restricted (in pairs) can show increased
corticosteroid concentrations indicative of a chronic stress response and/or
increased inappropriate behaviours. The differences observed in corticosteroid
concentrations between pregnant and non-pregnant pigs in tethers and the effect
of group size require clarification. Second, there appears to be little
difference in the welfare status of adult pigs kept in groups (greater than 2)
indoors or outdoors.

In conclusion, some current sow housing systems can result in chronic
stress and changes in behaviour, but the significance of these changes to
welfare status is as yet unclear.

THE BEHAVIOUR OF SOWS AND GILTS, HOUSED IN STALLS, TETHERS AND GROUPS

JUDITH K. BLACKSHAW* and J.F. MCVEIGH**

Availability of data on tethering of sows is limited. Fraser (1975) found
that sows in tether stalls with straw lay down more and had lower scores for
oral and other stereotypies (movements which are combined into rhythmic or
complex sequences of obscure purpose). Bar-biting was found to be chronic
throughout much of the day in the absence of any special disturbance.

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Recent work (Carter & English, 1983) has shown that agonistic encounters were lowest in stalls and tethers and there was a much higher incidence of recorded manipulatory activities of the mouth and snout among sows in the tether systems (41.1%) and strawyard systems (33.0%) than in stall systems (7.8%).

Gravás (1981) showed that the activity of tied sows compared with those free in a stall was not markedly different, and the number of still-born piglets in free stalls was 0.7/litter compared with 0.1/litter in tethered sows.

It is known that there are problems with sows kept in groups. Sambraus (1981) described social disagreements after grouping in 7 groups of penned sows. He suggested that grouping older sows may be possible if they were provided with individual feeding cubicles.

This study in a small commercial piggery was made under the normal husbandry procedures of the piggery to observe and record what behaviour occurs in sows and gilts housed in stalls, tethers and groups.

**OBSERVATIONS**

Two types of observations were made for each husbandry system:

(i) Detailed observations each week on 36 tethered sows, 8 tethered gilts, 9 sows in stalls, 10 gilts in stalls, two groups of 6 gilts and five groups of 6 sows each penned.

(ii) Surveys of all the pigs in stalls, tethers and pens with time sampling during both the day and night.

**RESULTS**

**Settling in**

Groups of sows and gilts explored their pens (sows, for 3-5 minutes; gilts, 10-12 minutes) before the first agonistic interactions occurred. Stalled and tethered sows settled immediately, but gilts that were experiencing tethers for the first time pulled back and forth and some squealed. This ceased after 7-20 minutes.

**Penned Sows and Gilts**

The grouped sows (five groups of 6 sows) were only kept together for one day over two feeding periods, as the agonistic behaviour (conflict involving threats, bites, fights) prevented any other patterns from emerging.

Grouped gilts (two groups of 6) showed some pre-feed excitement which consisted of crowding and pushing to the fence as the food trolley came past. There was no pawing or head waving nor was there opportunity for any bar-biting. Agonistic activity which occurred over the first 16 minute feed period averaged 4 agonistic incidents/minute. This decreased over the next three months to average 1.8/minute, during feeding. They showed no true stereotypies after feeding. The first gilt lay down within 17-34 minutes after the beginning of feeding and all gilts were consistently lying by 76 minutes after feeding.
There were examples of gilts that sat and chewed for up to 20 minutes in the after feed period, but this ceased when they lay down.

**Stalls and Tethers**

Pre-feed excitement was shown in stalled sows and gilts, and in tethered sows and gilts when food was anticipated. These were similar to those described by Fraser (1975). The types of behaviours seen are listed in Table 2. Day 1 was the day that the pig was put into the husbandry system and the frequency of the behaviour was noted over the first feeding period. Agonistic displays were not evident in tethered gilts, nor in stalled sows or gilts. The agonistic activities in the tethered sows dropped from 47 per cent of all sows over the first two weeks to one example over the three month period that followed.

