

THE CONSUMER NEEDS FOR POULTRY MEAT

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SUMMARY

The popularity of poultry meat with consumers is well established, however the industry needs to be capable of quickly responding to the movements in product preference as the consumer becomes increasingly sophisticated. Product range will broaden especially as the nutritive value of foods become of increased importance to the consumer and the industry continues to develop value added products to encourage increased poultry meat consumption.

INTRODUCTION

For a food item to achieve popularity with consumers it needs to possess a number of characteristics. The product needs not only to be affordable but also nutritious, enjoyable, reliable, flexible and safe. The priorities placed on each characteristic at each purchase is largely influenced by the reason for the purchase. If a basic food item such as poultry meat is to be successful in the market place it needs to find a myriad of uses in the food selection pattern of the consumer. Broiler chicken meat has been especially successful in achieving this.

An industry examination of the consumer market for poultry meat has identified three broad groups of poultry meat consumers. Firstly the convenience purchaser, who is influenced by easy to prepare safe recipes, recipes with a general, universal appeal and is generally willing to pay to satisfy the family. Secondly, there are the price conscious purchasers who will base their decision whether to purchase poultry meat largely on its price in comparison to other meats available. Thirdly, there are the people who enjoy different foods and their preparation. This group will experiment with a variety of recipes and meats and do not necessarily have a preference for poultry meat. There is also the 'committed' segment of the market who purchase poultry meat because they believe it to be 'healthy and good value for the family,'

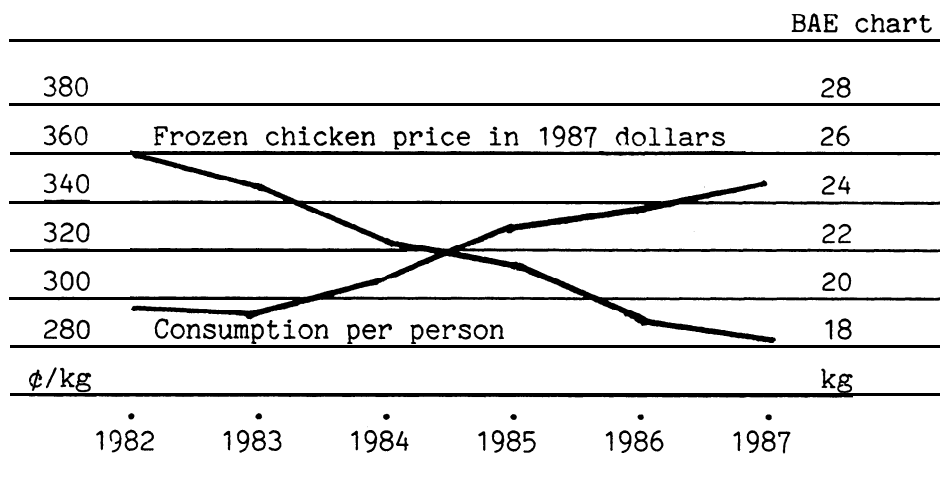
The needs of each of the above groups differ and poultry meat products exist or are being developed to satisfy the real or perceived needs of the consumer.

It is anticipated that consumer demand for poultry meat in Australia will increase in both the short and medium terms and an overall increase of **19%** is predicted over the period 1986-1991 (Hedley 1987). Australian poultry meat consumption is expected to increase by 1 kg/head in 1987 to 24.5 kg/head and this will reflect an increase of 4.9 kg/head since 1982. In 1987 dollar value the retail price of frozen chicken had declined from \$3.60/kg in 1982 to \$2.87/kg in 1987 - Fig. 1. Broiler meat production increased on a world-wide basis in 1986 and a further 5% increase is anticipated in 1987 (Brown 1987). The relative price of poultry meat to other meats places the industry in probably the most competitive position achieved so far. This position is a reflection of industry efficiency and the short period between the development and implementation of cost minimisation techniques and the realisation of their effect at the retail level.

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Figure 1.

Poultry meat consumption and retail price*



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OUTLINE OF CONSUMER TRENDS

Poultry meat products fall into a number of broad groupings, frozen, fresh, portions, value added products and smallgoods. The traditional demand for frozen product has declined significantly over recent years as the consumer preference for fresh product has gained momentum. The fresh product is frequently perceived as being more wholesome, as having more flavour, however it has been found that some 50-60% of the fresh product purchased is frozen at home. There is an increasing trend towards the purchase of chicken portions, both fresh and frozen. The reasons for this trend include the consumer belief that portions are cheaper, it overcomes preferences within families for the particular portions of the whole bird, that they are cleaner and there is less wastage. The development of poultry meat specialty shops and their popularity among cooking enthusiasts has also encouraged this trend. The development of the convenience food industry has probably also contributed to the increase in the domestic use of portions.

