

BEEF MARKETING AND QUALITY IN URUGUAY

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ABSTRACT

Meat cannot be considered as a mere commodity. Modern consumers not only care for certain quality traits and adequate prices, but are increasingly paying attention to other non-traditional cues, such as origin of food, production systems from where their meat comes from and animal welfare practices, among others. Uruguay bases most of its beef production on grass, although grain supplementation is used to feed animals facing nutritional restrictions with animal welfare benefits. Not only do grass-based production systems clearly present environment-friendly features, but also these systems positively influence meat quality traits, especially those affecting human health. Although Uruguay's extensive conditions allow animals to best perform their physiological and behavioural functions, many adjustments should be done to enhance animal productivity and animal welfare throughout the meat supply chain. Local research has provided the Uruguayan meat industry with information on how to improve animal welfare, efficiency, performance and product quality, taking into account consumer's preferences and health issues as well. Local scientists unanimously agree that unbiased scientific information must be always delivered, so as to maintain the country's credibility and trust. Throughout the years, national meat marketing policies shifted from "selling meat" to "selling trust" and now, Uruguayan beef marketing present and future challenges lie on how to continue adding value and creativity for each link and for the meat supply chain as a whole. The promotion, of the "Uruguayan Natural Meat" brand -among others- will continue to



spur sustainable production systems, processing and commercialization along the entire national industry.

KEYWORDS: marketing, beef quality, grass-based production systems, animal welfare, Uruguay.

INTRODUCTION

Uruguay has a temperate climate which makes it ideal for animal production systems, where livestock graze freely on the open range and drink clean and fresh water. The design of modern and competitive agri-food production systems in Uruguay requires innovation and science to develop a smarter and more responsible use of natural resources that are essential for human and animal life (Montossi, 2014). Uruguay is worldwide acknowledged for its high quality and safe meat production, and holds a privileged position in accessing international markets. It also presents an excellent sanitary status, individual animal traceability, national laws abiding by animal welfare and is also very competitive in matters of production costs (Realini *et al.*, 2015).

Meat cannot be thought of as a mere commodity. Other non-food related considerations, such as environmental sustainability, ethics and local labour laws among others, have to be taken into account to develop attractive and competitive agri-food business (Montossi and Cazzuli, 2015). Besides product quality, its origin and the way that meat is produced, consumers are becoming aware of other relevant factors in their purchasing decisions. This global trend has been proven in UE for Uruguayan meat (beef and lamb) and reviewed by Montossi *et al.* (2013) and Realini *et al.* (2015).

Improving product quality along with its healthy traits and safety issues, while promoting sustainable meat productions systems based on traceability and certification as well as on solid scientific background are all key aspects to be considered in further development of marketing and promotion of Uruguayan



beef and lamb consumption around the world. This is a model which is still under construction, but nonetheless, some basic steps have already been taken to build it. In this sense, some examples and actions taken are considered, reviewed and highlighted in this paper.

URUGUAY: LIVESTOCK PRODUCER AND EXPORTER

Agriculture is the Uruguayan economy's cornerstone, being fundamental to its present growth and social development. More than 70% of total exports come from agriculture, demonstrating how prosperity and national population wellbeing depends on it. Uruguayan beef exports share in global market increased more than 100% (from 3.1 to 6.6%), in the last four years. Since 1990, national beef production presented a continuous and accumulated growth of 67%. Historically, this period is considered to be the greatest in growth and competitiveness in national livestock production (Soares de Lima and Montossi, 2011). International meat market standards have increased in the last decade, especially considering the following: a) origin product and process certification; b) environment care and biodiversity; c) animal welfare; d) food safety regulations; e) new quality features; f) product differentiation and g) healthy properties (Montossi and Sañudo, 2007). The last emerging demand refers to some particular consumers that are including the concept of "social responsibility" and "carbon and water footprints" in their purchasing decision. They try to recognise value and pay for it to those commercial providers who certify both product and processes "from fork to farm", taking into account social and environmental quality indicators. Meat production, industrialisation and commercialisation cannot disregard this new scenario. Within a context of an escalating international and regional competitiveness for red meat market shares and considering that Uruguay has many comparative advantages to fulfil the above mentioned market requirements (Figure 1), the country faces the



challenge of meeting the unsatisfied demand (adapted from Montossi *et al*, 2008).