**TABLE 2** Pre-feed behaviour (5-12 minutes before feeding) and the frequency they occurred on the first day (Day 1) that sows and gilts were stalled or tethered

<table>
<thead>
<tr>
<th></th>
<th>Tethers (36)</th>
<th>Sows (9)</th>
<th>Stalls (8)</th>
<th>Gilts (10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agonistic displays</td>
<td>17 Stand for feed 5 Yell 7 Stand for feed 6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yell</td>
<td>26 Lie until feed comes 4 Paw 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paw</td>
<td>23 Pull at tether 1 Nosing bars 2 Stand &amp; chew 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nosing bars</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Froth and chew bar</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stand &amp; chew</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stand</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wave head</td>
<td>18</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Some of the tethered gilts learned to chew the bar, wave their heads, paw and yell during the following three month observation period but there were 5 gilts that only stood up when food was anticipated.

Bar-biting was observed in 17 tethered sows consistently but was interspersed with pawing, yelling and head waving. Some stalled sows and gilts also bit the bar, but again it was mixed up with the other activities.

These behaviours occupied a very small time period over 24 hours. It was 1.7-2.0 percent of the time in stalled and tethered sows, 0-0.4 percent in tethered gilts and 0-0.2 per cent in stalled gilts.
After feeding is one of the periods when stereotypies have been reported to occur in pigs. The behaviours are shown in Table 3. These behaviours occupied between 14.5-29.0 per cent of a 24 hour period in tethered sows, 10.0-14.0 per cent in stalled sows, 1.4-5.6 per cent in tethered gilts and 4.2-6.3 percent in stalled gilts.

**TABLE 3** After feed behaviours observed in tethered and stalled sows and gilts before they rested

<table>
<thead>
<tr>
<th>Tethers</th>
<th>Stalls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sows (36)</td>
<td>Gilts (8)</td>
</tr>
<tr>
<td>Lie</td>
<td>Lie</td>
</tr>
<tr>
<td>Lie &amp; Chew</td>
<td>Lie &amp; Chew</td>
</tr>
<tr>
<td>Lick trough</td>
<td>Lick trough</td>
</tr>
<tr>
<td>Stand &amp; chew</td>
<td>Stand &amp; chew</td>
</tr>
<tr>
<td>Chew trough</td>
<td>Rub nose on</td>
</tr>
<tr>
<td>Play with chain</td>
<td>Rub nose on</td>
</tr>
<tr>
<td>Rub nose on</td>
<td>Rub nose on</td>
</tr>
<tr>
<td>Floor</td>
<td>floor</td>
</tr>
<tr>
<td>Rub nose on</td>
<td>Lick trough</td>
</tr>
<tr>
<td>Floor</td>
<td></td>
</tr>
</tbody>
</table>

There were no examples of chronic bar-biting or the pre-feed behaviours of yell, paw, wave head, but there were several examples of true stereotypies which were performed continuously by individual pigs until they lay down.

A survey of (30) tethered pigs one hour before feeding (0800) showed 27% were lying, 27% were standing and chewing, and the remainder were standing only, or licking the trough, and one pig was bar chewing. In the period 5-15 minutes before feeding 50% were standing or sitting and the remainder were head waving, pawing or chewing a bar. By 3 hours 40 minutes after feeding all were lying, standing or sitting.

Pigs in stalls (18) just before feeding waved their heads and chewed bars (71%). Three hours after feeding 72% were lying and the remainder were standing and chewing.

A survey of tethered and stalled pigs over 16 hours (1500-0645) showed that all pigs were lying from 1830 to 0645 (75% of the survey period).

One hour after feeding stand and chew, followed by stand and lick trough were the most common behaviours. Stand and chew was the most common behaviour for two to three hours following feeding, after which most pigs were resting.
A PRODUCER'S RESPONSE TO COMMUNITY ATTITUDES

N. J. MAUGHAN*

The community has been concerned about cruelty to animals for some time. However, the Animal Welfare movement of today is a relatively recent phenomenon made up of a wide diversity of independent groups and confined to the more affluent urban-based Western societies. It is acknowledged that the community is concerned about the treatment of animals and that animal welfare has widespread and increasing public support. This is evidenced by:

* Media space devoted to animal welfare issues. A current affairs program in the United States featuring the animal welfare issue generated more mail than programs on any other topic.

* The number of organisations interested in Animal Welfare. The Humane Society of the U.S. for example announced in 1980 that it was co-operating with 400 other groups throughout the country in its campaign to have the Draize test on rabbits banned. In Australia, the Australian Federation of Animal Societies claims to represent 46 constituent member organisations with over 50,000 individual members.