Further, developments are occurring and there is an increasing interest in deboned meat, crumbed portions and precooked products. The development of poultry smallgoods products has made a significant contribution to increasing poultry meat consumption. These products are fulfilling particular needs in the catering and delicatessen areas. The demand for poultry white meat products has gained momentum over recent years. The industry continually experiences difficulties in satisfying this market and disposing of the proportional quantity of dark meat. The meat yield of carcasses and their component parts now require consideration in broiler breeding programmes. A comparative breed study by Orr et al. (1984) found that broiler chickens produced from one major breeding stock not only yielded a greater total quantity of meat but had a significantly larger proportion of breast meat. Similar strain differences were noted by Merkley et al (1980).

Chicken meat has been regarded by the consumer as a low fat product containing low levels of saturated fats. The concept of low fat has been questioned in recent years as the levels of abdominal and subcutaneous fat have increased. This has resulted from genetic selection procedures based largely on growth rate. Theoretically, selection for growth rate should increase the deposition of lean tissue.

It is proposed by Soller and Eitan (1984) that the resultant increase in voluntary feed consumption has been larger than the shift in lean/fat partition ratio and that the excess energy intake has been deposited as fat. Nowadays increased emphasis is placed upon feed efficiency and/or fat deposition in genetic selection programmes for the broiler chicken. Results of these programmes are now appearing at the retail level in Australia. Table 1. show the results of a recent comparison of three lines of broilers from within one Australian company. Each portion examined for fat content was found to be lower-in line 1 than either of the other breeding lines examined. It is interesting to note that the decline in fat content in line 1 has been offset by a similar increase in moisture content. A certain level of carcass fat is however essential in poultry meat as it influences the acceptability of the product to the consumer and contributes to the characteristic texture and feel of poultry meat when consumed (Baker 1986).

Table 1. Comparison of the moisture and fat content of whole carcass and portions from three lines of broiler chicken.

	Line 1.			Line 2.			Line 3.		
	Moisture (%)	Fat (%)	Moisture + Fat (%)	Moisture (%)	Fat (%)	Moisture + Fat (%)	Moisture (%)	Fat (%)	Moisture + Fat (%)
Thighs Mean	61.7	22.7	84.4	56.0	28.3	84.3	55.8	28.5	84.3
+ SD*	1.28	0.85		1.26	1.31		1.79	2.25	
n = 8									
Wings Mean	65.8	15.3	81.1	63.7	16.4	80.1	65.8	15.0	80.8
+ SD	0.97	1.78		0.75	1.25		1.42	0.63	
n = 8									
Drumsticks Mean	70.8	10.6	81.4	68.4	11.9	80.3	68.1	12.2	80.3
+ SD	0.70	0.80		0.54	0.75		0.68	0.74	
n = 8									
Fillet of Breast									
Mean	71.6	8.6	80.2	68.6	12.0	80.6	68.8	13.1	81.9
+ SD	0.55	0.78		0.75	1.12		0.80	1.09	
n = 16									
Whole Carcass									
Mean	63.0	14.4	77.4	59.5	18.7	78.2	58.6	19.2	77.8
+ SD	0.85	1.15		1.49	1.87		1.43	1.71	
1200-1300 gm									
n = 10									
Cooked Whole Carcass									
Mean	60.8	14.0	74.8	57.8	18.6	76.4	55.9	20.1	76.0
+ SD	0.71	1.14		0.99	1.03		0.93	0.99	
1400-1500 gm									
n = 10									

* Standard deviation

Data presented in Table 2. has been compiled from work by Leeson and Summers (1980a, 1980b) and Leeson et al (1982) and demonstrates the differences in carcass composition between the major table poultry species around their normal market age. There is little change in the proportion of the major portions in broiler chickens and small turkeys over the range of normal marketing ages and it is not until the large turkey market is reached that there is a significant increase in the proportion of breast meat. There is a very rapid increase in breast development in ducks over the usual marketing age range.

Table 2. Comparative yield of commercial cuts of male broiler chickens, Turkeys and ducks (% eviscerated carcass).

Age (days)	35	42	49	56	70	84	140
Broilers*							
Drumsticks + thighs	31.2	34.2	31.9	32.0	30.8	-	-
Wings	11.9	13.6	12.6	13.3	12.6	-	-
Breast	31.4	31.0	31.2	31.4	32.1	-	-
Turkeys**							
Drumsticks + thighs	-	28.3	-	29.2	30.2	29.6	28.3
Wings	-	17.7	-	16.9	15.7	14.5	10.9
Breast	-	33.7	-	33.5	33.8	33.5	40.5
Ducks***							
Drumsticks + thighs	27.7	26.2	22.8	-	-	-	-
Wings	12.1	12.3	11.5	-	-	-	-
Breast	17.0	20.5	25.7	-	-	-	-

* Leeson and Summers (1980a)

** Leeson and Summers (1980b)

*** Leeson et al. (1982)

Ducks are usually marketed at 6-7 weeks of age, Muscovy ducks at 10-11 weeks of age and geese either at 8-10 weeks or are retained for the large bird market. The data in Table 3 was compiled from work by Pingel and Schneider (1981) and demonstrates the difference in muscle content of waterfowl at two different ages. It is apparent that a slightly longer growing period will significantly improve carcass quality especially breast meat yield. Feather development causes significant problems for the large processor if the birds are allowed to age. A compromise has to be established between the requirements of the processor and the need of the consumer.

