The question of animal pain: the issues for debate

J.-L. Guichet1 and K. Latouche2

1 Université de Picardie Jules Verne, 10 Rue Hermel 75018 PARIS, France; 2INRA, UR1134, LERECO, Rue de la géraudière, BP 71627, 44316 Nantes Cedex 3, France

1. The question of animal pain: the issues for debate

The occurrence, reduction and prevention of animal pain may seem at first to be the concern of experts in the natural sciences and veterinary medicine. However, the issue of animal pain concerns all and this has led to a debate in society at large. The resulting range of diverse and often antagonistic points of view also requires the inputs of social scientists. The objective of this article is to clarify the issues around this debate by first retracing the history of man’s perception of pain and suffering in animals and second by outlining the stages in the development of this contemporary issue.

This debate encompasses many disciplines in the fields of human and social sciences because the question concerns not only animals it also concerns the relationship between animals and humans, whose actions may cause, relieve or aggravate pain and suffering in animals. More broadly speaking, it is apparent that the issue is linked to the philosophical idea of man’s moral responsibility for animals.

For western societies and particularly French society, modern ideas on pain and suffering in animals developed alongside a growing sensitivity to physical suffering in humans and particularly ourselves, but in general in all sentient beings so that the right to freedom from pain was progressively extended to all sentient creatures.

Expert analysis of the published literature reviewed by our committee has led to the identification of three stages in the development of current views on pain and suffering in animals. The first is the relationship between man and animals in traditional societies and the gradual recognition in the 19th and 20th centuries that animals are sentient beings and suffer accordingly. The second period saw a heightened debate on man’s moral responsibility to animals as a consequence of this recognition. The third covers the last 30 years during which there has been a marked acceleration in investigating animal pain and the implementation of changes that reduce pain in animals.

1.1. The role of animals in traditional societies

1.1.1. Men and animals, ‘mixed communities’. Since the Neolithic period animals have always been present in human communities with consequent social connections established between man and animals. Anthropologists have highlighted the great diversity in the nature of these connections. They ranged from the protection of herds against wild animals through to hunting and fishing and from companionship, through to assistance with labour and to raising livestock to provide clothing and food for humans. These relationships, which could be the source of either pain or well-being for either party, show that animals were treated as members of a ‘hybrid society’, to borrow an expression commonly used by researchers, meaning the animals fully integrated into human communities. The function and the status of the animals in the hybrid community were immediately determined by the differences in their physical, behavioural and social characteristics.

Anthropological analysis describes the way ordinary people can use analogy to understand animals by perceiving animals as being more or less similar to man. In the popular imagination animals are credited with having feelings, intentions, thoughts, virtues and failings similar to ourselves. These anthropomorphic images are perpetuated in everyday language: the dog ‘wants’ to go out, he ‘loves’ his master, a bee is ‘industrious’ and the wolf ‘cruel’. Likewise, humans are, or can be, compared with animals. This zoomorphism can be added to anthropomorphism and this double play of analogies exposes not only the differences between men and animals but also among people and among animals. From the human perspective animals are living beings as we humans are so we can use the same terms in thinking about them as we use to think of ourselves. There are differences among animals, just as there are differences between humans and animals. This gives rise to a wide variation in the nature of interactions that develop between man and animal and the resulting communication is an exchange between one living being and another.

As far as farm animals are concerned, their relationship with humans encompasses domestication, which ethologists define as a state or process that enables populations of animals to live and reproduce in environments imposed by man. The development of different breeds with their particular morphological characteristics can only be explained by human intervention whereby animals are selected for useful
characteristics. This selection covers a wide range of breeding objectives ranging from the production of food or clothing for humans to other breeding objectives that are far more difficult to characterise objectively, for example; social relationships or conformity with socio-cultural perceptions that go beyond the requirements of farming.

Almost all domestication has been of social species, and therefore all the consequences of the social hierarchy and dominance within the group have had to be dealt with. In fact, domestication only became possible because man was able to benefit from the social nature of certain species. Domesticated animals not only relate to each other and with their environment. They can also maintain a relationship with the humans who rear them and care for them, a relationship that is based on an exchange of goods, services and affection. Without any vocal exchange a negotiation of some kind takes place between man and domestic animals. Through mutual learning an arrangement emerges whereby the attitude of one is adapted to the expectations of the other and to which some authors attribute the notion of a ‘contract’.

Treating animals as subsidiary members of the human community places them in an admittedly, hierarchical and unequal relationship, but one that has made it possible to characterise each species according to the role they fulfil. This long coexistence has produced norms that vary according to time and place but that have for each particular norm, enabled the description of what constitutes a good cow, a good bull, a good (cart-drawing) team or a good dog as well from the human side, a good breeder, a good cart driver and a good shepherd.

In traditional farming, animals were not treated like people. They were put to death either to provide food or because they were no longer useful. But for all that, even though they were sometimes ill-treated, they were not simply considered as objects. There was a widely held interest in their health and welfare.

1.2. The animal in the classical philosophical tradition. A particularly relevant reference to the position of animals in society is the theory of Descartes who, by drawing analogies between the functioning of animals and robots, proposed the existence of an unbridgeable gap between man and the animals. According to Descartes, only man has an immortal soul. Animals are merely machines devoid of any feeling and thus can be considered as objects, open to manipulation and use. It should be noted that it was only after Descartes that his conception of animals as objects, largely hypothetical in his mind, achieved the status of a practical dogma.

The popularity of Descartes proposal, however, did not replace an enduring tradition that had roots in antiquity with Plutarch and Lucretius and that was continued by Montaigne, Rousseau and Adam Smith. This tradition leads us to the view that man has a duty of care towards living things, whether they are animals or even plants. The ability to feel and express mental states such as pain, suffering and pleasure is common to humans and animals. We must therefore treat animals as sentient beings and show them respect.

Equally, part of Christian thought considers that God entrusted man with the wise use of nature. As the guardian of nature man is accountable to God for what is done to the creatures that surround him.

Spurred on by scientific discoveries during the 18th century, particularly the progress in comparative anatomy that revealed the closeness of man and the animals, philosophical criticism overturned the precepts of Cartesian theory. Indeed, as Descartes himself had postulated, if animals can be considered as machines then the human body must also be a machine because it, too, is an animal body. At the same time the sharp distinction between the notions of instinct and reason was questioned and the fact that sentient feeling is common to both man and animals was pointed out.

