

*Chapter 5*

## **ORGANIC MEAT: MARKET DEVELOPMENT AND CONSUMER WILLINGNESS TO PAY**

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### **ABSTRACT**

This chapter provides an overview on the evolution of global market demand for organic meat and factors affecting it. Future prospects for development of organic meat consumptions and possible problems concerning trading are analysed. The price that people are willing to pay is the major determinant of the market share of organic meat. Although intent to purchase depends upon the interactions of quality attributes such as appearance and colour, it has been hypothesized a consistent effect of organic labelling as compared to some sensory characteristics on the price offered by consumers for organic meat. Previous experiments have shown that expectations induced by the information can affect the quality perception. Therefore, consumers' behaviour and attitudes toward organic meat are tested through the study of the effect of information about organic farming practices on product liking and consumer willingness to buy organic beef and pay the extra production costs. Our results indicate that this information, if given to the consumers, can be a major determinant of beef liking, thus providing a potential tool for meat differentiation to traditional farms where husbandry is based on extensive rearing systems and high animal welfare standards. Accordingly, consumers are prepared to spend more for organic beef, thus indicating that reliable information about the organic farming system may markedly increase consumer willingness to pay.

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## INTRODUCTION

The global market for organic food was valued at USD (United States dollars) 25 billion in 2003, which can be considered a niche (Willer and Yussefi, 2004). Although production of organic products is increasing across the globe, sales are concentrated in the industrialised parts of the world. North America and Western Europe account for 95 % of the world retail sales of organic food products with USD 13 and 10.4 billion, respectively. Although consumer interest is growing in other regions, the demand is confined to the industrialised world largely because of the price premium of organic products. Many developing countries have large sections of their populations below the poverty line, and this makes it difficult for a market for organic products to develop. A typical consumer of organic products has the following attributes: lives in urban areas, usually in a big city, in a medium to high-income household with relatively high purchasing power, belongs to middle-high social classes and is sensitive to factors like quality, provenance and production methods (Willer and Yussefi, 2004). The industrialised nations have a sizeable middle-class, and this is the reason why most organic food sales are concentrated in these countries. As more countries develop economically and as their populations become more affluent, demand for organic products is likely to rise. This will cause sales of organic products to become less concentrated in the world. Rapid economic growth in countries like China, Brazil, and South Africa is causing the upper social classes to expand, and this is creating a market for organic food. In other regions, there is an increase in organic farm land because farmers are attracted to the export benefits of organic production. Although most production in Asian and African countries will be for export markets, it is also creating regional markets to develop in which organic farmers market their organic crops to consumers in their region. Sales of organic products are slowing in certain countries, especially in Western Europe; however, the market is becoming increasingly global.

## THE MARKET OF ORGANIC MEAT

During 2005, while beef trade was growing at an average of 3.0 %, global pork export was led by the European Union, followed by USA, China, Brazil, Mexico and Canada, whereas Japan was the largest consumer market for pork followed by Russia, Mexico, Korea and USA (Organic Monitor, 2006).

The Western European market for organic meat was traditionally the largest in the world, however it has now been equalled by North America. The European market has faced rapid expansion since the mid 1990s and is now reporting slowing growth rates as certain sectors approach maturity. Supply-demand imbalances have become a characteristic of the European organic food industry. A number of countries are showing oversupplies in sectors like organic meat whereas other sectors like organic cereals continue to suffer from product shortages. A reason for this is that much of the early converts to organic agriculture were dairy and beef cattle farmers.

The average European expenditure rate on organic products is USD 27.2 per annum. There is much variation in the expenditure rate between European countries, ranging from USD 7.3 (Spain) to USD 105 (Switzerland) per capita.

In 2003, EU, including 15 countries, certified non-dairy cattle (mainly suckler cows) amounted to about 1 million heads corresponding to 1.7 % of total non-dairy cattle herd (European Commission, 2005). Austria ranked first with 25 % of EU, followed by Italy with 15 %, the United Kingdom with 13 % and Germany with 12 %. Certified pigs amounted to 450,000 heads or about 0.4 % of total pig herd. Only a few member states, such as Germany with 8 % and France with 4 %, had a significant share of certified animals. The number of certified pigs is still relative low. The relative slow development may be linked with higher production costs in organic pig meat production. Certified broiler number amounted to more than 9 million, France ranked first with 5.1 million. Sheep and goats amounted to 2.4 million heads or 2.4 % of total sheep and goats herd. Of the about 2 million certified sheep, 35 % were located in the United Kingdom and 21 % in Italy. According to Hamm et al. (2002) beef had the highest market share (1.7 %) followed by sheep and goat meat (0.7 %), pork (0.3 %) and poultry (0.3 %).

