Venison – Quality Issues

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Abstract

Much of the research on venison quality has focussed on production traits and yield of meat produced. There has been considerable focus on increasing or optimising yield. However, in the eyes of the ultimate consumer, yield is probably one of the least important criteria. As with other meats, palatability is the most important criteria Palatability, or eating quality, relates to the overall enjoyment of the eating experience and how good it tastes, smells, looks, and how juicy, tender and flavoursome it is Mild flavour and consistent tenderness of New Zealand farm-raised venison are no doubt important characteristics and need to be ensured, but it is likely that the image of venison is also an extremely important criterion Image encompasses the consumer's perception of safety, appearance, healthiness, and production aspects such as pasture-raised vs. feedlot, sustainability and animal welfare In order to maintain or achieve high standards of palatability and image, some existing production practices need to be improved

Introduction

To many farmers, quality simply means yield, since to a large extent, that is what their venison payment is based on The fact that they are paid less for females than males is certainly due to yield differences Some consideration of quality is made when comparing young animals with old, but this is minimal In the beef industry, particularly for the Asian market, premiums are paid based on the fat colour, lean colour, marbling and pH In both the beef and sheep industries, animals now must be sent to the slaughter plant fasted and clean, and any dirty animals are rejected and sent back to the farmer So what are the quality issues that are important for venison?

Martin Cooke, the Strategic, Technical and Development manager of Tesco's supermarkets outlined a number of factors when he spoke at the British Deer Farmers Association annual conference in November of last year It is worth noting that Tesco's is a multiple retailer with several hundred stores in the UK, Ireland, Europe, Asia and North America, and 30% of their income comes from overseas stores They are a global purchaser of agricultural products and the UK's biggest customer for agricultural products Martin stated that each week they purchased 6000 cattle, 20,000 lambs, 80,000 pigs and 35 deer They have 50% of the UK market for venison with approximately 100 tonnes of venison sold per year with more sold in restructured "grill steaks". They sell 50 animals per week worth of shoulder meat but only 25 animals per week worth of haunch. They serve 10 million customers in the UK each week. Fresh products are key to their business success Globally it is recognised that freshness matters. Customers are attracted to quality, variety and high standards. Customers are very disappointed when meat is not up to standard and impressed when it is Customers are increasingly well informed, especially regarding agriculture, and they are very articulate about what they want Customers also feel betrayed when products don't measure up – they feel that the bond of trust is broken

Key drivers are convenience, diversity of choice, value and quality, as well as safety, integrity and traceability Customers want to know Where did it come from? How was it produced? Can I eat this with a clear conscience? We need to be aware of how rapidly "news" can spread and how well-informed customers are

Martin stated that product quality attributes can be broken down into two categories: 'Nice to haves and 'Must haves The only clear 'Must have' was safety.

Safety

Food must be safe to eat People do not want to die or get sick Their health and wellbeing are extremely important to them You only need to think about the problems with BSE and *E. coli* 0157-H7 In the US, at least, concern over pathogenic microorganisms overshadows any other single issue facing the meat industry (Rust, 2000) So much so that irradiation appears to finally be becoming accepted by the general public in America. Recent initial media news splashes regarding the rules for the irradiation of red meats did not appear to cause undue consumer reactions Irradiation has gone from being highly undesirable a decade ago to now being demanded by some consumer groups, as it is recognised that this may be the only effective way of pasteurising or possibly sterilising meat.

Americans are more trusting of technology than ever before (Sloan, 1999). More than half (56%) of supermarket shoppers said they would be "very/somewhat likely" to "purchase food products like strawberries, poultry, pork or beef if they had been irradiated to kill germs and keep it safe" (FMI, 1999).

E coli and hepatitis remain on the top of the consumer's list of "very concerned" food issues – almost double the level of concern about fat in the diet or additives in general (Sloan, 1999).

Considerable research has been, and will continue to be, focussed on safety However, safety of the product relies upon the attitude of all the individuals in the various steps along the way from paddock to plate Safety of product begins with on-farm practices to ensure that livestock are not diseased or stressed entering the food chain. Transport of animals can be stressful and can lead to possible faecal contamination due to close contact whilst in transport and can therefore affect the safety of the meat due to increased risk of faecal contamination on the meat. Any faecal contamination on the meat is a concern for food safety MAF have recently circulated a Draft Generic HACCP Plan for Slaughter and Traditional Dressing of Farmed Deer, which addresses safety issues very well. Sources of potential contamination need to be identified and minimised or prevented if possible. We need to be sure that our products are as safe as they can be. Can the customer feel good about how it was produced?