It was also during this century in England, and a little later in France, that a new feeling arose and along with it demands for social control of emotional outbursts, in particular violent impulses. This feeling led middle class people from these countries to condemn cruelty to animals. From a political standpoint, this condemnation came from conservatives, concerned with moral order, as well as from liberals, who linked protection of animals with democratic empowerment.

1.2. The development of the modern view of animal pain

1.2.1. A history of animal pain as mirrored by human pain

Recognising human pain and taking it into account. Until the turn of the 19th century a certain degree of indifference was shown towards human pain, especially by the medical community. In deeply Christian societies, pain, that of Christ the Redeemer, the Christian martyr and the condemned, was valued positively. In the widespread tradition of French clinical medicine it was considered more as a guide diagnosis of disease than as an evil to be averted. Concomitantly the philosophical theory of vitalism was expanding. According to this theory, pain was a force-of-life reaction, a step in the healing process that should not be hindered. In addition, pain had been long considered as an exemplary means of punishment, such as in school corporal punishment. It was also seen as promoting masculinity notably in the military.

The 19th century seemed to mark a turning point. The advances in the understanding of the physiology of pain, in parallel with that of the brain and the nervous system, supported an increasing use of painkillers and analgesics, particularly for anaesthesia in surgery. This led to the widespread use of ether as an anaesthetic and to the discovery of chloroform and aspirin. However, the systematic management of pain in humans was limited, especially for very young children. These developments also answered to the population’s growing intolerance towards bodily suffering, in a social context valuing the human person and privacy.
Consequently society’s demand for ever-more effective treatments against pain was strengthened. The rise in concern for animal pain was therefore closely linked to the increasing sensitivity of humans to their own pain.

**Marginal consideration of pain in relation to veterinary medicine.** It took even longer for veterinary surgeons to take an interest in animal pain. Only in the second half of the 19th century did advances in medical physiology, paradoxically through vivisection, enable an improved comparative knowledge of the nervous system and therefore a deeper understanding of animal pain. However, the treatment of pain in animals remained very marginal until the mid 20th century and only really concerned horses, cattle and dogs.

This slowness to consider pain in veterinary medicine was also noticeable in the slow uptake of anaesthesia in veterinary medicine. Traditional restraints such as twitches, nose grips, tourniquets and the use of alcohol (the latter particularly for cattle) remained in use for a long time (well into the 20th century). Rather than for preventing animal suffering caused by the procedure, their purpose was to allow better control of the animal and to improve the ease with which the veterinary team could operate.

Until the Second World War, pain was essentially defined as a physiological phenomenon. Veterinary treatment of pain was primarily justified by economic and practical reasons. Pain affected productivity and could cause agitation and aggression that posed a danger for those handling the animals.

**The issue of animal slaughter.** The ESCo assessment only deals with the manner in which animals reared for meat are slaughtered. Apart from the issue of pain, slaughter procedures also raise concerns about food safety. Despite suggestions emerging from the current debate, slaughter is not a new issue. Historians report that from the 18th century middle class society complained over the slaughter of animals and the display of animal carcasses in full view of the public. From then on slaughter progressively was confined to purpose built slaughterhouses located on the outskirts of towns, thus facilitating increased surveillance by the veterinary authorities and closer attention to public health.

The issue of pain in animals acquired a new dimension with the emergence of industrial production of meat and the building of the first factory slaughterhouses in Cincinnati and Chicago in the 1900s. These were built in the total absence of regulations on animal pain, meat hygiene and safety in animal handling. As a consequence a wealth of literature appeared in the United States of America at the beginning of 20th century denouncing the industrialisation of abattoirs as detrimental to animals and to the quality of meat products.

The usual practice at this time was to slaughter animals intended for human consumption by slitting the throat without prior stunning. Only adult cattle and horses were stunned before their throats were cut, this being for the safety of the handlers and probably not out of compassion for the animals. Veterinary surgeons were the first to stress the need to relieve the suffering of animals at slaughter and the practice of stunning animals by captive bolt before bleeding increased between the two World Wars. In 1942, stunning was made compulsory in Paris and this was extended throughout France in the 1960s.

**1.2.2. From the recognition of animal sensitivity to animal protection**

*From recognition of a moral duty towards animals to the idea of animal rights.* Recognising that animals are sentient leads humans to better define the relationships they have with them, taking into account that humans have a moral responsibility not to inflict pain on sentient beings including animals. According to Kantian ethics, animals do not have the faculty of reason and as a consequence cannot be part of the moral community. Only beings that can consider themselves as ‘ends in their own right’ and recognise the same quality in their own kind can have an ‘intrinsic value’. It is this quality that gives them rights and imposes respect for their life, their physical and moral integrity and their freedom. Animals, being no more able to assert their rights than to carry out their moral duties, have only an ‘instrumental value’. Therefore, they cannot have rights, but since they are sentient beings we have a duty to ourselves, not to be cruel by making them suffer unnecessarily.

As opposed to Kantism, contemporary pathocentrist theories take animal sensitivity into account directly. This corresponds with a general trend towards considering pain unbearable that has been extended to all sentient beings. Explicitly or not, associations that campaign for the animal cause follow this train of thought. Rather than adhering to the anthropocentric idea that humans just have duties to animals, followers of the pathocentrist school of thought have gradually come to the conclusion that the animals themselves have rights or at least their own interests. Philosophical streams reflecting these various ideas will be described subsequently.

*The law applied to animals: from concern for public order to animal welfare.* A legal framework for the treatment of animals appeared in the 19th century with the introduction of the first laws and the proliferation of organisations for the protection of animals. This legislation on the treatment of animals arose more from a desire to improve public morals, triggered by a heightened awareness of human violence, than from a concern for animal welfare. The Grammont law (1850), which penalised the ill treatment of animals in public is especially revealing of the attention the governing elite paid to common violence and their fear of its social contagion. It was the publicising of violence that was condemned in this case. Killing animals continued to be considered necessary and was accepted. What characterised awareness of animal suffering was, above all, its visibility and the apparent pleasure of its perpetrators. Hence the Society for the Protection of Animals (SPA) and other protection groups did not campaign against the use of animals for transport and for slaughter but as far as possible...
to regulate these activities. The Grammont law remained in force for over a century.