Only little and partial information is available on prices for organic meat and meat products as prices diverge depending on the country and on the product. For instance, farmer price for organic pork in 2002 was about 2.46 €/kg on EU-15 average, only Italy reported a price 20 % below this average, but some countries had significantly higher prices like Greece (5.00 €/kg), Ireland (3.49 €/kg), Luxembourg (3.27 €/kg) and the United Kingdom (3.22 €/kg). Price premiums for organic pork ranged from 45 % in Germany and Austria to 132 % in the Netherlands, while EU average was about 62 %. Consumer price for organic pork cutlet was about 13.17 €/kg but differed considerably between the 15 member states: the Danish price was about the double of the price in Spain, Portugal and Finland. Consumer price premium for organic pork cutlet (81 %) was higher than average farm gate price premium and ranged extremely from 0 % in Portugal to 165 % in Greece. The high divergence in consumer prices and price premiums reflect often the different sales chains used, i.e. consumer prices are usually much higher in organic food shops than in supermarket chains. There was a considerable variability among the 15 Member States in farm gate prices for beef as well as in consumer prices for minced beef. As for beef, farm gate prices for organic and conventional were very high in Greece resulting in a high consumer price for minced beef. Organic price premium at farm gate level varied from 17 % in Denmark to 190 % in Spain and was on average about 49 % (European Commission, 2005).

The North American market for organic products is reporting the highest growth worldwide. The meat sector is the fastest growing organic food industry with sales expanding by 51 % in 2005 (Organic Monitor, 2006). The USA organic beef market has been showing the highest growth with sales doubling each year since BSE was reported in 2003. High market growth rates have led to organic meat supply shortages with producers unable to meet growing demand from retailers. The organic beef and pork markets are the most affected because of low production levels. American farmers have shown little interest in producing these organic meats due to high production costs and the lack of distribution infrastructure. Although production has increased since 2004, supply is expected to lag demand for a number of years. As a consequence prices are rising for a range of organic meat products and an increasing number of North American processors are looking overseas for supplies. In particular, organic meat products imports are mainly from Latin America, Australasia and Canada. Although organic beef has the fastest growing market, organic poultry is the most widely available in North America (nearly two-thirds of this sector). USA retail sales of organic poultry were USD 161 million in 2005, well under 1 % of conventional poultry sales.

However, retail sales of organic poultry have almost quadrupled since 2003, and estimates of annual growth rates range from 23 to 38 % through the end of the decade, with annual sales reaching almost USD 600 million by 2010 (Nutrition Business Journal, 2006). Approximately half (51 %) of organic poultry sales were in natural food stores in 2003, 45 % in mass market grocery stores (including conventional grocery, mass merchandiser, and club stores), and 4 % through direct sales and other distribution channels (Nutrition Business Journal, 2006). As in the conventional food sector, sales of broilers account for the majority of organic poultry sales. The relatively short production cycle and low price premium are responsible for organic chicken to be the most popular organic meat with consumers. Prices for organic broilers were steady at an average of USD 2.17 per pound from July 2004 through early 2006, with a range of USD 1.89 to USD 2.45. Average prices for conventional broilers, on the other hand, ranged from USD 0.59 to USD 0.82 per pound during the same period (Oberholtzer et al., 2006). Organic beef in comparison is more rarely found in retailers because of small-scale production, and inadequate distribution infrastructure, although the success of competing products like “natural” beef is decreasing. USDA (United States Department of Agriculture) roles for “natural” beef are less strict than those for organic products: antibiotics, hormones and animal by-products are banned but conventional feedstuffs are allowed.