Safety may well be of the utmost importance, but safety alone will not sell your product Safety will maintain market access which you will not have without it, but other attributes are required to out-compete other products available

Eating quality (palatability)

One 'Nice to have' mentioned by Martin Cooke, of Tesco's was food that was fantastic to eat rather than good to eat Customers now expect their meat to be tender and are very disappointed when it is not However, flavour seems to be in the eye of the beholder. Some customers prefer very mild tasting meat and we are marketing New Zealand farm-raised venison as a mild tasting, tender meat. However, some consumers prefer a stronger flavour and some of our competitors are filling that niche Flavour appears to be more important in some markets than others and there appear to be strong country and cultural differences Although in the past decade there has been a lot of focus on fat and cholesterol content of foods, this has been a very western focus and many countries, such as Japan, still pay massive premiums for heavily marbled meat Flavour matters in Japan; marbling in meat is prized since it imparts additional flavour Barley-fed pork is considered to taste better than corn-fed pork (Morris, 2000) Even in western cultures, high-fat gourmet products saw a comeback at the end of last century with the trend labelled "indulgence foods" or "comfort foods". A lot of American consumers are also shifting away from fat-free products because they equate them with no taste (Sloan, 1999) But whatever product we chose to produce and market, it must have consistency Mild flavour and consistent tenderness of New Zealand farm-raised venison are no doubt important characteristics and need to be ensured, but it is likely that the image of venison is also an extremely important criterion

Image

Animal welfare issues seem to come and go and are largely affected by the media The 99% of animals looked after well don't make a TV program but the 1% that's not looked after well will make the TV It doesn't matter to many media people if it is not representative but it certainly influences customer perception That's what the customer sees. In this respect we need to make sure we and our neighbours are working to the best possible standards

Also, we need to realise that perception often does not equal reality. Many consumers in the UK believed that pasteurisation of milk was equivalent to sterilisation and killed any potential pathogens. This was not the case However, research in the UK showed that if pasteurisation is extended for 25 seconds they could kill paratuberculosis bacteria (which were not killed by the previous method). Dairy facilities improved their methods of pasteurisation and were able to go on TV immediately after MAF announcements to say that they had already changed We need to be on the ball and able to react quickly to such events just to defend markets and maintain current sales Issues such as the dioxin scare in dairy products in Belgium can come and go extremely rapidly. You need to be prepared. It is far better if you can be pro-active about things rather than being reactive But it is also important to have early warning systems for such events, which requires good links in the supply chain and strong partnerships.

Whatever image we try to create for ourselves, whether it be clean-green, pasture-raised vs. feedlot, sustainable agriculture or anything from GMO to organics, we need to be able to defend it and to realise that we are dealing with savvy, intelligent consumers Chefs are now being trained to ask knowledgeable questions about such issues as sustainable agriculture We are also dealing with consumers that have more disposable income but less disposable time on their hands. Convenience is an increasingly important factor

Shift to ready-to-eat / convenience foods

For many consumers money may not be a problem, but finding time for cooking is. Although one solution is to go to a restaurant, this may also be time and money consuming Also, some people want to be able to eat in their own home environment, to relax and put their feet up. Fast-food sales continue to increase but another growth area with perhaps more potential for venison is one called 'home meal replacements' or 'ready meals' These are pre-prepared meals that are cooked at home to achieve a home-cooked experience, but without the hassle of meal preparation.

Statistics abound in the USA about the growing popularity of ready meals· more than half of under 25 year-olds have never cooked a meal, at 4 o'clock in the afternoon 40% of people do not know what they will be eating that evening and the average American family expects a meal to be ready in 14 minutes and so on But it is not just in the US that ready meals are catching on It is predicted that 45% of the sector is in the European market, 30% in the US and just 25% in the rest of the world, with an overall growth in the market of 15% in the next two years (Hansen, 2000). The average time spent preparing a weekday meal in the UK is 11 minutes. There is a great drive for convenience and ease during the week, though consumers will fuss and spend more time on weekends. Also, some consumers want to be able to serve a restaurant-quality meal to guests in their own home with guaranteed success and giving the impression of a home-cooked meal

There are many aspects of meal preparation that we take for granted that are seen as highly undesirable for many people Peeling potatoes is one that has been recognised to be highly undesirable for most Americans Supermarkets now sell pre-peeled and even pre-cut (scalloped etc) potatoes Another undesirable task is cutting up meat Many consumers are put off by the sight of blood or drip and for others (particularly Japanese people practising some Buddhist philosophy), touching raw meat is considered a very distasteful aspect of cooking meat (Morris, 2000).