Major features of sources of competitiveness for beef and sheep industries in Uruguay

- A country with a **long tradition and culture** in meat production and exports.
- **Clean green country, with pure air and pristine water.**
- All processes follow **strict standards** (GMP, SSOP, ACCP) which assure **food safety**
- **Modern slaughterhouses** worldwide recognised
 - **75%** of total area is used by livestock production
 - Each animal has **10.000 sq meters** to graze upon
 - **Production Systems:** 83% Native Swards
17% Improved Swards
 - **No antibiotics** used (controlled by NPER)
 - **No hormones** used (by law since 1978)
 - **E. coli 0157:H7 non detected**
 - **No animal protein** allowed on ruminant diet (by law since 1996)
 - **Free** from BSE, Scrapie and Maedi-Visna
 - Since 2006, **individual traceability** which allows to identify the origin of the product at any time during the process.



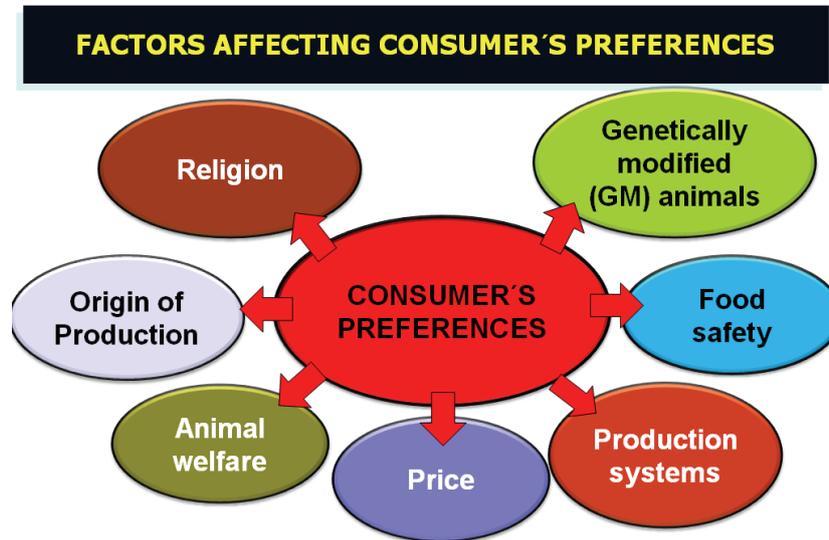
Figure 1 - Main features of the Uruguayan beef and sheep industries (adapted from Montossi *et al.*, 2008).

Even though grass-fed beef stands for the vast majority of Uruguayan production and exports, ever since Uruguay entered the "481 tariff quota" in UE, in which 30 months or less animals must be grain fed during the last 100 days before they are slaughtered, this kind of intensive production has significantly increased (Caputi and Acosta, 2015), positively affecting national beef exports.



PAYING ATTENTION TO CONSUMER'S PREFERENCES

There are several intrinsic and extrinsic factors influencing beef and sheep meat acceptance for consumption (Figure 2) (based on Montossi *et al.*, 2013).



There is no single factor affecting consumer's preferences

Figure 2 - Factors affecting consumer preferences (based on Montossi *et al.*, 2013).

From the government regulation and consumer point of views, concern has increased as to the sustainability of intensification of animal industries. More than ever, meat industries potential damages on the environment, human health and animal welfare are taken into account by consumer's every time they purchase meat or its by-products (Montossi *et al.*, 2013).

Uruguay has managed to open more than 100 markets all over the world, mostly where highly sophisticated tastes and preferences are registered, where consumers are highly



demanding when choosing meat products. There are several issues that have been brought up in the last years concerning consumers' attitudes and motivation towards the product they intend to buy. One of them is taking into account animal welfare aspects as well as animal health and food security issues. Origin and certification are two important cues and environmental issues are highly valued as well. It is also taken into consideration the products' quality, its consistency, differentiation and supply continuity. Human health is seen as a very important factor at the time of choosing a meat product and so are its culinary attributes, preparation and cooking easiness. Finally, aspects involving social responsibility influence consumers' choice as well (Montossi *et al.*, 2014).

Uruguay is the seventh global beef exporter and 70% of national beef production is meant to supply foreign markets. In the 1990's, this figure was only 30%. Livestock production necessarily has to address the satisfaction of overseas consumers, being this a great challenge to the country. Uruguay has worked on a marketing strategy centred on product differentiation and value adding, where nutritional quality plays a key role in it. Despite all past efforts, Uruguay should promote even more meat production based on pastures as part of this differentiation and value adding process (Realini *et al.*, 2015).