The number of certified animals in 2005 were: over 36,000 beef cows, 10,000 hogs and pigs, 4,400 sheep and lambs and over 10,000,000 broilers. In comparison with 2002 the increase ranged from 9 % (sheep and lambs) to 264 % (hogs and pigs).

The Argentine government has established national standards for organic products. These are at least as stringent as those of the International Foundation for Organic Agriculture (IFOAM) and the European Union. The organic industry in Argentina is mainly export oriented (85 % by value is exported with an estimated value of USD 32 million). Organic meat production, and beef in particular, is growing as a consequence of climatic suitability and soil fertility and can be cited as an example of a developing country supplying external markets. However, a domestic market is being developed in Buenos Aires. In 2000, out of a total production of 40,000 tons of organic produce, meat and livestock products represented 8 %. Of this total, 35,000 tons were exported, of which meat and animal products accounted for 3 %. This would imply that a substantial proportion of organically produced meat was consumed in the domestic market. It is not known what proportion was sold as organic meat and what proportion went into conventional sales. The European Union is the principal destination of Argentina's organic beef exports. Meat exporting began in the mid 90s with beef, and more recently Patagonian lamb became the predominant export for international markets. In 2002 there were 754,000 sheep and 122,000 head of cattle certified in Argentina (Willer and Yussefi, 2004).

Elsewhere, both Brazil and Uruguay are seeking to develop exports of organically produced meat (Willer and Yussefi, 2004). In the case of Brazil, organic beef production systems are being developed in the centre of the country. The authorities in Brazil see the organic production system as a way of boosting local cattle producers' income, while reducing the environmental damage that traditional methods of cattle raising have caused. While 90 % of Brazil's overall organic production is exported, Brazil's internal market for organic foods is growing at around 25 % a year.

Although the Australasian continent comprises almost 40 % of global organic farmland with 12.1 million hectares, the market represents a fraction of the global total (Willer and Yussefi, 2004). Sales of organic products were estimated at about USD 200 million in 2002

with Australia comprising the most. Beef cattle farmers use much of the organic farmland in Australia as pastureland. The Australian and New Zealand organic food industry is export-oriented with significant quantities of primary products, including beef and lamb, going to other northern hemisphere countries and relatively low amounts sold in the domestic market. However, sales of organic products within Australia are growing at about 15 to 20 % per year.

Exporters are finding increasingly difficult to meet supply gaps because of the differences in organic standards between regions. For instance National Organic Program standards developed in USA for organic meat products differ from those of the EU, and, although trade liberalisation may be removing tariff barriers, standards are becoming the major impediment to free trade in the global organic meat industry.

## **CONSUMER WILLINGNESS TO BUY ORGANIC MEAT**

Food quality is not an objective feature of the products as it is affected by consumer perception, and it is often referred to as perceived quality (Cardello, 1995). Many aspects can be used by consumers to perform their food choices. Intrinsic (e.g. cut, colour, fat rim) and extrinsic cues (price, origin, stamp of quality, production and nutritional information) are used to form expectations about product quality attributes, the latter can be classified in two categories: those experienced before or during consumption (experience quality attributes: e.g. price and sensory properties) and those not experienced directly, such as healthiness, naturalness, ethical aspects, etc., which should be communicated to be perceived as they are credence characteristics that can not be confirmed either before or after purchase (Grunert et al., 2004). Tangible aspects can markedly affect most purchasing decisions, independently from the knowledge and awareness of the consumer, whereas intangible attributes are important for high-involvement consumers possessing enough beliefs and attitudes (McEachern and Schroder, 2002). For these consumers, such intangible attributes play a central role in defining product quality.

According to a recent on line survey (ACNielsen, 2005), organic alternatives are purchased mainly for health reasons. Over two thirds of survey respondents think that organic foods are healthier for them and their children. This healthy perception is consistently strong across Asia Pacific. European people seem to be more conscious of the wider benefits of organic foods, such as protecting the environment and animals. Nearly a fifth think that organic foods preserve the environment, and 12 % cites kindness to animals as the key reason for purchasing organic alternatives. However, in other regions, less than a fifth of consumers are aware of the environmental benefits of organic foods, and even less mentions animal protection. As to the barriers to purchasing organic alternatives, high prices are perceived as the biggest problem for one third of respondents in Asia Pacific and over 40 % of European and North American people. Across Latin America and in South Africa, availability is considered a problem. Interestingly, lack of availability prevails over lack of credibility as a reason for not purchasing organic foods globally. An element favouring the spread of organic meat into the general retail sector is that purchasers of organic food tend to be in the higher income segment (F.A.O., 2002). Consequently, supermarkets seek to attract such customers by providing a wide range of food, including organic meats. The increased involvement of supermarkets, with their centralised systems of purchasing and distribution, may result in