Convenience trends are also growing in New Zealand as seen by the huge popularity of Alyson Gofton's "Food in a minute" TV segments which were expected to run for 6 months but have run for years instead. One particular idea involving using potato pom-pom's on top of a shepherds pie instead of mashed potatoes (involving a major time-saving from peeling, cooking and mashing potatoes) was extremely popular Three months worth of potato pom-poms sold out in one week and Heinz-Wattie had to fly in coating from Germany to produce more

Convenience foods are also becoming more sophisticated as consumers become more demanding Part of this change is a shift away from frozen foods to chilled foods as consumers perceive them to be fresher and more tasty. Freshness matters. Freshness is increasingly important and advances in packaging systems have lead to greater access and demand for chilled products rather than frozen Technologies are also available for selecting product that is appropriate for chilled storage since we are dealing with a biological product with a lot of natural variability. There are also new ways to manipulate product to reduce variability

In New Zealand we are world leaders in refrigeration technologies and a lot of our research has focused on the chilling or cooling of products Refrigeration and packaging research in the past has concentrated on effectively and efficiently cooling and packaging meat in order to ensure optimum quality product resulting in such advances as vacuum packaged product with a chilled shelf-life of at least 12 weeks The new era of research will focus on heating rather than cooling and such smart-packaging innovations as oven-ready packaging for meat Such innovations also provide market access in ways that may not be immediately apparent The cost of disposal of spent packaging is expensive in many companies In Japan, for example, wax cartons incur an extra disposal cost.

A large proportion of consumers are always looking for novel or new products to experience If they like them, they tell their friends and the products become trendy and highly desirable This trendiness and desirability can only be maintained by finding new and novel ways of presenting the product. This can involve the discovery and or promotion of new or novel aspects of the same product such as new ways of packaging and or cooking of the product, or new attributes of a product.

Healthfulness

Health and well-being issues are becoming increasingly important to consumers and they seek not only "purer" food and water, but "health-giving" products Although there has been a huge trend towards vitamin and mineral supplements (just look at the growth in the supplement sections of pharmacy's and supermarkets and in stores such as Healthy Living and Health 2000), there is a subtle shift towards a more holistic approach People are now going back to foods for their vitamins and minerals as well as for a whole range of defined and undefined factors. People want to live longer and healthier lives and to maintain certain fitness and activity levels and are willing to pay large amounts of money to achieve these goals

Billions of dollars are being spend on 'functional foods'/'neutraceuticals' Vitamin and herbal sales in the US topped $12 billion last year (Sloan, 1999) These are foods that along with standard nutrients such as proteins, carbohydrates and fats, have functional properties associated with them and/or pharmaceutical-like properties. For example, green-lipped mussels are reported to have arthritis relief properties, oysters are believed to provide sexual benefits and red wine can contribute to preventing coronary heart disease These are foods which people enjoy in their own right, but possibly indulge in more because of their perceived functionality or because they are good for you The "self treatment" movement is huge More than half of all shoppers (52%) believe that foods can be used to reduce their use of some drugs (Sloan, 1999) One-third regularly choose foods for specific medical purposes such as honey for sore throats or cranberry juice for urinary infections The vast majority are looking to self-treat common ailments such as upset stomach, diarrhoea, aches and pains. Gut maladies afflict more than 70 million Americans every year and joint health is a common concern One million new cases of arthritis arise each year due to the ageing of the Baby Boomer population and increased levels of exercise, aching joints are expected to annoy 80 million annually this year Blood lipids are a continuing concern as 96 million consumers continue to fight to lower cholesterol, triglycerides, LDL/HDL and plaque Skeletal strength issues attract both men and women beyond the 38 million with osteoporosis Hormonals provide more natural relief for the 40+ million women suffering menopausal symptoms Optimal vision is now one of the hottest trends in Japan, and antioxidants and phytochemicals are promoted to help delay reading glasses and improve eyesight Body fat is still an issue and obesity interest is back to high levels as obesity, especially among young people, is at an all time high in the US.