In the 1880s, a new wave of animal protectionists with very different ideas emerged. This was typified by the emergence of the anti-vivisectionist movement equipped with a more animal-centred ideology that rejected suffering and the death of animals for human needs. Their view was and remains, that an animal is valued as a sentient being whose suffering can not be tolerated or justified. The idea of establishing animal rights on the same basis as human rights began to spread. This current of thought has been gaining ground within animal protection circles, since the mid-20th century and it has contributed to the development of a public perception that the well-being of animals prevails over other moral justifications and public health.

1.3. The current debate on animal pain

1.3.1. Major changes in the relationship between humans and animals. Since the Second World War the relationship between humans and animals has gone through major changes. These changes were triggered by a combination of factors linked to post-war projects of economic and social development. The first of two major factors was the Monnet plan of 1946 for the development of agriculture, a global project for ensuring security of food production in France based on a modern, high-performing agro-industry. In this context, new husbandry practices based on the predominant industrial model were developed to guarantee regular supply of meat, milk and eggs to a growing urban market. Historians and anthropologists identify the high level of urbanisation during this period as the second factor. A consequence of the disconnection between rural and urban life was that urban dwellers no longer understood the realities of rural life. The concomitant passion for domestic pets that arose can be interpreted as a form of compensation for this separation from a rural environment.

These developments combined with a new sensitivity are thought to be key elements in the movement that rejected the view that inflicting avoidable pain on animals was acceptable and condemned any such practice. It was in this context that about 30 years ago ethical and legal frameworks concerning the treatment of animals began to appear. This ESCo assessment focused especially on the causes of animal pain in the context of intensive livestock production systems because, based on reports of pain and suffering the animals can be subjected to, it is the animal welfare in these production systems that has been most criticised.

**Intensive systems of animal production.** Specialists in animal production have traced the first appearance of intensive systems of animal production that increased yield and labour productivity to the beginning of the 20th century. These systems have been successful because, despite significant increases in consumption, European countries and especially France, have achieved self-sufficiency in food and have even become net exporters for certain animal products. Simultaneously, decreases in the price of animal products have resulted in a decreased proportion of the household budget spent on food. Between 1965 and 1980, a fairly constant 31% of the household food budget was spent on meat. This then decreased to around 26% by 2006. Over a 40-year span, INSEE data has shown a decrease in beef consumption of nearly 30% whereas the consumption of other types of meat has remained constant. Husbandry practices have come under increasing criticism because of the constraints the living conditions impose on animals and on workers.

The recent history of animal production shows that since the 1960s, agricultural research has contributed to the development of animals suitable for these high output systems of production. In the laboratory, animal scientists have deconstructed the whole animal to describe the physiological and biochemical control mechanisms for metabolism, growth, production and reproduction. From rumen microbiology to endocrinology, including nutrition, reproductive physiology and embryology a range of disciplines has been mobilised to improve the fit between the physiological characteristics of the animals and the performance expected from animals genetically selected to suit the production objectives and husbandry requirements for intensive production.

In theory, if not in fact, farm animals have become ‘animal machines’ characterised by their high levels of production as is evidenced by the trend to replace the term ‘husbandry’ with the notion of ‘animal production’. The organisation of labour, in particular for feeding, housing, health and reproduction, has been rationalised following processes similar to those used in the industrialisation of manufacturing.

The resulting livestock production systems indeed have been developed using the methods of organisation and standardisation of work practices of the manufacturing industries. These systems are very dependent upon the animal foodstuff industry, the pharmaceutical industry and agro-business; particularly the slaughterhouses. They are nowadays far less dependent on farms and on farmers and especially so in the highly integrated systems. Intensive production systems for pigs, poultry and calves (veal) represent the extremes of these systems. These industrialised systems of livestock production coexist with other extensive farming systems such as those qualified as traditional, organic or contemporary extensive farming.

It was in the context of social criticism of contemporary industrial livestock farming that the scientific community responded and developed the concept of ‘animal welfare’. This scientific community is better established in the north of Europe than in France. It encompasses not only ethologists, specialists on animal emotion and cognition, and neurobiologists but also philosophers, theologians and animal ethicists.

It was this scientific community that transformed the claims of animal protectionists into the science of ‘animal welfare’. These scientists not only had the expertise to assess the reactions of animals to husbandry constraints but they also contributed to the definition of production standards. They are at the origin of the recommendations for
each farm species and type of production and are taken into account by French and European regulations. The research carried out for the benefit of the animal welfare cause has improved the living conditions of animals in intensive production systems. It has also helped to integrate parameters of robustness and welfare into some genetic selection programmes.

The question of slaughter. A full analysis of animal pain must also address the question of slaughter. The general and technical aspects of slaughter are dealt with in the following articles but here we examine the cultural dimensions of slaughtering animals in observance of religious rites.

Ritual slaughter following the religious rules of Judaism and Islam requires the cutting of the throat of the animal without prior stunning. On the basis of the freedom of worship this is authorised in France by special dispensation. The religious laws of these two faiths require animals to be conscious at slaughter, therefore they oppose stunning before blood letting. European directive 93/119/CE renders stunning animals before throat cutting compulsory. However, an exemption is granted for ritual slaughter. Various animal welfare movements recommend the labelling of products specifying ‘slaughtered according to religious rites’. In practice the complexity of marketing chains will result inevitably in some meat produced by ritual slaughter being sold as meat produced by conventional slaughter. Clear labelling would inform consumers concerned about animal welfare and who wish to avoid consuming meat produced by religious slaughtering. The risk is however, that labelling would introduce some discrimination against these products for reasons other than animal welfare.

Animal pain and suffering and livestock workers: an under-explored link. The unique characteristics of working with animals as opposed to other types of agricultural work are being studied by experts in occupational psychology and ergonomics, in an emerging field of research. These studies highlight the suffering expressed by some workers in industrial farming operations. The organisation of labour on these farms and the precedence given to economic rationalisation have lead to deterioration in the relationship between handlers and the animals. The physical and psychological health risks facing these workers are related to the environment in which the livestock are reared (work accidents, injuries, exposure to dust and pathogens) and to the nature of the relationships they have with the animals. The status of the animals as a resource to be used, especially in the pig industry, has a negative impact on the status of workers themselves. Some workers feel that they do not have sufficient recognition from the animals they care for, their peers or the consumers.

There have been many studies on the physical consequences of these health risks but as yet there has been little research on the consequences of the psychology of the human–animal relationship on the health status of the livestock handlers or of the animals.

The relationship between livestock handlers and animals is a significant aspect of animal welfare, but so far it has been treated not so much in terms of the intersubjectivity of the relationship as in terms of stress on the worker, which is in turn, has a negative influence on animals.