pressure to reduce the current price differential between organic and conventional products. As an extension of this trend, some supermarkets have introduced "own brand" organic meat products, with such products being priced below those of competing brands.

The general sense among consumers who would not buy organic products is that they are usually more costly. Manufacturers and retailers should take into account the geographical differences in terms of acceptance and perception of organic food. For example, in Thailand and China credibility is more an issue, while in Asia Pacific perceptions of price of organic foods is the major constraint in eight out of 13 markets studied.

Meeting organic certification requirements usually implies higher production costs. For example, it is reported that the cost of producing organic beef in the United Kingdom is 20 % higher than under conventional methods. In some cases, the high cost of converting to organic meat and dairy production has led to subsidies being paid to the farmer. However, this is not the case in many countries (e.g. USA and developing countries). Thus the extra production costs have to be paid by consumers.

## **STUDY OF THE EFFECT OF INFORMATION ON ORGANIC BEEF ACCEPTABILITY AND WTP**

For consumers from western countries, price is not the only determinant behind animal-food purchases as they are acquiring an increasing interest in farming practices and the related organic standards. Consumers do not seek the cheapest food but the best value for money, i.e. the maximum benefit for what they are prepared to spend (McInerney, 2004). Information is a key consumer need. Consumers should be provided with the information they require, which should be presented in a simple form in order to enable them to make informed choices. In fact, it has been observed that consumers are willing to access to more information about organic food (Brennan et al., 2003).

Numerous studies have been conducted on the effect of information on food liking (Aaron et al., 1994; Daillant and Issanchou, 1993; Kähkönen and Tuorila, 1995; Solheim, 1992; Westcombe and Wardle, 1997). In particular, information about the manufacturing process (organic vs. OGM) can affect product acceptability (Caporale and Monteleone, 2004). Recent studies have been conducted on the effect of information about animal welfare on lamb (Napolitano et al., 2007a) and beef liking (Napolitano et al., 2007b). All these experiments have shown that expectations induced by the information can affect the quality perception. Thus, if expectations are either positively (the liking score of the product tasted without external information is higher than expected) or negatively disconfirmed (the product is worse than expected), the assimilation model is generally applicable, which means that hedonic ratings move towards the expectations when an external information is given compared to tasting without external information (Anderson, 1973; Cardello and Sawyer, 1992). However, there is generally a significant difference between liking score with information and expected liking score, i.e. consumers do not completely assimilate (Lange et al., 1999; Siret and Issanchou, 2000).

The price that people are willing to pay is the major determinant of the market share of organic meat. Although intent to purchase depends upon the interactions of quality attributes such as appearance and colour (Brewer and McKeith, 1999), it has been found a more

consistent effect of organic labelling as compared to some sensory characteristics on the price offered by consumers for organic pork (Dransfield et al., 2005). Using questionnaires on organic foods in Spain, consumers appeared to be prepared to pay about 12 % more for organic red meats and chicken (Gil et al., 2000). In France and The Netherlands, questionnaire responses suggested that almost half of consumers would pay 20 % more for pork from pigs raised outdoors (Carpentier and Latouche, 2005). Dransfield et al. (2005) stated that those studies over-estimated the premiums consumers would be willing to pay, while their results suggest that people would offer 5 % extra, with about one-fifth of consumers willing to pay 20 % extra, for organic pork. However, hedonic and purchase intent measurements may be not representative of the real behaviour of consumers. They may declare high preferences and purchase intent for products with high-perceived quality, albeit not buying them under economic constraints (Lange et al., 1999).

Recently, Lange et al. (2002) and Napolitano et al. (2008) observed that, as for food liking, the assimilation model is applicable also to consumer willingness to pay. As a consequence, it can be hypothesized that information about the organic manufacturing process can increase both meat acceptability and willingness to pay thus providing a means to cover the extra production costs sustained by organic farmers.