Table 3. Comparative yield of eviscerated carcass components in male waterfowl at different ages (%).

Age (days)	49	56	70	77
Ducks				
Meat	43.7	48.0	49.5	-
Skin	30.9	30.0	30.1	-
Bone	22.6	22.4	20.6	-
Breast meat	18.8	19.5	20.6	-
Leg meat	11.5	10.3	10.1	-
Muscovy ducks				
Meat	44.2	49.3	53.6	57.9
Skin	27.9	25.7	19.4	17.9
Bone	27.8	24.4	27.5	24.1
Breast meat	5.4	8.3	14.7	18.6
Leg meat	21.0	21.4	19.5	15.6
Geese				
Meat		48.6	51.4	53.3
Skin		27.0	26.3	24.6
Bone		21.1	22.2	22.3
Breast meat		11.5	14.1	15.7
Leg meat		17.8	16.9	16.7

FLAVOUR AND TASTE

Enjoyable flavour and taste are necessary for consumer acceptance. However, the production techniques of the modern poultry integrater do not always encourage these characteristics.

Many of the positive flavour characteristics of cooked poultry are associated with the protein component, whereas defective flavour characteristics tend to be more associated with the fat component (Friesecke (1981). Deterioration of carcass fat in poultry is normally a greater problem in refrigerated and further processed products, than with the frozen product. Carcass fat can be largely protected from deterioration by the feeding of elevated dietary levels of Vitamin E in the period prior to processing (Adams 1984). However, Baker (1986) suggests that a small degree of rancidity in chicken fat actually enhances the flavour. The age of slaughter can have a significant influence upon the flavour of broiler meat. Touraille and Ricard (1981) found that as broiler chickens age the meat becomes tougher, drier and more flavoursome. Twelve week old cockerels were selected on the basis of testes and comb development. The more mature animals were found to be tougher and more flavoursome.

NUTRITIVE VALUE

Data from the Australian Bureau of Statistics indicates changes in the food consumption patterns over the last 5-7 years (Wilson 1987)

1. A decline in the consumption of beef and veal with some increase in the consumption of lamb, mutton, pigmeats and poultry.
2. An increase in the consumption of fruit, vegetables and cereal products especially breakfast cereals.
3. Consumption of bread, milk products and egg products has remained reasonable stable however, there has been a shift away from full fat dairy products. The selection of foods by Australians is becoming increasingly influenced by the real or perceived nutritive value of a product. The inclusion of basic nutrient specifications on package foods will become a more frequent feature of marketing and will finally become a national legal requirement. It is of interest that a variety of requirements of this nature have been enforced by the state governments for stockfeeds for several decades.

The average age of the Australian population is increasing and associated with this is a more acute interest in the health of the individual. In the future the food industry will be serving a more health conscious nutritionally aware population.

The diversity in nutritive characteristics of the different poultry meats will allow the industry to target products at satisfying particular demands. Chicken breast meat without skin for example contains less than 2 percent fat in the uncooked state and so is very suitable for specialist low fat products.

CONFIDENCE IN THE SAFETY OF POULTRY MEAT

Industry surveys have indicated that there exists a low level of public concern with regard to the use of chemicals, antibiotics and hormones in animal production. The use of steroid hormone implants in poultry has been illegal in Australia for in excess of twenty years. Public concern in this area is but a reflection upon the past and in fact the development of the rapid growing broiler strains has significantly reduced any gains to be achieved by this practice. Media reports on the use of steroid hormones in poultry have all originated from a few overseas countries where their use is current.

The use of the persistent organochlorine pesticides in agriculture has been progressively phased out since 1970. It is now illegal in N.S.W. to use the organochlorine pesticides in all but a few limited situations and they have been removed from general sale. The Department of Agriculture in N.S.W. in a recent survey found detectable levels in 3 out of 300 stockfeed samples tested. It was concluded that a widespread problem did not exist. Increased attention by government bodies and the different sectors of agriculture will further reduce the potential for a problem especially as the effect of removing these pesticides from sale becomes apparent.

Strict adherence by producers to the specified withdrawal periods for both feed and water medications is necessary to eliminate tissue residues. Increased government and industry surveillance has elevated producer awareness and the administration of medication programmes by reputable poultry companies is strictly supervised.

The minimisation of bacterial spoilage in poultry meats requires continual attention. The additional demand for fresh product, portions, deboned meat and further processed products increases the efforts required by industry in this area. The problem is further compounded by consumers who under cook their food. Control measures can commence prior to processing with attempts to establish favourable gut microflora. Decontamination during production and processing involves satisfactory abattoir hygiene, cooling techniques, good packaging combined with strict supervision of delivery techniques and storage at the retail outlet.

Irradiation of foodstuffs subsequent to production has been shown to be a most satisfactory method of product sterilisation. There has been considerable consumer resistance to the concept in countries where the process has been contemplated. Australia will be no exception to this and the topic is certain to provide interesting public debate in the future.

Consumer demand for poultry meat products is certain to expand in the years ahead. The extent of this expansion will be determined by the ability of the industry to contain its costs and present **nutritious, safe** and attractive products to the consumer.

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