* The volume of mail received by both State and Federal governments. I understand that the Department of Primary Industry in Canberra receives more mail concerning animal welfare than on any other single topic.

* Response of governments. Both State and Federal governments have appointed senior public servants to deal with animal welfare matters.

* Legislation. There is now legislation concerning animal welfare in many countries around the world including Britain, U.S.A. and Australia.

It would be foolish for producers to claim that all is well in the animal production industries. It is not. We know it is not - and we should say so. What is unacceptable however is the notion that isolated examples of abuse or ill-treatment of animals are typical of the whole industry. They are not. Nor is it correct to portray all producers as being primarily motivated by the profit motive who care little for the welfare of the animals in their control. The truth is that the vast majority of producers and people working in the animal production industries are genuinely concerned about the welfare of animals and have chosen to work in that field largely because of their love of animals.

There is a need to guard against attributing to animals, human emotions - emotions which they may or may not have. Taking the anthropomorphic point of view that because I would not be happy in a given situation, the animal necessarily reacts in the same way. Most humans for example would find little joy sitting in the fork of a tree nibbling gum leaves, a state of affairs that I would suggest the koala finds most satisfying.

It is not necessarily valid to argue that because in improving an animal's overall environment we have restricted its ability to forage, to wallow, or to nest, that the animal is necessarily stressed or frustrated. We need to know far more about basic behavioural needs.

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The main areas of concern in relation to pigs seem to be:

- large scale corporate owned farming
- transportation
- handling at abattoirs
- stocking densities
- stalls and tethers
- bedding
- mutilations

The more responsible leaders of the animal welfare movement both in this country and overseas would acknowledge privately that they are distorting the facts but argue that the end justifies the means. They do of course have a problem, because the rate of progress is insufficient to satisfy the militant members of the loose coalition of diverse member organisations, which make up the animal welfare lobby.

**TEN POINT PLAN**

I would advocate that in response to legitimate community concern regarding animal welfare matters, the Australian Pig Industry should accept the principles embodied in the following ten points:

1. Producers should be concerned to see that the public are given a balanced view of animal welfare.

2. Codes of practice based on logic, reason and objective evidence should be welcomed by producers.

3. Such codes should take into account all available evidence on health, production physiology, biochemistry, and behaviour.

4. Codes of practice should be sufficiently flexible to allow for innovation.

5. Implementation of animal welfare objectives should rely heavily on counsel, advice and assistance, with threats of prosecution used only as a last resort. The prime objective is surely to improve the welfare of the animal, rather than to punish errant owners of stock.

6. Dialogue between producer groups and animal welfare groups should be encouraged since there are large areas of common concern.

7. Existing production systems should be examined and if necessary modified with the welfare of the animal in mind. Where satisfactory modifications are not possible, alternative production systems should be explored.

8. Consideration should be given to phasing out emotive terminology such as crates, confinement and cages.

9. More funds must be directed towards animal welfare and behavioural research. This is the fastest growing area of agricultural research in many overseas countries. It is interesting to note that Australian producers through the Australian Pig Industry Research Committee have already provided in excess of $300,000 for research in these areas. I would be interested to know how much money animal welfare groups have provided.
Pig producers should co-operate with other livestock producers in mounting a carefully planned and professionally executed public relations campaign. It is in my view imperative that as a matter of urgency the pig industry joins with the other animal production industries in formulating and implementing a carefully planned co-ordinated campaign to:-

* inform producers
* rectify problem areas; and
* give the general public a balanced view of the animal production industries.

The animal welfare issue will not go away quietly and I would suggest that in future producers will need to include public relations in their budgets in the same way as they now do for labour, feed, fuel, research and promotion.

CONCLUSIONS

J.A.A. GARDNER

Several areas have been identified where action is needed:-

* The pig industry should adopt the Australian Model Code of Practice for the Welfare of Animals as a basis for its own self-regulation.
* There is a need for industry to inform the public about its activities.
* More resources should be allocated for research into pig behaviour.
* Regular dialogue should be established between pig producers and welfare groups.

From the research discussed, there was no indication that the welfare status of pigs group housed indoors was any different to those outdoors.

REFERENCES