Little is known on the effect of the information about organic production on the real consumer willingness to pay for meat. Recent studies demonstrated that auctions are able to place consumers in real situations where they can show their true preferences. In particular, the Vickrey second price auction is widely used to assess consumer willingness to pay real goods (e.g. Melton et al., 1996), including foods (Lange et al., 2002), and the value consumers give to food safety (e.g. Hayes et al., 1995) and animal welfare (Napolitano et al., 2008). According to this specific type of auction consumers are individually asked to submit a sealed bid corresponding to the highest price they would agree to pay for a particular product. The highest bidder (i.e. the winner), by paying the second highest price, has the opportunity to buy a product at a price equal to or, more often, lower than the value he assigns to the product (Vickrey, 1961).

The present study was aimed to verify whether consumers confirm their higher liking for organic meat by willing to pay extra costs in a situation where a potential purchase performed by consumers, such as the Vickrey auction, is included.

## Methodology

Beef was obtained from twelve Podolian young bulls aged 16 months and reared either in conventional (CB) or organic local farms (OB). Carcasses were aged 15 days in order to increase meat tenderness and make the product acceptable from a sensory point of view (Braghieri et al., 2005). Both products were obtained from the muscle *Longissimus dorsi*. Meat samples (10 x 10 x 1 cm) were grilled at 300°C to an internal temperature of 75°C assessed using a thermocouple probe inserted into the meat. Mean cooking time was 6 min. Samples were offered to the subjects immediately after cooking in booths where salt was available *ad libitum*.

Subjects were recruited in Potenza (main town in the region of Basilicata, southern Italy). The consumer panel consisted of fifty subjects recruited on the basis of age and level of

education. In addition, subjects were selected using predetermined screening criteria based on consumption frequency of beef and organic products.

Sixty-five subjects were interviewed and were asked their frequency of consumption of beef at home (1 = never; 2 = once a year or less; 3 = 3-5 times a year; 4 = less than once a month; 5 = 1-2 times a month; 6 = more than twice a month; 7 = at least once a week ).

The selected consumer panel included subjects who reported to consume beef at least “1-2 times a month” and organic products occasionally (at least “once a year or less” but “less than once a week”). Subjects had a mean age of 49 years and were almost equally distributed for sex. The main features of the subjects participating to the consumer panel are depicted in Table 1.

**Table 1. Socio-demographic features of the subjects participating to the consumer test**

		Number	Percentage
Age	20-39 years	14	28
	40-59 years	17	34
	> 59	19	38
Sex	Female	22	44
	Male	28	56
Education level	Primary school	3	6
	Secondary school	6	12
	High school	20	40
	Graduated	17	34
	Post-graduate	4	8

The experiment was planned in four tests (Table 2). In the first test the consumers were offered both CB and OB in a balanced order of presentation. They were asked to taste the meat and rate their liking receiving no information on the products (Perceived liking). In the second test the subjects received two sheets with the information concerning the farming systems (conventional or organic). They were asked to read carefully the information and give their liking expectation for that product (Expected liking). First and second tests were performed in the same day. The day after the third test was performed: the consumers were given OB only along with the information sheet. They were instructed to read the information before tasting the sample and express their liking score (Actual liking).

**Table 2. Summary of the experimental design for the assessment of consumer liking (L) and willingness to pay (WTP)**

Test	Day	Stimulus presentation	Type of evaluation	Type of rating
1	1	Beef	Tasting without information	Perceived L
2	1	Information	Expectation	Expected L
3	2	Beef + information	Tasting with information	Actual L
4	2	Product display	Auction	WTP



Consumers rated their liking on a 9-point hedonic scale labelled at the left end with “extremely unpleasant”, at the right end with “extremely pleasant” and at the central point with “neither pleasant nor unpleasant” (Kähkönen, Tuorila and Rita, 1996).

