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Sheep meat: Can we adapt to forthcoming demands?

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SUMMARY – Currently the European sheep industries face global competition and revolutionary changes. The similarities of the many animal meat products mean that they must compete on a cost-of-production basis. Issues such as environmental impact, human nutrition, food safety and biotechnology have increasingly large consequences on the production chain. The most progressive producers are conscious of the consumer's demands and endeavour to improve and refine product quality and consistency by becoming system-oriented with high throughput, accurate recording, and the ability to control cost of production. This is achieved by integrating modern production and management strategies and technologies. The recent economic problems have highlighted and caused the need for fundamental reappraisal of aspects of production focused more clearly on the relationship with the consumer. The industry has to be market driven – responding to the consumer at all times. A constant review of the market conditions in each market (including niche) is necessary. The need for quality and consistent quality, convenience and tenderness is vital to success as is presentation and packaging. The end product must exceed end-users expectations to include convenience, nutrition, health status, system of production and welfare. Adequate promotion is necessary, including service provided around the product, in the market and education to the consumer.

Key words: Sheep meat, carcass quality, consumer, marketing.

RESUME – *"Viande ovine : Pouvons-nous nous adapter aux demandes qui viendront ?". Aujourd'hui à travers l'Europe, le secteur de la viande ovine doit faire face à une compétition globale accrue et à des changements révolutionnaires. Les similarités de l'offre en matière de produits carnés ont pour conséquence une mise en concurrence de ces produits sur la base de leur prix de revient. Des problèmes tels que l'impact sur l'environnement, l'alimentation humaine, la sécurité alimentaire et les biotechnologies ont de plus en plus de répercussions sur la chaîne de production. Les producteurs les plus avant-gardistes sont conscients des exigences des consommateurs et il leur tient à cœur d'améliorer et d'affiner la qualité et la régularité de leurs produits. Les exploitations ovines performantes ont su constamment s'adapter en pratiquant une certaine systématisation sur des troupeaux de plus en plus importants, des contrôles de performances rigoureux et sont aujourd'hui capables de gérer leurs coûts de production. Or cela suppose d'avoir accès à ces nouvelles technologies et à ces capitaux, de même que de bénéficier de conseils avisés. Les récentes difficultés économiques ont souligné et justifié le besoin de réévaluer certains aspects de la production. Les industriels de la filière doivent absolument se concentrer sur leur relation avec le consommateur. En effet, la filière doit suivre le marché jusque dans les moindres réactions du consommateur. Il est donc nécessaire de réexaminer les conditions du marché en permanence, et ce pour chaque marché (y compris niches). La nécessité de maintenir une qualité constante, un produit pratique, préserver la tendreté sont tout aussi indispensables que le sont la présentation ou le packaging. Le produit fini doit aller au-delà des attentes des consommateurs en matière de commodité d'usage, de qualités nutritionnelles, de répercussion sur la santé, de méthodes de production ainsi que de bien-être animal. Enfin une promotion adéquate est nécessaire, incluant aussi bien l'information du consommateur que toute une gamme de services mis en place autour du produit et sur le marché.*

Mots-clés : *Viande ovine, qualité de la carcasse, consommateur, marketing.*

Introduction

The aim of this paper is to discuss whether there will be a demand for sheep meat in forthcoming years. The European sheep industry faces global competition from China, South Africa and Eastern Europe as well as the established exportation of sheep meat from New Zealand and Australia. Changes in the way that meat is now produced also has effects on cost of production. If meat is a high priced food then its market potential is drastically reduced from the outset.

One of the problems for the sheep industries is that consumers have different opinions on quality across Europe. This means that production of a consistent, non-seasonal product is extremely difficult. Furthermore the differences in exchange rate across the European Union means that some countries are advantaged over others.

Consumer changes also affect the potential market for sheep meat. Across Europe, the younger consumers claim that lamb is fatty, wasteful and old-fashioned. New butchery techniques are required to change the image of sheep meat. Marketing and production systems to promote lamb consumption and consistency are discussed.

What is quality?

Everyone has a differing opinion on the definition of quality. What is acceptable for one man, is not for another. There are many regional and national preferences that influence the desirability of lamb; hence different finishing and marketing strategies have to be adopted on a European and worldwide basis. Currently, in the UK, greater consideration is given to the carcass weight than to quality *per se*. Profitable carcasses have a high percentage of weight in the preferred leg, loin, rack and shoulder cuts. Yet to the consumer, quality in lamb refers to the factors influencing acceptability and palatability. So although a butcher perceives quality lamb muscle as having a firm, dry surface, modest marbling and a pinky colour, the consumer also requires flavour, juiciness and tenderness.