1.3.2. Deliberations on the definition of animal pain: philosophical and ethical considerations

A question increasingly discussed in the philosophical literature. In philosophical literature over the last 15 years, increasing importance has been given to papers dealing with either pain or with animals. However, in few of these articles have the two been examined simultaneously and even more exceptional are papers dealing specifically with animal pain.

Other fields of philosophy are also involved in these discussions because, even though pain is not dealt with directly, it is integrated into philosophical reflections on the foundations of morality and law. The application of philosophy has rarely considered in any detail, the applied aspects of animal pain and when it does, it concerns itself mainly with livestock farming and experimentation on animals.

Despite the differences in approach in the literature it seems that some universal issues can be identified in the various streams of philosophical thought. They can be grouped under three principal headings: pain and suffering in relation to consciousness; the moral status of sensitivity to pain and the economic and cultural contexts in which pain is imposed on animals.

A reassessment of cognition in animals based on recent scientific advances. Recent developments in disciplines such as ethology, especially of primates, neurophysiology and cognitive sciences demonstrated continuities in cognitive abilities among animals and humans. Specialists in cognitive sciences have studied the ability of some species of animals to build up images of their environment and of events that take place within it that enables them to respond and if necessary, adjust their responses. In this regard some authors speak about ‘animal subjectivity’.

Advances in these scientific fields led to the acknowledgement that animals, particularly mammals, have cognitive abilities and a range of mental states that go far beyond those previously attributed to non-human sentient beings. This conceptual change has coincided with the increasing perception that animals reared in intensive farming systems are merely machines for production. Similarly, in bio-medical research, animals are exploited largely as laboratory tools. This contradiction between the concept of animals as beings deserving moral consideration and the manner in which they are used has stimulated the emergence of the field of animal ethics.

The concepts of pain, suffering and welfare and the overlap among them. The literature on animal ethics deals almost solely with suffering and rarely with pain. For example, in a review of 84 papers in this field only three dealt with pain.
Among those authors who deny the existence of animal consciousness there is controversy over the consequences of this distinction between pain and suffering. Some authors consider that animals cannot imagine pain and therefore cannot be in a state of suffering. Hence they are not relevant moral beings. On the contrary, other authors consider it precisely this alleged inability that could make pain worse because the animals are unable to rationalise and justify outcomes as humans can. Some authors conclude that in the absence of knowledge of the way each species experiences painful situations, logically, the benefit of the doubt should be given in favour of animals.

There are also varying interpretations among those authors who consider as pertinent the notion of animal suffering, linked to the consciousness of pain. Some authors have developed the idea of gradualism (gradual evolutionary change) in animals, setting different ethical norms for categories of animals depending of their degree of evolution. The specific vital needs and mental abilities of animals are very diverse and need to be determined for each species. This way, broad categories of animals can be differentiated depending on their cognitive abilities and accorded specific rights in proportion to their vital needs and mental abilities.

Moral considerations may go beyond simple concerns for animal welfare. They can be broadened to include the idea that animals should have a life fitting their species and that includes the freedom to express their natural behaviours. This position is founded on the idea that from its own viewpoint, a living being has had a satisfactory life if its capacity for certain actions and behaviours has been fulfilled, and that it is unfair to prevent them from this fulfilment. For instance, whatever their social, physical or mental handicaps all human beings have the right to choose the life they want to lead and to have the opportunity for self-development in line with their abilities. When extended to animals, this call for justice requires that humans take the necessary measures to ensure that all species are given the opportunity to develop according to their own aptitudes.

The concept of animal welfare, on which the regulations on rearing animals and on the conditions for slaughtering animals are based, is seen as an attempt to reconcile these different points of view. It substitutes an approach based on pain with a positive approach that takes into account the factors considered decisive to the respect of the animals perception of pain and suffering. The concept of animal welfare is founded on Five Freedoms: 1. Freedom from Hunger and Thirst, 2. Freedom from Discomfort, 3. Freedom from Pain, Injury or Disease, 4. Freedom to Express Normal Behaviour, 5. Freedom from Fear and Distress. The animal welfare approach places greater emphasis on the duties humans have towards animals than on specific animal rights, marking a transition from the requirement for avoiding harm to that of doing good.

The question of the boundaries between pain, suffering and consciousness will be treated in greater detail in article entitled, Pain: definitions, concepts and mechanisms in humans and farm animals.

The emergence of the issue on animal rights: animal ethics. Most authors, at least the philosophers, agree with the idea that animals are not moral subjects, in keeping with Kantian philosophy on this point. Nevertheless, in no manner does this undermine the current point of view that animals can be regarded as moral beings if feeling pain is taken as a valid ethical criterion for animal welfare. This implies not only, that humans have the duty of care for animals but goes further by granting animals rights or at least recognising that they have their own personal interests. However, these duties or rights need to be further defined. In the extension of moral consideration to animals there has been a tendency to copy moral theories established for organising human affairs and for enforcing norms on actions and decisions liable to have an impact on other humans. The moral interest for animals does not always allow for a cruel and degrading treatment to be distinguished from one that is humane. For this reason, an assessment of a welfare situation cannot be left entirely to the subjective analysis of humans because it will differ according to individual sensitivity and cultural diversity. It is in this context that animal ethics emerged and differentiated into two main streams, both of Anglo-Saxon origins. On one hand there is the utilitarian approach where the interests of all sentient creatures are brought together in an overall calculation and on the other hand the deontologist approach that supports non-negotiable rights for animals.

Sensitivity is clearly taken into account in the utilitarian approach according to which it is necessary to maximise the well-being and to minimise the suffering of all sentient beings. There is no reason for limiting this consideration to humans. All sentient creatures can therefore be included in an assessment of any action on the basis of the ratio between the costs to the individual under consideration (in terms of suffering or pain) and the benefits (in terms of wants or desires satisfied). The cost-benefit assessments done by some researchers are in fact, an application of this ethical principle. Other authors limit the relevance of such an evaluation by stressing that it is not egalitarian because the ones that suffer are not necessarily the ones that benefit from the suffering. It is worth noting that in absolute utilitarianism terms, it is possible to accept the sacrifice of individual interests for the common good. As a consequence protection is not granted to each individual, whether human or animal. Individuals can only be assured that their torments and satisfactions will be taken into account in an egalitarian manner in an overall assessment, the results of which may be disastrous or even fatal for them.

