

IMPORTANT PIG CARCASS PURCHASING CRITERIA

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SUMMARY

Queensland retailers (butchers and supermarkets), wholesalers and smallgoods manufacturers were surveyed to determine market requirements for pig meat. Business operators were asked about: pig carcass purchasing criteria; preferred carcass weight and P2 fat depth ranges; prevalence of pale, soft exudative (PSE) pork, dark, firm dry (DFD) pork and ecchymosis; and satisfaction with current pig meat supplies.

The most important carcass purchasing criteria were carcass weight and fatness. Carcass meat and skin colour, carcass conformation and carcass sex were also considered important by some operators. Preferred porker carcass weights were 40-50kg with 8-11 mm P2 fat depth and preferred baconer carcass weights were 55-70kg with 9-13mm P2 fat depth. Many respondents reported receiving PSE, DFD and ecchymosis affected carcasses. Most businesses were able to obtain pig meat which met their specifications. This information has been extended to producers who can use it to better meet specific pig meat markets.

Keywords: pig meat, carcass purchasing criteria

INTRODUCTION

Pig meat competes with various other protein sources. Therefore, pig producers must be aware of consumer demands and supply appropriate product if pig meat is to retain, if not increase, its market share. The retail, wholesale and smallgoods manufacturing sectors can provide carcass specifications and pork quality data which producers can use to better meet specific pig meat markets.

A survey by Pryde *et al.* (1991) identified factors which influenced where and why North Queensland retailers and wholesalers purchased their pork carcasses. This paper is extracted from the Queensland pork market survey which obtained market data for the other pig producing regions of Queensland.

MATERIAL AND METHODS

We surveyed retailers (butchers and supermarkets), wholesalers and smallgoods manufacturers using as a base the questionnaire of Pryde *et al.* (1991). Issues addressed in the questionnaire included: important pig carcass purchasing criteria - carcass weight, P2 fat depth, sex, conformation (carcass shape), breed, carcass colour and overall carcass fatness; preferred carcass weight and P2 fat depth ranges; prevalence of pale, soft exudative (PSE) and dark, firm dry (DFD) pork and ecchymosis; and business operators' satisfaction with current pig meat supplies.

The survey was conducted in south-east (SEQ), central (CQ) and southern (SQ) Queensland, involving 319 businesses or about 26% of all meat retailers, wholesalers and smallgoods manufacturers. Using consumer focus groups - 1 each in Brisbane, Toowoomba and Rockhampton - we compared the survey information with consumer requirements for pig meat.

RESULTS AND DISCUSSION

Carcass purchasing criteria

The most important criteria used by all businesses when purchasing pig carcasses were carcass weight and fatness (Table 1). Overall fatness and P2 fat depth were ranked within the top 4 criteria by all businesses, suggesting that they do not rely solely upon the P2 fat depth measurement as an indicator of carcass fatness.

Operators also considered carcass meat and skin colour to be important, preferring light pink coloured skin and meat. The focus group studies confirmed that consumers prefer light pink coloured meat and clean white skin with no visible hairs or blemishes. They associate these qualities with fresh product. Conformation was considered to be important because of its perceived influence on saleable meat yield and because of visual appeal.

Carcass sex was included in the top 5 purchasing criteria by butchers, wholesalers and smallgoods manufacturers in the south-east region. Butchers and smallgoods manufacturers expressed a strong

dislike for boar carcasses, commenting that boar taint was a major problem. The strength of their reaction indicated that boar taint is a contentious issue. However, consumers in the focus group studies did not report boar taint in either fresh pork or pork smallgoods. This is supported by Malmfors and Lundstrom (1983) who reviewed 9 European studies on consumer reactions to boar meat and concluded that while attitudes to boar meat varied widely it is largely acceptable to consumers. Entire males convert feed into muscle more efficiently than castrates, benefiting producers by lowering production costs (Squires *et al.* 1993). Boar taint occurs more frequently in heavier carcasses (Malmfors and Hansson 1974). As the average carcass weight has increased in recent years further studies are recommended to determine if business operators' concerns about boar meat are justified.