In past times, there were general theories on what constituted quality. One definition is that quality meat should combine the capacity to retain high nutritive value with functional roles in fabrication and processing; thus it will satisfy both butchers and consumers alike (Hammond, 1932; EAAP, No. 4, 1953; Howard, 1964). Unfortunately times have changed. Whereas, Hammond wrote in 1932 that the problem (of producing mutton) "...is complicated by the fact that the process is in the hands of sometimes two and often three sets of people – the breeder, the feeder and the butcher – each seeing one side of the problem only" (Hammond, 1932, p. ix), this now includes the retailer and the consumer as well.

Background

Europeans have been consuming and using ovine products for about 12,000 years. Recently, production systems have constantly changed to meet demand and consumer trends. Yet many parts of the sheep industry have stood still. This is because sheep are an essential part of farming in Europe. They have the ability to thrive on land unsuitable for any other agricultural practice e.g., mountains and island shores. Sheep perform the first stage of converting grass into edible forms; Man cannot digest cellulose so it is the ruminant which converts large amounts of grass into edible forms of food for Man. The temperate climate of Northern Europe is especially suited to grassland production. With much of Europe's land, especially in the northern areas, comprising hill and rough grazing, there is little possibility of converting this to produce cereals, novel forages or vegetables, hence sheep and cattle make use of this land in the most economic way possible. As sheep have this ability to utilize rough grazing, many farmers have focussed on the basic "keeping and selling" rather than on the technicalities and economics of production. By selling these sheep as a matter of course there has been a delayed acceptance of performance testing and genetic evaluation, as well as breeding for carcass quality as well as viability in upland situations.

Current situation

Statistically, production in most EU member states was fairly stable in 1998 with the exception of UK and Eire, where production increased by 10 and 6% respectively. However, production in France has been declining for several years and this also continued to be the case in 1998. EU-15 gross indigenous production of sheep meat totalled 1.15 million tonnes in 1998, three per cent more than in 1997. EU-15 consumption of sheep meat totalled 1.39 million tonnes, just over 1% more than in 1997. Most of this increase was prompted by the lower prices at retail level. EU self-sufficiency in sheep meat rose very slightly last year, to 82.7%.

The future

The main problem faced across Europe is that the sheep carcass is a high cost item, with slow growth, low yields and low reproduction rate incomparison to pork and poultry. Unlike many other farmed animals, sheep seasonal breeders. This means that there is only one annual harvest of the product, thereby making it less able to be continually "mass produced". A problem faced across Europe is the difficulty in producing a consistent, seasonal product. This is shown yearly in

Britain by the huge falls in prices received by farmers when the main flux of lambs are finished and ready for market. These factors mean that lamb must be distinguished and marketed as a product attractive to the higher socio-economic groups of consumers. These are the consumers who purchase on factors other than price. Lamb, therefore, should be seen by the consumer as an adaptable special occasion item, of quality and consistency, not of low value. This requires much market research including research into lifestyle changes and forward-thinking strategies to forecast market idiosyncrasies such as population expansion and consumer attitudes. The lamb-based product must then be altered to suit market requirements. So although there will always be threats and opportunities for lamb products, the key to the future is that there must be adaptation and change. Europe must learn to think "outside the box" by welcoming the new and yet retaining the pick of the past in husbandry, production and marketing at both farm gate and higher levels.

On a worldwide basis agriculture accounts for a large portion of Gross Domestic Product (GDP) in third world countries, with livestock production accounting for at least a third of total agricultural output. An increasingly fast rise in pigmeat and chicken transactions have not helped the trend of farmed lamb consumption in these countries. Although red meat (beef, lamb and pork) will still supply 90% of the market in 2003, white meat sales should prosper in urban areas (Reynolds, 1994). By then, consumers will have increased money to buy food, and will be able to afford more expensive sources of animal protein. Producers will need improved access to animal feeds for intensified systems, and hence to increased veterinary care. As the human population increases, so will demand for food depending on disposable income. This will lead to the problems that the western world has seen in the past decade with influxes of problems. In 1974, Sahlins wrote of the original affluent societies – those who lived by domestic production alone. Most societies have now submitted to the material and political demands of other cultures; needs cannot then be satisfied by domestic production alone.

Why choose lamb as a protein source?