Lamb and beef are also a rich source of protein and necessary micronutrients (iron, zinc, selenium and vitamins - mainly B₁₂ and E from grass-fed animals) in human diet, which are not present in vegetables or have a low bioavailability (Biesalki, 2005). This condition, in addition to the low carbohydrate content of lean red meat, could be also beneficial to reduce and/or prevent overweight, cancer or diabetes. It was assumed that impaired bioavailability of micronutrients is a problem in the elderly segment of world population (Viteri & Gonzalez, 2002). Therefore, meat is part of the solution to this challenge, especially considering that elderly people are an increasing proportion of the world's population in the long term. Human health concerns have



increased in relation to fat consumption present in red meats, resulting in recommendations of higher intakes of PUFA (polyunsaturated fatty acids), particularly those of n-3, and at the same time promoting the reduction of n-6 fatty acids consumption with optimums of PUFA/SFA (saturated fatty acids) and n-6/n-3 ratios higher than 0.4 and lower than 4, respectively (Department of Health, 1994). According to Bayarri *et al.* (2010), consumers' interest on their own wellbeing and the information shown on product labels are increasingly acquiring importance among the factors explaining food selection. Cabrera *et al.* (2010), Cabrera and Saadoun (2014) and Saadoun and Cabrera (2013) studied the nutritional value of Uruguayan meat, proving that this food is an important and healthy component of human diet. Fatty acid profile and vitamin E content of meat are well known factors influencing a healthy human diet (Realini *et al.*, 2015).

Later on, this paper will focus only on two aspects concerning consumer's demands and therefore attending marketing strategies: beef production systems and animal welfare.

Beef production systems in Uruguay

Uruguay is an agri-exporter country, whose economy is based mainly on natural resources. Beef production has been historically one of Uruguay specialties and grass-fed livestock is the unquestioned national and traditional production. In 2014, summing up beef and its by-products, these items achieved the status of main exported products (Uruguay XXI, 2015).

Moreover, natural grasslands are the main nutritive basis for national beef feeding, which stands for over 64% of total exploited area, whereas other kind of pastures - such as fertilised or oversown natural grasslands, artificial pastures and annual forage crops - represent 13.5% of productive area (General Agricultural Census, 2011). In other words, grass and forage production has been the pillar of Uruguay's economy for many years.



According to Sepúlveda *et al.* (2011) feeding systems are considered by some consumers to be a key extrinsic quality trait of meat. Font-i-Furnols *et al.* (2011) affirmed that consumers mainly prefer feeding systems based on pastures and forages rather than cereal-based ones. Research asserts that carefully informed consumers have a favourable image about extensive livestock systems and associate them with positive attributes (e.g. in UE), while more intensive systems (e.g. feedlots) create negative expectations and may influence and penalise the qualitative assessment of meat (Montossi *et al.*, 2013). All these statements place Uruguay in an enviable position among global meat producers and exporters.

As it was mentioned earlier, environmental issues are increasingly taken into account from a consumer's point of view. Given that Uruguay virtually fulfils the most sophisticated consumer's requirements in this area ("natural" meat production), research was carried out in order to connect Uruguay environmental advantages with meat quality traits, so as to scientifically prove that these advantages do not necessarily have to negatively affect meat quality.

In spite of being pastures the main nutritive basis for Uruguayan livestock, meat production systems have intensified in the last years - especially in fattening operations - incorporating a variable amount of feeding concentrates on animals' diets (del Campo *et al.*, 2014a).

Extensive production systems based mainly on pastures have been conventionally associated with inferior meat quality attributes (e.g. meat tenderness and meat and fat colour) (del Campo *et al.*, 2014a). However, Brito *et al.* (2009), del Campo *et al.* (2008) and Realini *et al.* (2004) reported that finishing strategies did not show clear changes in meat quality. Thus, pasture-based finishing strategies did not only clearly affect quality, but according to all those authors, it also increased meat tenderness in beef.



Local research led by Realini *et al.* (2013) found out that European meat consumers presented the higher acceptability scores for Uruguayan beef from grass-fed animals with or without concentrate supplementation than animals fed on concentrate only. This researcher's results leverages Uruguayan livestock production systems, since these are grass-based in their vast majority (Montossi and Cazzuli, 2015).