Table 1. The 5 most important criteria used when purchasing pig carcasses by business category in south-east (SEQ), southern (SQ) and central (CQ) Queensland

Business category	Region	Most important criteria (most important – least important)				
		1	2	3	4	5
Butcher	SEQ	Carcass weight	P2 fat depth	Sex	Overall fatness	Carcass colour
	SQ	Carcass weight	Overall fatness	P2 fat depth	Conformation	Carcass colour
	CQ	Carcass weight	P2 fat depth	Overall fatness	Carcass colour	Conformation
	State	Carcass weight	P2 fat depth	Overall fatness	Carcass colour	Sex
Supermarket	SEQ	Carcass weight	P2 fat depth	Carcass colour	Overall fatness	Conformation
	SQ & CQ	Carcass weight	P2 fat depth	Overall fatness	Conformation	Carcass colour
	State	Carcass weight	P2 fat depth	Carcass colour	Overall fatness	Conformation
Wholesaler	SEQ	Carcass weight/ P2 fat depth	Overall fatness	Carcass colour	Conformation	Sex
	SQ & CQ	Carcass weight	Overall fatness	P2 fat depth	Conformation	Carcass colour
	State	Carcass weight	P2 fat depth	Overall fatness	Conformation	Carcass colour
Smallgoods manufacturer	SEQ	P2 fat depth	Carcass weight	Sex	Overall fatness	Carcass colour

Preferred carcass weight and P2 fat depth ranges

Preferred porker and baconer carcass weight ranges were 40-50 kg and 55-70 kg, respectively (Table 2). Customer preferences for particular cut sizes and saleable meat yield both exerted a major influence on the carcass weight ranges specified by all business operators.

In this study butchers' preferred weights were similar to those considered most suitable by butchers in the North Queensland survey (Pryde *et al.* 1991). In contrast, most supermarkets in our study preferred lighter porker carcasses than their northern counterparts, who preferred 50-54 kg carcasses.

We found that both butchers and supermarkets preferred heavier carcasses than did Walker (1983), who found butchers and supermarkets preferred 30-50 kg and 35-45 kg carcasses, respectively. Our results, in conjunction with industry slaughter data (Ransley and Cleary 1994), indicate an increasing national slaughter weight over the last 10 years.

All business operators across all regions specified narrow P2 fat depth ranges, indicating a uniform preference for lean carcasses (Table 2). The consumer focus group studies confirmed that leanness was a primary concern of consumers when purchasing fresh pork and pork products. Some consumers considered that very lean pork was too dry when cooked. Consumer studies in North Queensland (Bloomfield *et al.* 1992) found that people visually prefer pork with 8 mm of backfat, but when asked to taste pork samples with different backfat measurements most preferred cuts with 11-15 mm. This

indicates that while leanness is an important purchasing criterion, it does not always provide the most acceptable eating experience.

Carcass weight is the most important factor influencing carcass fatness. Carcasses become fatter as weight increases. Producers can manipulate carcass fatness by controlling animal factors, such as breed, strain and sex, and feed variables such as diet composition and level of feeding (Shorthose 1990). However, there are biological limitations to the degree of leanness that can be achieved at a given carcass weight. As liveweight increases over 50 kg it becomes more difficult to control fat deposition (Campbell and Dunkin 1990). Therefore it may not be biologically possible at heavier carcass weights to deliver the degree of carcass leanness that pig meat customers demand.