For this reason, some authors think that to protect both humans and animals it is necessary to grant them all moral rights. This is the deontological position, exemplified by the stance of the American philosopher, Tom Regan; the recognised authority on deontology. Even though in practice his line of reasoning encompasses actions similar to those of the utilitarian position, it differs significantly in theoretical foundations, putting him in opposition with Peter Singer, the figurehead of utilitarianism. According to deontologists, the rights granted should be more or less extensive depending
on the complexity of the mental faculties of the animals and on their cognitive abilities. For the supporters of deontological ethics all creatures, or at least those above some level of complexity, are ‘subjects-of-a-life’. They have an ‘intrinsic value’ and therefore treating them as having only an ‘instrumental value’ or inflicting the slightest harm on them should be prohibited, whether in farming industries or in scientific experiments. This stance of an absolute right to equality is translated beyond vegetarianism into veganism. This way of thinking about animals extends the rejection of death to the rejection of any exploitation. It excludes the consumption of honey, eggs and milk since farming these products involves putting to death bees, male chicks and calves and culled animals. Consequently even if the primary objective of these production systems is not to produce meat, the innocence is only apparent. In an even more radical position vegans practice a complete change of lifestyle and have added leather, wool, silk and any animal labour to the list of unacceptable items (Box 1).

**Box 1 Vegetarianism**

The vegetarian movement originated with the views of the evangelical religious movements in England at the end of the 17th century which spread around the country during the following century. During the 19th century the development of vegetarianism in England and the United States was linked to evangelical groups. In France and in the rest of the European continent the spread of vegetarianism was more under the auspices of medical philanthropy. In common to both was the prescribing of social and moral norms for the well-being of animals that went far beyond a mere non-meat diet. However there was a difference between religious vegetarianism which related to the quest for spiritual purity and vegetarianism on the grounds of health and lifestyle. Where the emphasis was above all on bodily health and on the improvement of the social status of the poor and the working class. Vegetarianism is still more prevalent in Great Britain than in France. Ten per cent of the British population is vegetarian as opposed to 2% of the French. There are also wide differences in practices and considerable diversity among followers and related institutions. While, as in the past, concern about animal pain is basic to the vegetarian movement it is not first and foremost on the agenda. It is rather the pursuit of an extensive reform of health and social status that is at the heart of the vegetarian ideology. It is also worth noting that since the end of the 19th century there has been a minority vegetarian tradition in some French anarchistic circles. Today this can be traced to French, anti-specist vegans who bring an anarchistic dimension to the political discussion on the status of animals in society.

Other theoreticians put forward the idea that it is enough to have a ‘conative life’, that is, one with drives and mental states, to have interests and, therefore, rights. As animals have a conative life, they have a right to health, should not be excessively restricted in their movements and inflicting suffering, mutilation or deformity on them must be avoided. On the other hand, for the authors of the Universal Declaration of Animal Rights (1978), animal rights stem first and foremost from the animals’ vulnerability.

These schools of thought do not clearly define the species concerned by these rights, probably due to insufficient knowledge regarding the mental and emotional universe of animals.

In a closely linked viewpoint, some authors consider that humans have been able to communicate with the animals they have been associated with. Without reciprocal benefits, domestication would not be possible. Such an exchange of services, information and sensibilities brings with it obligations: wherein lies the significance of the expression ‘domestic contract’. It is as if the ‘life story’ of domestic animals has been woven together from all sorts of different beliefs, repeated across generations into the mixed societal form now in existence. These relationships are reciprocal (the obligations are not one-way), but non-egalitarian (very non-egalitarian, since they include the possibility of putting animals to death). Such a contract results in the necessity of ‘taking care’ of animals, which implies providing them with food, protecting them (against predators, parasites and disease) and taking charge of their reproduction, while at the same time ensuring them of a certain ‘well-being’. It also includes devising husbandry systems which assure every animal of a certain freedom of movement, the opportunity of exploring its environment, of expressing behaviour appropriate to its species and forming relationships with its own kind.

Beyond the potential divergences of these viewpoints, it is possible to find consensus on the reality of the moral issue of this question: that animal pain is thought to be have been aggravated by the intensification in husbandry practices and that there has been a rise in social concern regarding the condition of animals in our society. For the authors, animals have become a moral concern; therefore they should be protected by the norms ascribed to any human actions and decisions which may impact upon them.

*The role of animal protection organisations.* Movements of thought and action concerning animals were formed and developed later in France than in the Germanic or Anglo-Saxon world. The SPA was founded in 1845, followed soon after by the adoption of the Grammont Law which the newly created SPA put into practice.

Since the 19th century, similar associations have multiplied, one feature remaining constant over their increasing diversity: their social composition. Their members are mainly from the middle and upper social classes, wealthy, educated and urbanised. This probably explains their belated interest in farm animals, with the exception of horses. The issue of farm animals was not brought into focus until 1961 with the creation of the *Oeuvre d’assistance aux bêtes d’abattoir (OABA)* or the Society for the Protection of Farm Animals, at the same time as the first large post-war reorganisation of slaughterhouses and meat production systems.

A panoramic view of the organisations shows a great diversity in their concept of the animal condition and the relationships they look for between humans and animals. Very broadly, it is however possible to differentiate, as is
often the case in activist movements, two types of position, between which lie numerous real variants:

- moderates, reformists, who want mainly to provide animals with decent living conditions or at least to improve the conditions in which they are kept;
- radicals, who call themselves ‘abolitionists’, abolition referring to any type of animal exploitation and therefore, as a safeguard, suppression of all relationships with them in order to return them to a supposedly happy natural state, free from human slavery.

While the objectives, operating methods and the spheres of influence of the many organisations vary greatly, they nonetheless share common ground in organising their activities on three levels:

- activities which aim to improve the fate of animals in a very concrete way, by protecting them, taking them in, treating them, etc;
- activities to raise public awareness, through traditional methods of activism (information campaigns, circulating pamphlets, petitions, demonstrations, etc.), or through education (some organisations are authorised to visit schools);
- finally, through pressure groups, most often by lobbying national or European public authorities and by professional and contact networks but sometimes also through violence against economic concerns (particularly pet shops, laboratories and fur producers or sellers), indeed even — and this has happened in Great Britain and in the United States — against human targets, in line with the logic of terrorist movements.

