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## Incidence of carcass damage in slaughter pigs

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### Introduction

During transport and lairage prior to slaughter pigs from different rearing groups are frequently mixed. The fighting which often ensues leads to unsightly lacerations on the carcass which, in severe cases, may lead to its downgrading. The so-called rind-side damage makes the carcasses less suitable for curing into bacon and there is also evidence that pigs which have been fighting preslaughter are more likely to produce meat with a high ultimate pH (Warriss and Lister, 1983). Despite the economic importance of these effects there appears to be no recent estimate of the incidence of damaged carcasses. A survey carried out in the mid-seventies found that over 40% of pig carcasses showed some evidence of fighting damage (Meat and Livestock Commission, 1976) but the number which were bad enough to be downgraded was not recorded. The problem has been highlighted by the increasing use of entire males (boars) for bacon production and the commonly-held belief in the meat trade that boars are more prone to fighting. Downgraded carcasses are given a Z-grading under the Meat and Livestock Commission pig classification scheme. This grade is not restricted to carcasses damaged through ante-mortem fighting but is given to all those which are "scraggy, deformed, blemished, pigmented, coarse-skinned or partly condemned, or those with soft fat or pale muscle". Nevertheless, observation suggests that carcasses damaged by fighting make up the overwhelming majority of those which are given a Z-grade. Therefore we have recorded the incidence of Z-graded carcasses in order to estimate the current importance of the problem.

### Materials and Methods

The frequency of Z-graded carcasses was recorded over one year (1982/83) in three bacon factories each slaughtering approximately 100,000 pigs per annum. During the period studied the overall number of pigs killed was 300,045. It was possible to classify the carcasses as coming from either boars or non-boars (castrates and gilts combined). Differences between the proportions of boars and non-boars given Z-grading were tested using Chi-squared tests.

### Results and Discussion

The results for the three factories are given in Table 1. Overall, the incidence of Z-graded carcasses was 4.67%. About 21% of all slaughtered pigs were boars and of these 5.29% were awarded a Z-grading. The comparable incidence of Z-grades in the non-boars was 4.51%. The proportion of boars killed and the incidence of Z-grading varied between the three factories but in each plant the frequency was always higher in boars than in non-boars and the differences were very highly significant ($P<0.001$). The incidence in boars ranged from 1.3 to 2.5 times the incidence in the combined gilts and castrates and the plant with the highest incidence overall had in fact the lowest proportion of boars slaughtered. The implication is that, at very low incidences of Z-grades, reflecting good preslaughter handling, the effect of sex is more important than where handling is less careful and the incidence of Z-grades is high. With good handling however, the extra problem associated with boars is considerably reduced in absolute terms. This handling does not necessarily seem to relate to the practice of keeping pigs in lairage for long periods. We know that the plant with the lowest incidence of Z-grading keeps a high proportion of its pigs overnight. The possibility of a seasonal effect in the incidence of Z-grading was examined (Fig 1). There is no evidence that the frequency varies consistently throughout the year and this is also true if boars and non-boars are considered separately.

The variation in the incidence of damaged carcasses between the three plants in this survey and also in the Meat and Livestock Commission survey referred to earlier suggests that much of the problem could be avoided by different preslaughter handling procedures, whenever possible avoiding mixing groups of unfamiliar pigs. Certainly, reduction in the number of damaged carcasses would be economically beneficial and might also lead to improved meat quality as well as being desirable in the context of animal welfare.

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References:

Meat and Livestock Commission 1976, Technical Bulletin Number 14. Handling pigs from farm to slaughterhouse.

Warriss, P.D. and Lister, D. 1983, Animal Production 36, 525. The physiological responses to fighting in pigs and the consequences for meat quality.

Table 1. The incidence of Z-graded carcasses in three plants each slaughtering about 100,000 pigs per year

| Plant | % boars killed | % Z | | | Significance of difference between sexes $X^2$ | Ratio of incidence in boars to that in non-boars |
|---|---|---|---|---|---|---|
| | | overall | boars | non-boars | | |
| A | 21.8 | 1.2 | 2.2 | 0.9 | 250.2 *** | 2.5 |
| B | 29.4 | 4.1 | 5.0 | 3.7 | 98.7 *** | 1.4 |
| C | 13.3 | 8.5 | 10.5 | 8.2 | 79.7 *** | 1.3 |

Fig. 1 The monthly incidence of Z-graded carcasses in the three plants