Table 2. Preferred porker and baconer carcass weight ranges (standard AUS-MEAT trim) and P2 fat depth ranges by business category in south-east (SEQ), southern (SQ) and central (CQ) Queensland

Business category	Region	Carcass weight range (kg)		P2 fat depth range (mm)	
		Porker	Baconer	Porker	Baconer
Butcher	SEQ	45-50	60-65	9-10	9-11
	SQ	40-45	60-65	8-10	9-12
	CQ	45-50	55-65	10-11	10-12
	State	45-50	60-65	9-10	9-11
Supermarket	SEQ	40-45	60	8-9	11-12
	SQ&CQ	40-50	-	9-11	-
	State	40-50	-	8-10	-
Wholesaler	SEQ	40-50	60-70	8-11	10-13
	SQ&CQ	40-50	55-70	9-11	11-13
	State	40-50	60-70	9-11	10-13
Smallgoods manufacturer	SEQ	40-45 (4) ^A	65-70	8-11	11-13

^A Sample size, all other samples greater than five.

Table 3. Percentage of businesses in south-east (SEQ), southern (SQ) and central (CQ) Queensland receiving pale soft and exudative (PSE), dark, firm and dry (DFD) and ecchymosis affected pig carcasses

Business	Region	Number of businesses surveyed	Percentage of businesses receiving affected carcasses		
			PSE	DFD	Ecchymosis
Butcher	SEQ	150	28.0	26.0	34.0
	SQ	42	35.7	21.4	45.2
	CQ	43	20.9	30.2	34.9
	State	235	28.1	26.0	36.2
Supermarket	SEQ	30	16.7	36.7	66.7
	SQ&CQ	10	80.0	60.0	60.0
	State	40	32.5	42.5	65.0
Wholesaler	SEQ	15	33.3	13.3	13.3
	SQ&CQ	9	33.3	11.1	44.4
	State	24	33.3	12.5	25.0
Smallgoods manufacturer	SEQ	17	35.3	17.6	29.4

Prevalence of PSE, DFD and ecchymosis

We asked business operators if they had received any carcasses affected with PSE, DFD or ecchymosis in the 3 to 6 months before the survey (Table 3). Ecchymosis, or blood splash, is the occurrence of multiple blood spots in muscles after slaughter (Shorthose 1990). Although the survey indicated the prevalence, the actual number of affected carcasses was not quantified. However, Trout *et al.* (1991), in a survey of the major pork abattoirs, found that approximately 32% of Australian pig carcasses were PSE affected and 15% DFD affected. Anon. (1994) reported that the high incidence of PSE and DFD pork suggests that Australia lags behind international best practice in preventing these conditions. We did not examine why quality problems were more prevalent in certain businesses or regions.

Satisfaction with pig meat received

Most business operators were satisfied with the pig meat they received, suggesting that the specifications of retailers, wholesalers and smallgoods manufacturers are being relayed to producers. Only 2.3% of operators were dissatisfied with the pig carcasses they received. The focus group studies revealed very few concerns regarding fresh pork, suggesting that consumer requirements are also being met. However, there were some negative comments relating to inconsistent and overly large carcasses, and dry and flavourless pig meat. Very few operators suggested that pigs were too fat. This indicates that although the pig industry has responded to demands for lean meat, other quality traits may have been neglected in the process. Jones *et al.* (1994) and Henry (1993) both indicated that selection for leanness can inversely affect meat quality.

CONCLUSIONS

While carcass trading criteria (price, carcass weight and fat depth) are important carcass purchasing criteria they are not the only factors influencing those buying pig meat. Carcass and meat colour, overall carcass fatness and carcass sex all influence purchasers' decisions in different ways. Carcasses are generally traded only on carcass weight and fat depth and producers do not receive any objective market signals in relation to other purchasing criteria. If the market share of pig meat is to be optimised producers must be provided with feedback on all important carcass purchasing criteria.

The prevalence with which PSE, DFD and ecchymosis were reported suggests the need for an increased extension effort to ensure producers and processors are aware of the problems, the losses associated with them and the means by which they can help to minimise them. The question as to why quality problems are more prevalent in certain businesses and regions also warrants further investigation.

In their pursuit of the *perfect pig* producers must consider all meat quality factors which influence eating quality, not only leanness. Furthermore, pig meat customers must be made aware of the biological constraints of carcass production and not expect unrealistic degrees of leanness in heavier carcasses.

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