On the other hand, Brito *et al.* (2014a) carried out an experiment where the objective was to determine effects and interactions of different post-weaning and finishing feeding regimes (pasture-based versus concentrate-based) on animal performance, carcass and meat quality traits. In this experience, results were the exact opposite of those reported by international studies in which feed-lot animals report more tender meat than grass-fed animals. Also, in accordance with Realini *et al.* (2004) and Brito *et al.* (2009), this trial reported higher concentrations of linoleic acid than grain-fed steers. According to UK Department of Health (1994) recommendations, PUFA:MUFA¹ should be above 0.45; even though the ratios found in this study were below that level, grass-fed steers at finishing period presented the highest levels. A healthier n6:n3 ratio was found for steers that were grass-fed during both periods.

Brito *et al.* (2014a) also conducted another experiment in which calves were fed differently during their first winter of life, and later on their second winter, they were fed differently again. These nutritive differences consisted on different forage allowances of oats and ryegrass pastures. No significant differences were found on meat quality traits, but carcass traits were affected by treatments, where animals with higher forage availability during their last winter achieved heavier hot carcasses.

Putting together all these studies, Brito *et al.* (2014a) concluded that feeding systems affect animal performance and carcass traits, but not meat tenderness.

¹ MUFA: mono unsaturated fatty acids.



In Uruguay, during the last 10 years, cow slaughtering has held a very important proportion in the overall national figures, presently being 46.5% of total national slaughtering (INAC, 2014). Lagomarsino and Montossi (2014) carried out an experiment to assess the effect of different levels of forage allowances combined with the use of rice bran supplementation (0.8-1.6% LW allowance) during winter on meat quality traits and fatty acid composition in Hereford cull cows. Under this trial conditions, no differences were found on meat quality traits in cull cows. Nonetheless, different feeding systems had a significant impact on fatty acid composition, especially on n6:n3 ratio, where this ratio was higher in the supplemented treatments, even though all rations were within the UK Health Department (1994) recommendations. This experience shows the beneficial effects of grass feeding cull cows or grass feeding systems with low levels of added supplements.

Fattening duration whether on pastures or in feed lots and their combinations, can also affect fatty acids profiles. Concentrate-only diets for the last 40 days before slaughtering would not affect fatty acid composition of intramuscular fat. These systems result in higher intramuscular fat and therefore promote higher meat palatability, yet with similar fatty acids profiles (Realini *et al.*, 2015).

Montossi & Sañudo (2007) compared meat from Uruguayan grass-fed steers with meat from grazing animals which were supplemented from the United Kingdom, and meat from feed lot steers from Spain and Germany. Uruguayan meat presented very high levels of fatty acids from de n-3 series, as well as better fatty acid profile ratios (n6:n3 and PUFA:MUFA).

Based on previous studies, Realini *et al.* (2015) affirmed that grass-fed animals produce meat which presents higher levels of n-3 fatty acids and CLA² content, as well as more favourable PUFA:MUFA and n6:n3 ratios and a higher vitamin E content

² CLA: Conjugated Linoleic Acid.



which helps in the conservation process of meat and human health (Montossi and Sañudo, 2007).

Uruguay has the particular feature of having most of its meat production systems based on grass and eventually supplementation on pastures may be quite usual especially during forage shortage, most commonly used during winter time (Realini *et al.*, 2015). Brito *et al.* (2014b) found that differences in fatty acids profiles and vitamin E content were scarce when comparing pure grass-fed systems with grass-fed systems that include supplementation up to a 1% LW allowance.

In Uruguay, restricted grain supplementation on fattening beef under grazing conditions is one of the available technologies to increase farm production and profitability in particular under high stocking rates or restricted forage quantity and quality, as well as the improvement of carcass and meat quality (Realini *et al.* 2015). In this context and looking for opportunities to improve Uruguayan red meat profitability and acceptability in the European market, different pasture:concentrate combinations have been studied on fatty acid composition, sensory attributes and consumer acceptance and perceptions, which have been summarised by Montossi and Sañudo (2007). These studies have proved that the inclusion of certain amounts of concentrates in the diet of lambs and beef grazing artificial sown pastures, could improve animal performance, carcass and meat quality, sensory attributes as well as consumer acceptance without changing the fatty acid composition compared with grass-fed animals. Therefore, it has been proved that is possible to use restricted grain supplementation to promote simultaneously lamb and beef productivity and efficiency as well as healthy meat under grazing conditions.