1.3.3. Taking animal pain into account in the law. A comment of a lexical nature should be made as a preamble: it can be observed in fact that the legal vocabulary used for describing different states of pain is very diverse — ‘well-being’ and ‘suffering’, ‘fear’, ‘anxiety’, ‘ability to suffer and to remember’, ‘behavioural needs’. It is not possible from this diversity to conclude whether they translate an awareness of animal complexity and of a form of mental suffering or whether they simply reflect the usual uncertainties on this issue.

The way animal pain is taken into consideration by the law is not easily comparable with the way human pain is taken into account. In fact, whereas compensation and the fight against human pain are fundamentals of central and time-honoured branches of law, such as criminal and civil liability law, it is only in recently adopted laws in the health and psychological dimensions, an increased will to treat human pain specifically has been observed, including in the medical and hospital contexts. This new dimension in the law can be linked either with the lowering of the threshold of tolerance for suffering and the end of life, or the end of Christian glorification of suffering, or with the emergence of new ways to fight pain.

As for taking animal pain into account in law, it can be traced back to the first laws on animal protection — France with the adoption of criminal laws to curb cruelty to animals, in Europe with the publication of directives setting minimum standards for activities involving animals.

In French law, the spread of a new attitude of caring for animals was embodied in the evolution of regulations for animal protection. Starting with the Grammont Law, it became more clearly established in 1959 with the decree making cruelty punishable in the private as well as the public domain. Animal protection laws/regulations then followed on rapidly, increasing the possible penalties, granting power to animal protection societies and widening the range of offences (maltreatment, acts of cruelty or serious abuse, voluntary or involuntary life-threatening attacks, etc.). What is fundamentally implicit in these legal provisions is the recognition of the animal’s capacity to feel. Another explanation could be animals’ dependence and vulnerability vis-à-vis humans. When they are no longer labelled as dependent or vulnerable, animals become the subject for other solutions (nuisance animals, dangerous dogs, etc.).

Based on the law of 10 July 1976, French law states that ‘any animal being a sentient being shall be placed by its owner in conditions compatible with the biological needs of its species’ (article L.214-1 of the Rural Code). There is consensus on the importance of this law: animal feelings are placed at the heart of animal protection legislation. However there is still controversy regarding the implications of this wording. Does it mean recognition of the specificity of the animal amongst legal things (a category differentiating them from ‘people’)? Does it demonstrate the existence of a third legal category in addition to the traditional dichotomy between people and things? Or could it demonstrate that animals are no longer legal property or things but legal subjects, limiting the owner’s freedoms and providing animal protection societies with the ability to take action against certain breaches of the law?

This recognition of animals as sentient beings has not however, as the law stands, closed the remit and terminated the rights of ownership over animals. Contrary to what might be commonly imagined, the law does not seem to see a contradiction in the references to ‘being’ and the application of the rules of ‘having’. The law of 1976 makes reference to the owner of the animal. In this sense, it appears difficult, therefore, not to describe animals as property when they able to be appropriated or are owned. The description of property remains unchanged in French law and can be traced back to Roman law. It justifies in principle the definition of the animal as a legal object (as opposed to a legal subject), or a legal thing (as opposed to a legal person). It does not dispute the quality of ‘being able to feel’; legal objects (or things) are not limited to inert objects but include anything that does not qualify as a subject (or person).

In European law, the issue of animals’ legal status has not been expressed in the same terms as in French law.
The jurisdiction of the European Communities and then the European Union being limited, animals are defined according to those limitations. In the Treaty of Rome (1957) animals are defined as agricultural products, within the framework of the common market and free movement of goods and people (the fields of agriculture, transport, internal market and research falling under community jurisdiction). This definition remains unchanged, but it has not prevented the community legislator from adopting laws/regulations so as to ensure the minimum protection for animals on the farm, while being transported and during slaughter or when used for experimental purposes. The animals concerned are primarily those which are likely to enter and be transported within the domestic market, essentially farm livestock.

The protection of livestock in Europe. European and community laws (the Council of Europe and European Communities and then the European Union) play a key role in the evolution of rules related to animal protection. However, French law already had criminal rules of law in place protecting animals before the first European directive was adopted. Within their jurisdiction, the European Communities, which became the European Community and then the European Union, basically intervened to ensure a minimal harmonisation by the different member states on the subject of animal protection in agricultural, trading or experimental contexts. What should be noted is that the European directives set out higher demands for animal protection regarding certain activities, which therefore lead to greater consideration of animal pain. On the other hand, they do not resolve the question of the legal status of the animal and do not prescribe criminal penalties against those responsible for animal suffering.

Hence, the European Community adopted a series of directives concerning animal protection: stunning animals before slaughter (1974, repealed in 1995), protection of laying hens on the farm (1986, replaced in 1999) veal calves and pigs on the farm (1991, modifications in 1997 and 2001), protection of animals during transport (1990, modified several times and replaced by a regulation in 2004). In 1998, a directive concerning animal protection on farms set out a general framework for their protection. This fixed the rules on the housing of animals, on their care and husbandry methods (prevention of injuries and suffering, protection of animals reared outside) and is the basis for the whole range of community regulatory formalities applicable to all livestock.

This community legislation fixes the minimum general norms for farm animal protection according to the 'five freedoms' stated above.

In 1997 a protocol on the protection and welfare of animals, annexed to the Treaty of Amsterdam was proposed. It asserts that when formulating and implementing community policy in the areas of agriculture, transport, the domestic market and research, the European Community and the member states will take the requirements of animal welfare fully into account, while at the same time respecting legislative or administrative provisions and the common practices of the member states. This concerns in particular, religious rites, cultural traditions and regional heritage. However in 2001 and 2008 the European Community’s Court of Justice refused to qualify ‘animal welfare’ as a general principle of community law. Nevertheless, the reference to animal welfare appeared throughout the texts and documents of the community’s institutions.

The project for a Treaty establishing a Constitution for Europe (2004) gave animal protection a place by stating that ‘when they implement Union policy in the areas of agriculture, fisheries, transport, the domestic market, technological research and development, the Union and the member states will take animal welfare fully into account recognizing them as sentient beings, at the same time respecting the legislative or administrative provisions and the common practices of the member states. This concerns in particular, religious rites, cultural traditions and regional heritage’. This wording, which is very close to the one in the protocol annexed to the Treaty of Amsterdam, was not retained as the Constitution was rejected by referendum.