Eight out of ten primary food shoppers in the US admit their purchasing decisions are "at least a little influenced" by their desire to either manage and/or prevent a specific health condition, or to follow a doctor's advice About half of the primary shoppers now fall into the *highly* or *moderately* involved self-care category, which means that there is a market of 55 million shoppers. In terms of preventative markets, eight out of ten adults are concerned about developing cancer, 75% fatigue/lack of energy, 75% heart disease, 73% cholesterol, 68% stress, and 59% diabetes With cholesterol, digestive, blood pressure, cancer, and prostrate problems predicted to increase 30% or more within the 50-64 age group, consumer interest in the positive role foods can contribute to health will gain momentum. Research needs to be done to understand more about the functional attributes of venison. There will likely be some spin-off in this area from the velvet research, with many of the components present in velvet likely to be present in venison as well.

Dieting/weight loss

Dieting and weight-loss will continue to play a role in food, particularly meat, consumption People in the United States have been obsessed with diet fads for 35 years, and they are likely to continue this obsession well into the millennium These fads have had huge influences on meat consumption in the past and are likely to be just as influential in the future. At the present time, dieters in the USA are turning to meat and protein as a way of losing weight The so-called 'high-protein' diet has generated intense publicity in the US media during 1999, with much prominence given to efforts by a Dr Atkin to market an updated version of his 1972 best-seller with the revised title. "Dr Atkins new diet revolution." It has already sold six million new copies and has been associated with an increase in meat sales but is also arousing controversy Its basic philosophy is to eliminate just about all carbohydrates (no more than 20 grams a day) which causes stored body fat to be metabolised in providing energy

Although many health professionals criticise such 'diet fads' since most lack proven scientific research and good credentials, the public often show no such reservations. Among many over-weight people there is a passionate desire to lose weight, but an equally passionate aversion to being told. "Don't eat this, or don't do that " There is also often a willingness to listen to anyone who suggests easy ways of accomplishing weight loss, especially those that involve eating foods they already enjoy eating.

Concluding remarks

There are a lot of consumers who want to eat meat but often feel guilty. We need to find more ways of removing this guilt, ways of making consumers not only not feel guilty but to feel like they are doing something that is good for them· good for the environment, good for their health, good for others and good for their psyche When consumers think that something is good for them, they often eat a whole lot more of it Sometimes it may be as simple as keeping it as a luxury that they can indulge in occasionally in a form of retail therapy We do not need to reduce the price, in fact we may want to increase it if/when we can demonstrate greater value for money with our product. We should place the emphasis on the value of our product and the benefits that it provides over the competitors. We should provide a quality product and highlight all of the great attributes of our product and convince consumers that they are getting great value for money Consumers need to feel good about purchasing and consuming the product However, it still needs to taste great or it will face the demise faced by the granola bar And it needs to taste great every time you have it It cannot be tasty sometimes and bland at others, juicy sometimes but dry at others A large part of this can be attributed to the cooking but the raw material needs to be as consistent as possible Both the influence of different meat processing regimes and the animal production regimes, need to be examined further to achieve consistent products At the moment we have the luxury of being able to select our best product for our best markets because there are some markets where any old product is acceptable. As we move away from the traditional game trade to more branded product, product consistency must also improve and we must have ways of measuring and ensuring product consistency

Research

In order to capture these market opportunities, research needs to focus on a number of areas

- Developing new understanding of the association between cultures, food attribute preferences and human decision-making associated with trying or repeatedly buying new products;
- Leveraging existing and new understanding of the flavour and functional attributes of fibrous protein raw materials to create processed foods with entirely new textural and eating properties;
- Conceptualising and substantiating new technologies for manipulating, preserving and delivering food ingredients and products,
- Measuring and modelling biological raw materials and human physiological responses for improved utilisation and presentation of foods for consumers

In the future, consumers will continue to recognise foods from New Zealand as being safety- and quality-assured, and will come to see New Zealand as being their preferred source of foods that are healthy, fashionable and convenient for their modern individual lifestyle. New Zealand food manufacturers will recognise this programme as being essential to their ability to increase revenue and profitability through novel products and processes, while allied industries will benefit from spin-off applications such as those built around sophisticated measurement techniques. The major contribution made by this programme will be measured by the uptake of the results by food companies, and in particular, the rate of transformation of the commodity meat processing industries into profitable manufacturers of value-added processed foods

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