In tests 2 (expectations produced by information) and 3 (acceptability generated by information and tasting of the product) the following information concerning the farming systems were given to consumers:

- 1) Conventional beef: conventional beef cattle farming ensure standards of animal welfare as set by the current legislation; the administration of pharmaceuticals is allowed within the suspension limits, as well as the use of GMO and chemicals for the production of animal feeds, in accordance with the current legislation; a high stocking density per hectare is allowed.
- 2) Organic beef: organic beef cattle farming practices ensure standards of animal welfare higher than those set by the current legislation by promoting grazing systems and the expression of species-specific natural behaviour; the use of pharmaceuticals is markedly reduced; the use of GMO and chemicals for the production of animal feeds is banned; stocking density per hectare is low in order to reduce the impact of farming on the environment.

The second price Vickrey auction (Vickrey, 1961) was used to assess consumer willingness to pay organic beef. Participants attended a short presentation explaining the procedure to be followed for the auction. It was made clear that the submission of bids implied a commitment to buy the product. Participants agreeing to the procedure signed a consent and received 10 Euro in cash. Subsequently, a formal training on the use of the Vickrey second price auction was conducted. It was explained that the maximum price accepted to pay for 100 g of organic beef had to be written on paper, separately by each participant. The bid had to be comprised between 0.00 and 5.00 €. On each form provided to consumers there was a suggested price (ranging from 0.29 to 2.71 €, mean = 1.54 € corresponding to the actual commercial value of organic beef), however it was explained that they could offer lower or higher prices. The participant submitting the highest price (winner) had to buy the product, not at the submitted price, but at the second highest price (i.e. the second highest submitted bid). In case of more consumers offering the same highest bid only one participant, randomly chosen by another consumer, would be selected as winner. This procedure allowed one of the participants to buy organic beef at a price lower than or equal to the price they would normally accept to pay. It was also explained that the study aimed to know the value that the product had for the consumers, not its commercial value, and that the best option for them was the submission of their real reservation price. In order to ascertain that all participants correctly interpreted the procedure, some practice was conducted using snacks. Subsequently, an auction was conducted where consumers submitted bids after the display of a 100 g slice of organic beef.

The Student’s paired t-tests were used to evaluate differences between mean scores either obtained for the two products (OB and CB), or obtained for the same product under different conditions (tasting only, information only, tasting with information). The same test was used to compare the suggested price for organic beef and the actual bids offered by consumers.

## Results and Discussion

Ratings given by consumers to OB and CB are summarised in Table 3. Consumers rated both products at scores above the central point (5 = neither pleasant nor unpleasant) for perceived liking. These results indicate that the meat from both organically and conventionally reared beef cattle was characterised by a good eating quality. However, mean scores of perceived liking were higher for OB as compared to CB ( $P < 0.001$ ). No information is available on the effect of organic farming on beef acceptability, although previous studies reported minor effects on flavour (Marino et al., 2006) and tenderness (Braghieri et al., 2005). In this study organic farming practices induced a much higher acceptability as compared with conventional techniques ( $P < 0.001$ ) with scores above 7 (pleasant).

**Table 3. Rating ( $\pm$  S.E.) given by the consumer panel during the three hedonic tests**

Type of rating	Organic beef	Conventional beef
Perceived liking	7.22 $\pm$ 0.16a	5.94 $\pm$ 0.20b
Expected liking	7.88 $\pm$ 0.12a	5.18 $\pm$ 0.24b
Actual liking	7.72 $\pm$ 0.15	NR
P-E	-0.66***	0.76***
	Negative disconfirmation <sup>1</sup>	Positive disconfirmation <sup>2</sup>
A-P	0.50*	-
	Assimilation <sup>3</sup>	
A-E	-0.16	-
	Complete <sup>4</sup>	

P = perceived liking mean scores (blind condition); E = expected liking mean scores (only information); A = actual liking mean scores (with information); NR = not recorded.

a,b =  $P < 0.001$ ; \* =  $P < 0.05$ ; \*\*\* =  $P < 0.001$ .