The issue of animal welfare has however been integrated into Common Agricultural Policy (CAP) reform via the conditionality of subsidies (which may be coupled or decoupled from the first pillar and certain subsidies from the second pillar of the CAP). Conditionality enforces compliance with certain measures (known as the minimum basis) in order to receive the full amount of the subsidies. Non-compliance with these measures means, after checks and findings, a reduction in subsidies. The sanctions vary according to whether the non-compliance is judged intentional or not (from 1% to 20% if the non-compliance is intentional, even up to 100% in extreme cases). Besides environmental aspects, animal identification, public health and food safety, animal health, the respect for animal welfare (animal protection section) has been included in the minimum basis since 2007. No assessment of non-compliance rates within the criteria of animal protection is available for the time being.

Finally, the European Commission presented a community action plan in 2006 setting out the activities it intended to carry out in the area of animal protection and welfare. It consisted however, of a document on Union policy which has no legal value. The efforts made in view of having the criterion of animal welfare accepted by the World Trade Organisation (WTO) have been unsuccessful.

Livestock protection in French law and regulations. Concerns about animal pain have been progressively incorporated into French law and the legal framework for animal protection has widened proportionally to the range of protection afforded. It now concerns animals used in research, pets, as well as livestock (methods of animal husbandry, housing, transport and slaughtering of animals). A large number of regulatory texts have been adopted since the 1970s, some stemming from community directives or from commitments contracted by the ratification of conventions, in particular those of the Council of Europe. These regulations concern husbandry practices (with specific provisions for...
veal calves, pigs and laying hens), transport and slaughter. Since 1974, stunning all animals before slaughter is compulsory, with special dispensation for the religious and emergency slaughter of animals. Also training for those in the trade (those who transport animals in particular) and veterinary drug administration are regulated. At the European and French levels, committees are charged with implementing regulations concerning animal welfare.

The body of community or national laws and regulations is underpinned by advancements in scientific knowledge regarding animal behaviour and their sensitivity to pain. In particular, this is the case for livestock, the laws/regulations relying most often on regularly updated expert assessment. Changes in legislation are also the result of power struggles between movements and groups in society, as witnessed by, for example, the recognition of the right of animal protection societies to file a civil suit for certain offences committed against animals (Code of French Criminal Procedure, article 2–13).

The French Rural Code now has a chapter devoted to animal protection (in which article L214-1 appears, from the 1976 law already mentioned) among different chapters dealing with the keeping of animals, their transport or the fight against animal diseases. Animal protection as an objective thus appears clearly at the heart of the law on animal production.

In France, the status of animals falls mainly within the provisions of civil law, criminal law, rural law and criminal procedure law. This segmentation of legal interpretations, linked to the number of different ways of using animals, to the diversity of the animal species concerned and to the different aims at stake, does not facilitate understanding of animal status by the parties involved in a lawsuit. In the same way, the diverse occurrences of the word ‘pain’ and its metamorphoses (suffering, maltreatment, etc.) make understanding animal pain in animal protection law more complicated, in particular regarding livestock.

1.3.4. Taking account of animal pain in the economic context. In the literature pertaining to animal welfare there is also the question of determining the actual nature of consideration for animal pain. Is it a public good which must be respected in the general interest? Is it a farming externality (i.e. the consequences of taking animal pain into account by the farmer have an influence on other members of society but the farmer receives no remuneration in exchange) that has to be internalised by the public authorities? Is it a private good or a psychological externality which is only contingent on the working of the market? (The psychological sphere involved in economic factors does not relate to the public sphere.) Depending on the authors, opinions diverge and the question remains open.

In the case of animal welfare, the regulatory route has been given priority by the European Union with the adoption of the ‘welfare’ directives already mentioned, considering welfare, therefore, as a public good. Among the member states, some have only taken this route (such as Norway or Finland); in other countries like France, taking animal welfare into account on farms has given rise to some attempts to show its value in the market (voluntary quality assurance measures).

How society perceives animal pain. Social demand for reducing animal pain is difficult to quantify and must be distinguished from other expectations such as respect for the environment, the economic viability of farms and industry networks, health safety standards, the organoleptic quality of the products, by players with different motivations (farmers and retailers, animal protection organisations, citizens and consumers…).

The studies available today on the economic factors involved in taking pain in animals into account are mainly Anglo-Saxon. They show that the public’s perception of animal pain compared to the human experience of pain remains uncertain and that those working with animals agree that animals do feel pain. A significant number amongst them are of the view however that animals do not feel pain as strongly as humans. On the other hand, there are no studies on producers’ willingness to change to more animal-friendly practices according to the costs involved in such changes.

A Belgian study confirms differences in perception between producers and other citizens. While all of them associate animal welfare with physical health, provision of food and water, warmth and protection, citizens who are not producers add to that list freedom of movement, which they consider unsatisfactory nowadays on farms. For the producers, although the economic interest of their farms and the positive impact that improvements in animal welfare could have on the image of their trade predominates, they are also showing rising concern over animal pain.

Consumer expectation. Consumers’ specific request for taking pain in farm animals into consideration must be allowed to be expressed through the market. The work available on this subject concerns animal welfare rather than animal pain. Numerous surveys on the welfare of livestock reveal strong interest on the part of consumers for animal welfare with, in certain cases, positive and significant willingness to pay for produce resulting from more animal-friendly farming methods. These studies must however be interpreted carefully as it has been shown elsewhere that there is sometimes a wide discrepancy between declaration of intent and purchasing behaviour. Besides the issue of the methodological validity of the existing surveys (and particularly the definition of animal welfare given to those participating in the survey), this gap may signify either a lack of information on the part of the consumer (which suggests a policy of adapted information and/or labelling) or a dichotomy between the citizen who wants to see him or herself as a person of certain values and the consumer who often seeks out less-expensive products, whatever the production methods. Consumers are aware of a contradiction between the idea of wanting a pleasant life for the animal and prospect of slaughtering it for consumption.
Generally, it can be observed that consumers associate animal welfare with quality in the wider sense (health safety qualities, organoleptic qualities...) of these animal products. Consumer acceptance of new production methods needs to be studied beforehand therefore, when taking animal pain into consideration. In fact, certain solutions for managing animal pain such as using biotechnology for vaccines, or the use of pharmacological products, with the risks they carry of leaving residues in the animal products, can to a large extent counteract the consumers’ expectations. The few studies which exist on this question will be dealt with in article entitled, Means of reducing pain in farm animals.