One of the main objectives for many years has been to find an economic method of production for lean meat. Genetics, feeding systems and breeds have all been researched. The vast changes brought about by the new research studies led to an increase in the amount of British meat being produced and consumed. In most other developed countries, external trade grew more than consumption. However, as meat consumption grew, so did alliances to help protect animals, promote animal welfare, conserve nature and promote vegetarianism. In highly developed countries the overall meat market became close to its saturation point, as did animal welfare.

Furthermore people have been bombarded with reasons for eating less, or even for excluding meat totally from their diet. Propaganda concerning welfare, health and conservation issues in the mass media has influenced people. In the past permanent or occasional abstention from meat owed its origins to economic or religious pressures. In modern times, there are a variety of views; but adoption of vegetarian lifestyles is usually motivated mainly by compassion. Argued evidence in terms of health hazards of meat and anatomical and physiological considerations has strengthened aversion to slaughter. Many do not like the intensive farming of animals and cannot justify the consumption of meat from such conditions. Some British people have moved to low-meat, free-range or purely organic meat diets. In Britain, more supermarkets are promoting "freedom" foods, from assured schemes where farming practices are monitored, even though such are inevitably more expensive. This has led to an accelerating decline in lamb meat eating and to a rise in the consumption of vegetables and poultry.

We must accept that Man does not need meat to live. Meat is eaten by choice rather than necessity. Dobe !Kung tribesmen of Botswana obtain only thirty percent of their calories from meat, however they rate meat above all other foods. They say, "Steak is always better than potatoes" (Lee, 1984, p. 45). We know that meat is remarkable for its nutritive value, and in addition derives widespread appeal from its appearance, aroma, texture and flavour. These factors stimulate the digestive juices, aid food absorption and lead to a high satiety value. Such feelings of satisfaction stave off hunger longer than any other food (Fiddes, 1991; Lister *et al.*, 1976). As the !Kung noted the determining factor for protein consumption is taste. Man wants to eat meat. But does lamb figure in the list of desired meats? How do we encourage the consumer to buy sheep meat?

Lamb has to compete in a fast moving consumer market against beef, pork and poultry. It is the most expensive meat and the demographic profile of lamb eaters is characterized by a significant number of over 45 year olds in Britain. This means that meal solutions and convenience are of increasing importance to the British consumers. In 1998 over 50% of all lamb sold in Britain was in the form of traditional roast which often take in excess of two hours to cook. Yet findings from independent research concluded that the maximum time consumers are willing to spend preparing and cooking meals during the week is just thirty minutes, reinforcing the need for more convenient cuts of lamb (Source: Millward Brown, 1999). Today's consumer requires speed, convenience and taste as motivating factors when cooking at home. There is a strong preference for meat presented in boneless and leaner cuts with guidance on cooking times and recipe suggestions.

Background to quick lamb

Following the identification that 70% of all lamb was being purchased by consumers aged 45+ (source: TNS Superpanel) a full and thorough consumer research programme was undertaken during the spring of 1998. Working with a range of cuts developed by MLC's trade marketing, the research identified an opportunity to present lamb in a form that was far more "convenient" and fitted into modern lifestyles. The research concluded that the "Quick Lamb" brand identity closest matched expectations of these cuts and as a result this concept was launched into multiple and independent retailers in September 1998 supported by a high profile promotional campaign. Quick Lamb was launched during extremely difficult trading conditions for lamb caused in part by the relatively low retail price of other primary meats, most notably pigmeat. Following consultation with retailers it has been decided to extend the Quick Lamb range in order to give it better opportunities for consumer visibility and therefore overall success. Findings from research groups continue to stress the importance of speed, ease and versatility in British households and therefore strategically Quick Lamb remains a perfect way of developing the lamb market for the long-term consumer requirements.

All of this means that lamb can be a special occasion product positioned as a quality product, or it can be perceived through re-education of the consumer to be a quick and healthy option. However, in many cases it is the supermarket buyer who has a positive or negative influence, determining what sits on the supermarket shelf and what is likely to succeed.

New issues

Europe needs to be able to compete on an international scale. Meat consumption can be influenced from a variety of factors including global economy, consumer perceptions and food safety. The most essential factor for governments across Europe is to implement public measures, based on law to maintain consumer confidence. Scientific developments are therefore of utmost importance. Progress has been made across Europe with regard to traceability, and the importance of well organized assurance schemes. This can bring genuine added value by increasing the reputation of a product, by distinguishing it favourably above other commodity's. Biotechnology has already had an impact on lamb production via embryo transplants. However, these remain costly, so their influence is as yet low. Health and safety issues are complex for lay people because of the varied and often conflicting nature of recommendations. Current and future possible developments in new meat ingredients are being evolved. These ingredients can be divided into two categories; firstly, meat derivatives such as meat protein fractions, fibrin from blood and refabricated muscle fibres and allied Surimi-like materials from lamb i.e., doner kebabs. Secondly, a wide range of ingredients from non-meat sources including dietary fibre, fat substitutes, microbial enzymes and various sources of polysaccharides. Consumer concerns such as diet and health relationships, food safety, quality and environmental issues will influence the acceptance of new meat ingredients. The many opportunities open to the meat industry in the development of new products and ways of achieving significant improvements in meat product technology are infinite.