The conceptual model of the influence of diet on intramuscular fat and fatty acid profile and their ratios in lamb and beef met is summarised in Figure 3.

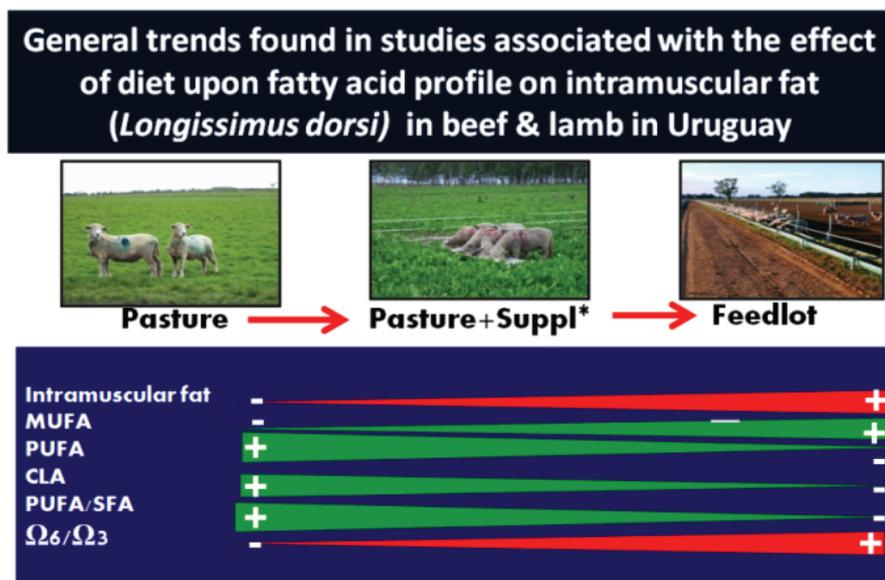


Figure 3 - The influence of production systems on intramuscular fat and fatty acid profiles and their ratios in lamb and beef meat.

Finally, in addition to the already mentioned importance of consumers' healthier diet through red meat consumption, it is also important to consider red meat as a significant contributor to global food security. This means enough meat availability, its continuous accessibility, supply stability, affordability and the utilisation of meat as part of an appropriate and healthy diet, which should contribute to achieve a nutritional well-being status.

Grazing animals also play an important role in promoting the conservation and best use of marginal land and productions systems of the world.

As all these studies mentioned above stated that grass-based production systems are a competitive advantage *per se*, which in turn are well aligned with consumer preferences.



Animal welfare

Based on Montossi *et al.* (2013), the potential factors affecting beef and sheep welfare in production systems under grazing conditions are highlighted in Figure 4.

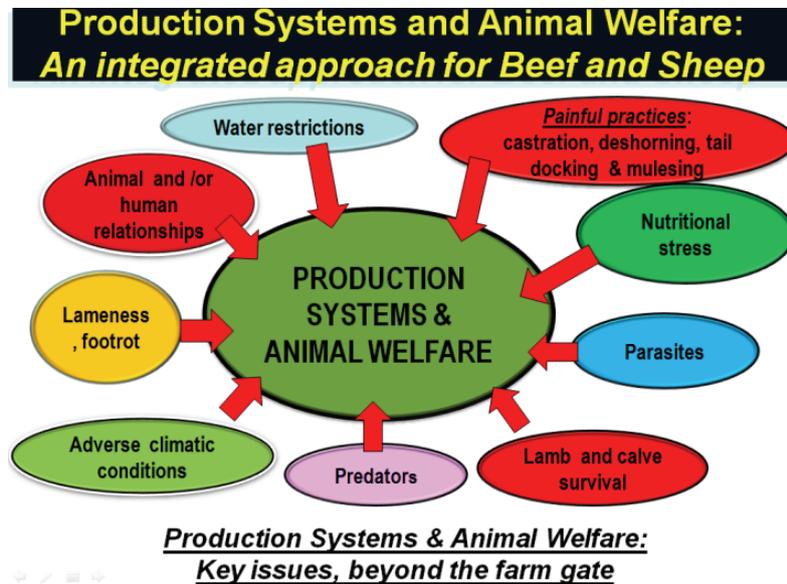


Figure 4 - Factors affecting animal welfare under grazing conditions (based on Montossi *et al.* 2013).