Possible tools for demonstrating the market value of taking of animal pain into account. If sensitivity to animal pain only concerns consumers, taking it into account is the role of the private sector. The demand for animal welfare protection and taking animal pain explicitly into account, open opportunities to niche markets and/or for market segmentation, to satisfy interested customers. The consumer still needs to be clearly informed about the proposed product and its attributes, with, for example, suitable labelling, initiated by private parties with the help of specifications, and/or supported by the public authorities. This would have the aim of protecting consumers from the risk of fraud by guaranteeing the authenticity of the qualities claimed.

Such actions would allow interested consumers to validate animal products in the market from farms with animal-friendly practices that meet their expectations. Specific voluntary procedures for taking charge of animal pain can be implemented, or else quality assurance measures which exist already could be extended. Such quality assurance measures exist and some of them already include aspects relating to animal welfare. These aspects can be central or more often complementary to others (health safety, taste...).

It would be advisable not to add these initiatives to the multiplicity of existing measures. A rationalisation of those measures and a clear indication of the methods for taking animal pain into account in livestock, and by extension the levels of animal welfare in farms, would have the advantage of providing information efficiently to consumers. The relevant criteria for such labelling still remain to be defined. The role of the World Organisation for Animal Health (OIE), a competent organisation on this issue, could be important on this point.

In parallel, large supermarket chains today appear to be a key factor for a market solution. They have already taken up some consumer concerns in order to demonstrate the value of the voluntary measures carried out in the food sector. These primarily target food safety. Other concerns such as working conditions, the environment or animal welfare remain secondary, as their value is less able to be recovered in the market, even if this hierarchy in concerns varies from country to country. From their market power and their extensive supply chain, often crossing national boundaries, large supermarket chains could play an important role in encouraging farmers to change, by assuring them of remuneration for these new improvements in their farming practices. Thus, in the United Kingdom where a tightening of regulations had forced veal calf production to relocate, the large supermarket chains took the initiative of organising a joint effort between producers, public authorities, veterinary surgeons and animal protection activists to elaborate improved veal welfare standards, thus stimulating veal consumption by British consumers. Moreover, some multinational catering companies have forced their suppliers to adhere to strict quality standards on the subject of animal welfare, without stating the motivation (ethical, marketing...). These measures show that a precise demand expressed by consumers or citizens can, through the market and the power of large multinational companies, cause animal pain to be taken into account on a large scale.

The regulatory route. If animal pain is considered a public good, recognised by all, consumers and citizens alike, it falls to the State to have this dimension recognised by adopting the appropriate regulations. Tools such as conditionality, which, since 2003, links payment of subsidies to farmers who fulfil environmental requirements or to matters of animal welfare, can then be used and adapted. The new regulations requiring farmers to take responsibility for and deal with animal pain would then be integrated into the minimum basis for the payment of subsidies.

Solutions for reducing animal pain on farms could, depending on the solutions chosen, cause over-expenditure. Such over-expenditure due to changes in farming practices puts the industry in a difficult position, running the risk of having to relocate production without any benefit to animal welfare. As a case in point, there is the example of the adoption of regulatory measures on the welfare of veal calves in the United Kingdom at the beginning of the 1990s. This regulation paradoxically resulted in a decline in animal welfare, since many producers relocated their production out of the United Kingdom. As this involved the transport of live animals there was an implied deterioration in their well-being.

The OIE is therefore advocating that accompanying measures be taken in addition to taking animal pain into account on farms (such as relevant labelling or relevant information for consumers) so as to guarantee a fair return to producers on their products on the national or international market and to preserve the economic viability of the industry and its competitiveness on international markets.

Voluntary measures taken by the farmers and remunerated by the public authorities can also be developed. Contracts negotiated with the public authorities (in the framework of the second pillar of the CAP: with measures concerning agricultural competitiveness – axe 1 and/or Agri-Environmental Measures (AEM)), for example, include taking pain in farm animals into account. The creation of specific AEMs or adding to those available today in France on aspects of taking charge of animal pain could be considered.

Putting such measures into place would therefore allow some farmers, following the example of consumers, to modify their husbandry practices voluntarily and express their preferences.
A major obstacle: the WTO’s position on production methods and the absence of international standards on animal pain. The WTO’s rules aim to avoid protectionist behaviour in countries, and leave little place for ethical or social demands concerning animal husbandry methods. They state that if the products are qualitatively identical, their import cannot be rejected on the grounds of production methods. In this context, better farming practices for the benefit of animal welfare are not considered to produce animal products any different from those obtained by classical industrial methods. These arguments are also valid for the question of taking animal pain into consideration at the farm level.

Only bilateral or multilateral agreements remain acceptable, but require time and sometimes difficult negotiations. On the other hand, the adoption of international standards regarding pain in farm animals, according to the species concerned, would make a recognised international framework available. This framework would be of great use for the rationalisation of voluntary measures and would become the tool of reference for the development of a rational labelling strategy, as envisaged by the European Union. There is no recognised international standard today concerning animal pain. The OIE, a competent international institution on this matter, has recently published a report on the question of pain in animals as it has previously done on animal welfare, but no official position has been defined.

Concerning animal welfare, it should be kept in mind that, six different norms have been adopted by the OIE. Five of them concern transport (by land, air or maritime routes), or animal slaughter (for consumption or for health safety ends). The sixth concerns stray dogs.

From this analysis, it appears that there is some difficulty in taking the expectations of consumers or citizens into account on the subject of animal welfare and by extension on animal pain, at the single country level.

1.4. Conclusion

The analysis of knowledge produced in the different disciplinary fields gathered together in this article shows a convergence of representations, knowledge and the law on recognition of animal pain which can no longer be assessed only by economic or health safety criteria. The question of animal pain has now been raised in society, by consumers and citizens. The current reference has extended to animal welfare incorporating pain in a wider framework, on the model of the definition of human health, adopted by the WHO, which now includes psychological and social components.

The current state of play on the issue is a result of multiple changes in society:

- The manner of taking human pain and by extension pain in animals into account has strongly evolved. Whereas pain was in the past considered as inevitable, solutions exist now to reduce, if not to eliminate it.
- The public has distanced itself from farm animals and farming realities. The relationship of urban populations to farm animals has become rare and the only animals with which they are in contact are pet animals, whose status is different.
- Production systems designed in the different livestock sectors of the industry in order to answer production requirements now raise multiple questions.
- The stakeholders involved in the debate have steadily increased. Whereas before, only the farmer had to take decisions, nowadays all the players in the industry, from farmers to consumers, not forgetting the retailers and also the other players, such as animal protection organisations, are all concerned in the debate.