Can the British producers adapt to survive?

Purchasers of finished and breeding lambs are now putting more emphasis on quality; sheep breeders have to achieve better conformation, leaner carcasses and increased growth rates with their lambs. Quality, both objective and subjective, may also have preference over price to the consumer. Different quality levels are being introduced, and maintained; special meat assurance, as a form of guarantee, is being brought into practice for meat producers. Quality control is being strengthened through vertical contracting or integration. Modern marketing techniques, extended shelf life and carcass grading schemes are further aspects being used to help sell meat. Yet, in Western Europe, long-term growth in lamb consumption is probably to be measured in qualitative rather than quantitative terms. Promotion of a product through a brand can have positive results, giving increased spend on consumption of lamb against worldwide trends. Tenderness regimes involving pre-and post slaughter approaches have resulted in a higher quality product, while new packaging technology has resulted in enhanced shelf life. This demands the highest standards of hygiene. Animal ID and traceability and the auditing of on-farm production processes coming under increased scrutiny. The challenge is to implement and have accepted systems which are auditable and realistic and designed to ensure safety and quality.

Sheep production lends itself to extensive production. Production, processing and marketing are inextricably linked and this interdependence applies to the area of quality, price or safety of the product. Animal welfare and environmental conditions are also of importance and have already achieved major significance in Europe and elsewhere. Although these concerns can impact on the economics of production, if they become an issue at the retail level then they cannot be ignored.

The increasing importance of economic production of animals, and the flourishing demands for lean meat for health and welfare reasons make the use of new breeds, breeding and feeding techniques options to be considered. One of the main objectives for many years has been to find an economic method of production for lean meat. Consumer demand for meat is analysed in terms of a complex mixture of acceptable levels of leanness, tenderness and flavour and of price and income influences. Currently the demand for lamb is fragile. Key factors influencing meat consumption are habit, seasonality, cost, and the price of poultry. Moreover, the lamb industry has a structure that makes adaptation difficult. The large, integrated poultry producers and processors can talk to the major retailers and outlets on equal terms. General processors buying a certain amount of lamb as cheaply as possible on the commodity market, are clearly in a better position than individual producers to innovate in terms of scale of operation, flexibility and control and to market improved products aggressively.

The recent economic problems have highlighted and caused the need for fundamental reappraisal of aspects of production. The sheep industries must focus more clearly on the relationship with the consumer. A constant review of the market conditions in each market (including niche) is necessary. The need for quality and consistent quality, convenience and tenderness is vital to success as is presentation and packaging. The end product must exceed end users expectations to include convenience, nutrition, health status, system of production and welfare. Adequate promotion is necessary, including service provided around the product, in the market and education to the consumer.

However there is unlikely to be the same commitment to lamb if other ingredients are cheaper, more readily available and of controlled quantity. Unfortunately the length of time it takes to produce lamb cannot be shortened any further. Most breeds of sheep are naturally seasonal breeders, compared to pigs and poultry with their high turnover both in breeding and finishing. This leads to easier product control, quality and alteration. Genetic advancement can be attained more quickly to meet the consumers' demand for change as and when required. So if a demand for lamb is to be renewed and sustained, reliable sources of consistent high quality produce with innovative marketing will be required. The lamb industry must be moved into a higher gear if it is to survive in the future.

Returns are dictated by finished product market price. Thus poor quality cannot be "cushioned" by subsidy; hence farmers must produce lambs that meet the narrow specification band that satisfies market demand. Competition increases and survival is dependent solely on production and marketing efficiency. This may be compounded by the fact that the farmer rarely deals directly with the consumer, but with a wholesaler who in turn deals with retailers, thus the market price is dictated by different people who have the option to find alternative supplies if products do not meet required standards. To make a profit in the new market conditions, producers must evaluate production costs by determining exact production outputs and by using projected return comparisons. The cost of producing a kilogram of lamb can be calculated by adding the variable costs to flock replacements, divided by the weight of carcass sold per ewe.