Under extensive production systems, animals are free to move within a habitat that allows them to best perform their physiological and behavioural functions (Montossi *et al.*, 2013). This would be the first evident advantage of the traditional and most common Uruguayan grass-based production systems, and this should be highlighted every time that Uruguayan beef is sold abroad.

However, Sevi *et al.* (2009) claim that rustic animals from extensive systems have their ability to cope with environmental conditions and inadequate management practices highly



overrated. These authors also state that grazing can also affect animal well-being, due to seasonal fluctuations of herbage allowance and quality; consequently, these animals may undergo temporary nutritional stress, and thus affect their wellbeing.

According to del Campo *et al.* (2014a), many animal welfare recommendations, regulations and practices are based on scientific information generated mainly from intensive production systems, which are by no means the general situation presented in Uruguay, as it has been presented before by INIA Uruguay during the International Congress of Meat Science and Technology in 2014 (ICoMST 2014; <http://icomst2014.inia.uy/>). In Uruguay, an Advisory Animal Welfare Workshop has been implemented and it has been lead by the Ministry of Livestock, Agriculture and Fisheries of Uruguay. This Working Group represents national research and extension institutes, central government, universities and meat marketing institutions, and the private sector among others (del Campo, 2012). It is very important that any scientific study concerning animal welfare should always be carried out in an unbiased way and needs to be published whatever the results (del Campo *et al.*, 2014a), as well as being audited by the scientific community and international commercial entities.

For example, del Campo *et al.* (2010) reported that a short period in lairage time had significant negative effects on pH values, meat colour and meat tenderness of Hereford and Braford steers, when comparing between 3 and 12h of lairage time. According to this experiment, resting periods in pens, probably longer than 3h should be applicable, especially in animals that may had had stressful pre slaughter conditions. These recommendations differ from those proposed by UE regulations, showing the importance of generating local research that takes into consideration local conditions through a holistic approach.

As for individual temperament, del Campo (2008) and del Campo *et al.* (2010) showed that calmer animals presented more tender meat than those excitable. These conclusions led del



Campo *et al.* (2014a) to recommend that special considerations should be always thought of when working with excitable animals, given the relation between animal welfare and meat quality. Furthermore, these authors stressed that education and training of stockpersons, lorry drivers and all people who work with animals will lead to improve meat industry animal welfare and meat industry competitiveness.

Following the same line of thought, Montossi *et al.* (2013) suggested that an acceptable level of tameness can be achieved by certain adjustments to the management system, in particular a scheduled series of short periods of contact with human beings. This is something that has to be bore in mind, because in Uruguayan extensive systems and semi-extensive systems animal-human contact does not occur as often as in more intensive situations.

Entire animals show many disadvantages in meat quality when compared to castrated males, regarding tenderness, meat colour, fat cover and marbling (Arthaud *et al.*, 1997, Gerrard *et al.*, 1987 and Seideman *et al.*, 1982, cited by del Campo *et al.*, 2014b). Since castration is a necessary management practice in beef production, especially in extensive conditions (del Campo *et al.*, 2014ab) and considering that it is a painful procedure, local studies have been carried out to determine stress-associated responses and to address and implement local husbandry practices to promote animal welfare.

Consistently with international recommendations, del Campo *et al.* (2014c) proved in local conditions of Uruguay, that stress response and pain of castrated animals with different methods is reduced, the earlier in life these procedures are performed. Furthermore, as for animal performance, animals castrated from one week to one month old showed slight increases of body weight, while animals who were castrated at 6-7 months of age presented weight losses from 3 to 5%.

Del Campo *et al.* (2014b) carried out a trial in which the objective was to determine the impact of different castration



methods on animal growth and meat quality. Calves castrated at 7 months of age did not show any differences on growth, regardless of the castration method. Brightness and redness in meat were lower in animals castrated in a traditional way without pain mitigation, but no other traits (pH or tenderness) were affected by different castration methods. Therefore, these authors recommend that animal welfare criteria should be determinant when choosing the best method to castrate calves.

As del Campo *et al.* (2014a) clearly stated, unbiased scientific information related to animal welfare must be delivered so as to maintain the country's credibility, integrity and competitiveness. Beef marketing should always rely on scientific information for the sake of a transparent export-oriented beef supply chain.