<sup>1</sup> The product is worse than expected

<sup>2</sup> The product is better than expected

<sup>3</sup> Actual liking moves towards the expectations

<sup>4</sup> Assimilation occurs, and actual liking is not different from expectations

Expected liking scores were higher for OB than for CB animals ( $P < 0.001$ ). These results indicate that consumers are aware of the possible positive effects of organic farming on product quality and safety. Our study also confirms previous reports stating that consumers use the application of organic standards as an indicator of product attributes such as food safety, food quality and food healthiness (Brennan et al., 2003; Michaelidou and Hassan, 2008). Fresh meat is usually commercialised as undifferentiated product. For instance, Grunert (1997) suggests that the butcher is considered as an expert by consumers and, therefore, reliable to predict meat quality and characteristics. As long as fresh meat is mainly sold as a commodity, there is also only a limited incentive for meat producers to differentiate their product (Grunert et al., 2004). Any form for improved or otherwise differentiated meat quality requires new ways to signal the quality to the consumer. Thus, meat product differentiation needs a constant and reliable signalling of quality through appropriate information given to consumers in order to motivate them and increase their willingness to buy and pay for meat (Bredahl, 2004). This differentiation can be based on both product or

process characteristics. For animal-based products process characteristics may be represented by the farming practices and the related organic standards. In fact, consumers showed a WTP for OB higher than the suggested price ( $P < 0.001$ ), the latter corresponding to the commercial value for organic beef (Table 4).

**Table 4. Mean ratings ( $\pm$ S.E.) of WTP**

	WTP
Suggested price	1.54 $\pm$ 0.12a
Consumer bid	2.65 $\pm$ 0.13b

a,b =  $P < 0.001$

Results concerning the effect of information on expected and actual liking of beef are shown in Table 3. For both products (OB and CB) the expected acceptability was significantly different from the perceived liking expressed in blind conditions ( $P < 0.001$ ), thus indicating that a disconfirmation occurred. In particular, the consumers found OB worse than expected (negative disconfirmation), whereas CB was considered better than expected (positive disconfirmation). These results indicate that information about farming practice can have a marked impact on consumer expectancy with organic standards associated with high expected product quality and conventional farming associated with lower expected product quality. Accordingly, previous studies revealed a marked effect of positive information about farming practices and animal welfare on actual liking of meat (Napolitano et al., 2007a,b) and willingness to pay for yogurt (Napolitano et al., 2008).

A significant difference between perceived and actual liking was observed for OB as the former was lower than the latter ( $P < 0.001$ ). Therefore, the information given about organic farming was able to affect the actual liking of beef. In this case, the effect of information can be explained on the basis of the assimilation model, which can be observed when the actual liking of the product moves in the direction of the expectations. In particular, the information concerning the use of organic farming techniques characterised by high levels of animal welfare, product safety and low impact on the environment had a positive impact on actual liking. Consumers completely assimilated their liking in the direction of expectations, as indicated by the fact that expectancy was not significantly different from actual liking ( $P > 0.05$ ), which in turn showed scores close to 8 (very pleasant). The complete assimilation observed for this product is likely to be due to the important role played by the information in the determination of actual liking of organic beef. In addition, the complete assimilation was possibly facilitated by the good eating quality of the organic product, as indicated by the high value of perceived liking observed in blind conditions.

## CONCLUSION

The main limit to purchasing organic meat remains price because of high production costs, which are affected by organic rules (higher space allowance, origin of feedstuffs, etc.) and small-scale production systems. Two strategies to overcome this constraint are: the spread of organic meat in supermarkets, which is likely to induce a reduction of current price (this approach may be suitable for meat which is organic but otherwise undifferentiated from conventional products); the induction of increased willingness to pay by constant and reliable quality signalling systems capable to provide an ethical value to the product, which may become even higher if associated to traditional farming systems and typical meat productions.

The results concerning the study of the effect of information on beef liking show that consumers are influenced by information about organic production and move their actual acceptability in the direction of expected liking, possibly because consumers are aware of the ethical value of organic farming and its effects on product safety. In particular, the hedonic discrepancy was totally assimilated indicating that actual liking of organic beef was markedly affected by information. Conversely, the information concerning conventional production had a detrimental effect on expectancy. Therefore, the information about organic farming, if given to the consumers, can be a major determinant of beef liking, thus providing a potential tool for meat differentiation to traditional farms where husbandry is based on extensive rearing systems and high animal welfare standards. Accordingly, consumers are prepared to spend more for organic beef as compared to the suggested price, thus indicating that reliable information about the organic farming system may markedly increase consumer willingness to pay.

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