Prior to the removal of the sheep variable premium in 1989, it was possible to forecast profits from lambs. Purchasing store lambs to finish on known, proven systems gave good economic results. However, increasingly hill farmers are being forced to finish their own lambs. Feeding strategies must be adopted that: (i) will benefit farmers both economically and financially; (ii) will finish lambs to the market requirements; (iii) will suit the breed of lamb available; and (iv) will be sufficiently flexible to adapt to slow or quick finishing to maximize market returns.

The modern production system

Farmers must be sure they know exactly how much it costs to produce a kilo of lamb on their farm. They must take everything into account. How much is that figure below (or above) the price per kilo paid by the meat market? They must know these figures and aim to maximize on them. On the whole, today's market requires fast growing, healthy lambs. Ewes must produce an optimum number of lambs without compromising their health status or weakening themselves before the next breeding season. Lamb meat needs to be produced cheaply and efficiently.

Basically the sheep industry is fragmented, and served by a traditional supply chain. There needs to be a sense of direction and an alliance with each other. Quality, consistency and cost efficiency of lamb production must be improved. Farmers need to use existing livestock development initiatives. If they can't be joined directly, new stock can be source from them. Best practice must be used on farm. Farmers need to envelop quality assurance and traceability in systems of production.

The hard facts count. Some farmers think that genetic improvement is short-term. Wrong – it is permanent, sustainable and accumulates over the years. Research at Scottish Agricultural College has shown that lambs that are genetically leaner produce a leaner carcass regardless of the way they are fed. Given the structure of the European sheep industry this is a critical finding. Lambs in meat sire flocks are typically reared on a high quality diet and depending on how these lambs perform on that diet, they are selected for breeding. But in commercial flocks, where these terminal sire rams are used for crossbreeding, lambs are finished at grass. Only if sheep that perform well under concentrate feeding also perform well at grass will selecting terminal sire sheep for leanness fully benefit the commercial lamb producer. There has been a lot of effort by pedigree breeders to improve the quality of lamb. The growth in Sire Referencing Schemes in terminal sire and other breeds is a clear sign of this. It's important that the genetic improvement achieved in the pedigree sector translates into leaner lamb at market. The important finding of this trial was that on three feed treatments, high index lambs had more than a 20% advantage in lean to fat ratio compared to low index lambs. So, the high index lambs had substantially leaner carcasses regardless of feed. The conclusion – choosing terminal sire sheep on index score will improve the carcass quality of lamb and therefore that of the national crop (Lewis *et al*., 1999).

Producers will have to appreciate that all sheep are only worth what the sheep industry will pay for them. As with any product, the value is only what the buyer will pay. Supermarkets sell lamb for high prices because some people are willing to pay those prices. Therefore at the present time, the less they cost to keep – the more money can be made. So make sheep pay their way. Sounds easy, and in theory it is, if producers get the breeding right, prioritize health and feeding and sell what the market requires. If we look to the Southern Hemisphere they have the right idea. Their breeding is in line with pig breeding companies. They use data and records and information on both sire and dam lines so they produce what they want – not what they get. Each breed has superior traits, and within those breeds individual animals that excel. How can we identify superior animals? With performance data. This is why we need to become more used to using records and figures so that superior individuals can be identified and utilized to the benefit of the industry as a whole.

Conclusions

The sheep industries need to put their house in order. There is a need to demonstrate that lamb meat is pure and wholesome, and that any adulterations are justified. People will continue to eat meat because of its satiety and taste, but they must be assured beyond doubt of its safety. The decision of the consumer to eat less lamb affects everyone concerned in the production and processing, supply and marketing, cooking and consumption of lamb. The most important factors, which affect production and consumption, are the farm animal units and the average price per tonne of lamb. Other factors include the increase in human population, change in average per capita consumption of meat, relative to the level of meat importation, and actual income.

Predicting future trends is unlikely to be successful because unforeseen changes must be expected to arise. Nevertheless to look to the future we must look to the past to some extent. Particularly to identify past mistakes that are within the capability of meat producers to rectify. Few people in the western world have to put themselves out to find food or to cook it. Therefore they are not grateful for the meat they can afford and do not regard it as an important energy source. They are more demanding than their ancestors. Persons that do produce the animals, process them and cook them value them more and still appreciate meat. Finally, we do need protein to survive, but we do not need lamb. Yet people will always eat food that they like in terms of the pleasure that the consumption of good meat, attractively cooked brings. Lamb has a future in human diets to provide not only a nutritive contribution but also an important social aspect.

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