Marketing

INAC is the National Meat Institute of Uruguay and its mission is to develop joint actions to promote the national meat supply chain and formulate legislations that will contribute to its socio-economic development. INAC Marketing Department has defined medium and long term strategies for the Uruguayan meat industry, in which market research is a pillar. After 2001-2002 economic crisis, a new marketing paradigm shifted from "selling meat" to "selling trust". In order to "sell trust", transparency, confidence and trustworthy, accessible information from "farm to fork" was imperatively needed, and traceability played a key role in this matter. INAC's logo (Figure 5) represents grass turning gradually into the bar-code that reaches consumers (Bonsignore, 2014, personal communication).



Figure 5 - INAC's main logo: "from nature to table".

Concepts such as "slow food", "natural Uruguay", "healthy fast-food", "meat boutique" are some of the approaches that have been used to promote Uruguayan red meat all over the world, as well as the "we pack nature" marketing concept (<http://www.inac.gub.uy/innovaportal/v/7816/7/innova.front/we-pack-nature>) (Bonsignore, 2014, personal communication).

FINAL COMMENTS

The scientific community has great responsibility in generating technological innovations to promote a better world, where increasing production needs to match the rising global food demand and still has to be aligned with a respectful treatment of natural resources.

Policy makers, in an international coordination and cooperation effort, have to promote and facilitate the adoption of environmentally sustainable practices, without necessarily restricting productivity and efficiency. This should be particularly emphasised in underdeveloped countries with exporting capacity which appears as an excellent opportunity for social equity compared to central economies.

According to international studies, both production systems and animal welfare prove to be a very important extrinsic cue for meat consumers all over the world. That is to say, consumers value these extrinsic aspects *per se*, even though they also directly affect meat quality and safety. Additionally, Montossi and Cazzuli (2015) stated that the promotion of suitable production systems is also a key factor to understand the new and consistent trend in which consumers opt to purchase agri-foods that are



produced and processed in a respectful coexistence with natural resources.

The international and local scientific information presented in this article highlighted and summarised the increasing importance of designing and implementing sustainable production systems aiming to reach high value and sophisticated niche markets worldwide. Uruguayan red meat industry has focused on how to flexibly carry out strategies to fill the requirements and standards of these niche markets, through the implementation of production, processes and marketing differentiated practices.

Integrated production systems will eventually materialise worldwide based on "a holistic approach" (ethics, culture, environment, society and economics) with the supportive progress and contribution of science as well as respecting the general and ample factors of diversity and differences found between developed and underdeveloped countries. This approach will be based on cooperation of societies from all around the world and a thorough understanding of beef and lamb industries and consumer's preferences, beliefs and rights.

Montossi *et al.* (2013) stated the following: "Red meat industries around the world are very dissimilar given the huge variation presented in natural resources, social, economical, cultural, technological and geo-political issues amongst others". These authors are very conscious that many of the technological proposals, productive advantages and disadvantages, social-economical opportunities and limitations, and market accesses and constraints addressed here to improve livestock industry competitiveness, could work properly for some production systems and markets, or produce neutral to even negative impacts in other situations. They also emphasised that "culture, beliefs, values and education of livestock industry shareholders and consumers worldwide are of vital importance and will definitively shape the final impact of those along the red meat chains". These concepts are summarised in Figure 6.



**ALIGNMENT OF PRODUCTION SYSTEMS FEATURES
AND CONSUMER'S PREFERENCES**
"The future of the Global Red Meat Industry"

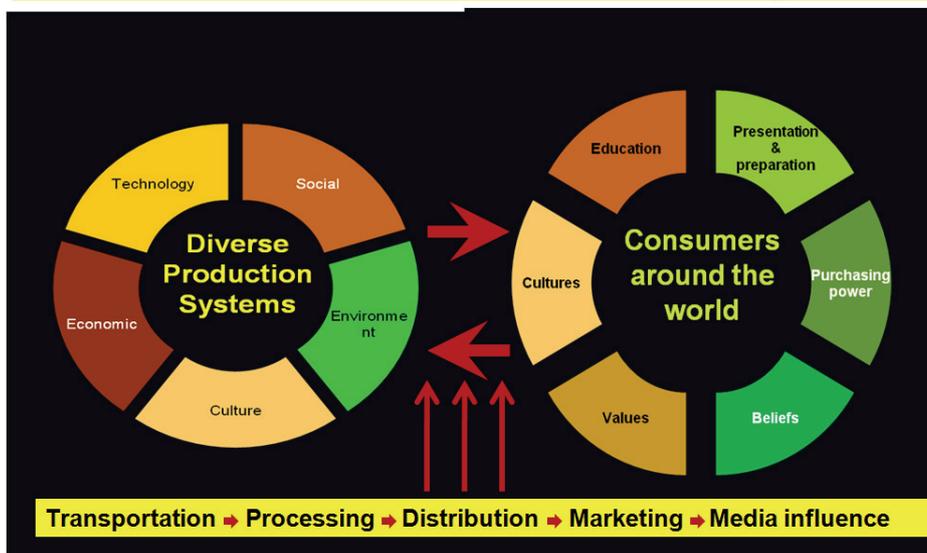


Figure 6 - The alignment of diverse production systems features and consumer preferences and characteristics.

Figure 7 presents an integrated global approach on differentiation, segmentation and alignment between production systems and consumer's preferences.

Besides the benefits of caring about environmental sustainability and the consumer perceptions of it, animal ethical issues should also guide public policies in this same direction. Certifying or further promoting these two features may certainly be of great aid in boosting marketing strategies for Uruguayan meat and gain confidence and loyalty from consumers worldwide.

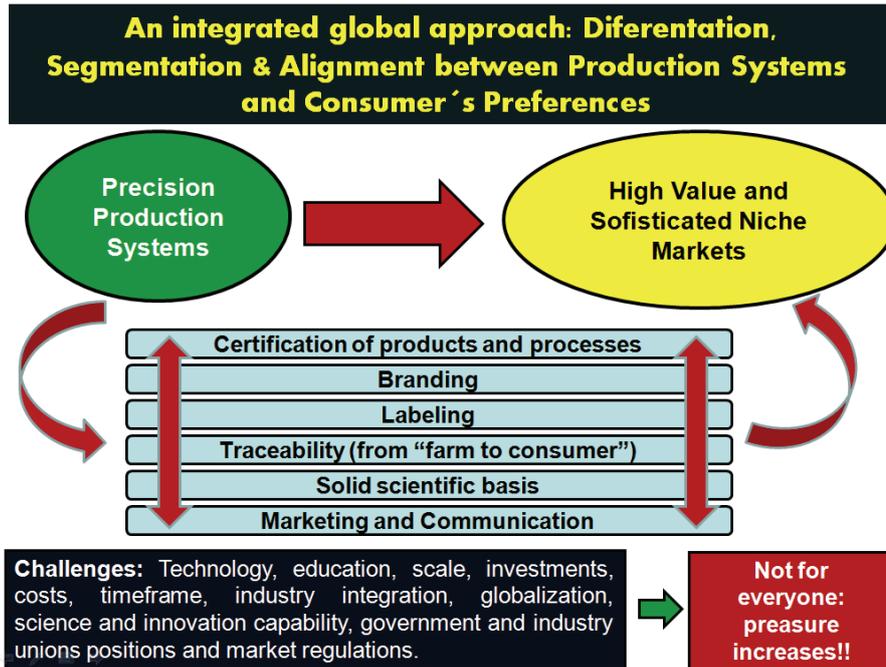


Figure 7 - An integrated global approach: differentiation, segmentation and alignment between production systems and consumer's preferences.

Independent and unbiased scientific information has to be generated and communicated by Uruguayan research entities in cooperation with international counterparts aligned with its traditional virtues concerning about "natural" production systems and animal welfare. This is an unavoidable path to build a sustainable business to keep on reaping good economic and social results.

In relation to marketing and promoting of the Uruguayan Beef Industry, Silvana Bonsignore (2014, personal communication) from the National Meat Institute of Uruguay (INAC) quoted "As scientific and technological breakthroughs will continue to provide objective answers and set the ground to guide humanity on which road to follow, task for marketers will be to design the most appropriate



communication strategy for each case, not only in pursuit of commercial goals but also in order to contribute to educate within a value-based framework and to improve the life quality of global population, with honest and transparent information". Meat marketing specialists must also deepen and improve their market research techniques, detecting precisely what consumers want, which their needs and desires are whenever they undergo buying experiences. In addition, specialists must understand where the new consumer trends are heading to, in order to give adequate feedback to each different link in the meat supply chain. Marketing should add value and creativity in each link: "from farm to fork and from fork to farm".

Scientific and technological information locally generated and internationally evaluated and audited will play a crucial part in the design of modern "clean, green and ethical" production systems, aligned with consumer's trends and overseas government policies and regulations.

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